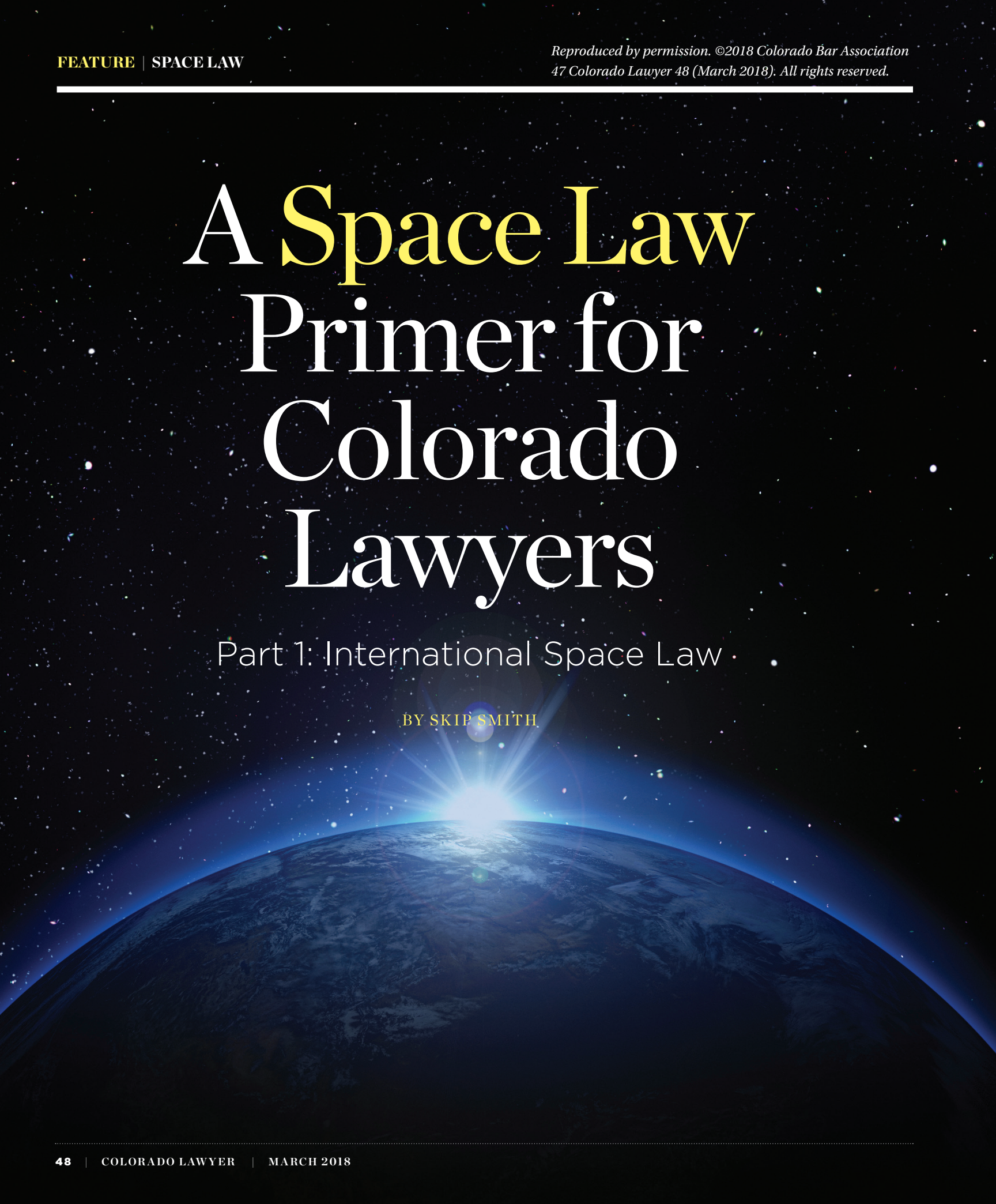
A Space Law Primer for Colorado Lawyers

Part 1: International Space Law

BY SKIP SMITH



International and national space laws impact many Colorado companies. This article addresses international space law. Part 2 will address U.S. national space law.

Space law is the collection of international and national laws governing space-related activities. Space law addresses a wide assortment of matters, such as the freedom of use and exploration of outer space by all nations, protection of the space and Earth environments, liability for damages caused by space objects, dispute resolution, rescue and return of astronauts and space objects, sharing of information about potential hazards in outer space, prevention of harmful interference, use of space-related technologies, licensing of satellite launches, and international cooperation.

Why is space law relevant to Colorado lawyers? It's simple: Colorado has the second largest aerospace economy in the United States, with more than 400 aerospace companies and over 25,000 private aerospace workers.[1] Colorado is home to Lockheed Martin Space Systems Company (satellite launch and manufacture, earth observation and exploration, human space flight, planetary and asteroid exploration); Ball Aerospace (satellite manufacture, astrophysics and planetary science, instruments and technologies, earth science); United Launch Alliance (satellite launch); EchoStar (the world's fourth largest commercial satellite fleet of 25 satellites); Digital Globe (owner and operator of earth remote sensing satellites); Sierra Nevada Corporation Space Systems (space technologies, spacecraft systems, space exploration systems); and many midsize and small subcontractors and suppliers of space goods and services.

Colorado is also the home of Air Force Space Command (military space), a National Oceanic and Atmospheric Administration Laboratory (civil space), the National Center for Atmospheric Research (a federally funded research and development center), and the Space Foundation (space education).

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Additionally, Colorado is one mile closer to space than most other places! In short, many Colorado companies are involved in space activities, so Colorado lawyers are well-served by understanding the legal environment within which these companies operate. This two-part series will review the primary components of space law: international space law (part 1) and U.S. national space law (part 2).

The Venn diagram on the next page shows one way of looking at space law. The first component is international space law—mainly treaties and other international agreements. The second piece is domestic space law—many nations have developed detailed laws and regulations applicable to space activities, and the United States is clearly the leader in this effort.[2]

The United States has many laws specifically aimed at space activities, such as the Commercial Space Launch Act of 1984, as amended,[3] the Land Remote-Sensing Policy Act of 1992,[4] the U.S. Commercial Space Launch Competitiveness Act,[5] and the Inventions in Outer Space Act.[6]

The third component is a large body of laws that were developed over centuries for other applications that now are being applied to space-related activities. For example, contract law governs contracts for the manufacture of satellites and for the launch of those satellites. Normal principles of contract drafting and interpretation apply to each of these transactions, which typically far exceed $100 million each.

The pyramid shows another way of looking at space law, with international and national space law as its foundation, upon which rest the many other legal principles and laws that impact space activities built on this base. Government and commercial contracts are a major aspect of space business. Many of the companies involved in space activities are government contractors. Dispute avoidance and resolution is a major part of space business and very often involves international dispute resolution forums such as the International Chamber of Commerce. Financing and insuring space-related activities

are critical activities and are not that different from financing and insuring other large-dollar, high-risk business ventures.

The Five Major Space Treaties

There are five major outer space treaties that all came out of the United Nations in the late 1960s and 1970s. During this period, space-related issues generally involved two blocks of nations: those led by the Soviet Union and those led by the United States. The lack of subsequent development of international space treaties within the United Nations is likely due to the end of the Cold War and the increasing number of space-faring nations. In many ways, negotiations between two primary blocks, with relative parity in space power, was easier. Negotiations now must occur among the many space powers including, but certainly not limited to, the United States, Russia, China, Europe (with its own internal divisions), India, and Japan. Developing countries also have considerable weight within the U.N. system, where each country has one vote.

Within the United Nations, the Committee on the Peaceful Uses of Outer Space (COPUOS) was instrumental in establishing the five treaties. COPUOS has two bodies: the Scientific and Technical Subcommittee and the Legal Subcommittee, both of which were established in 1961.[7]

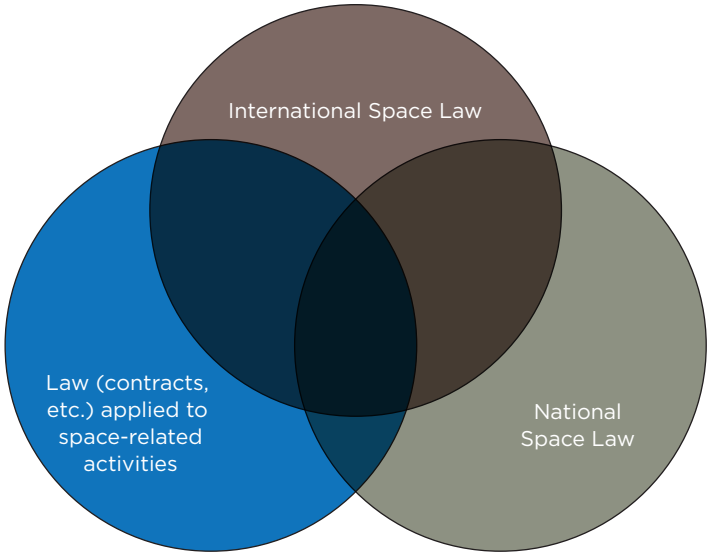
The Outer Space Treaty

The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies,[8] is best known simply as the Outer Space Treaty. It has 105 parties, including all of the space powers.[9] This treaty was based mainly on an earlier Declaration that was adopted by the U.N. General Assembly in 1963. The Outer Space Treaty entered into force in 1967.

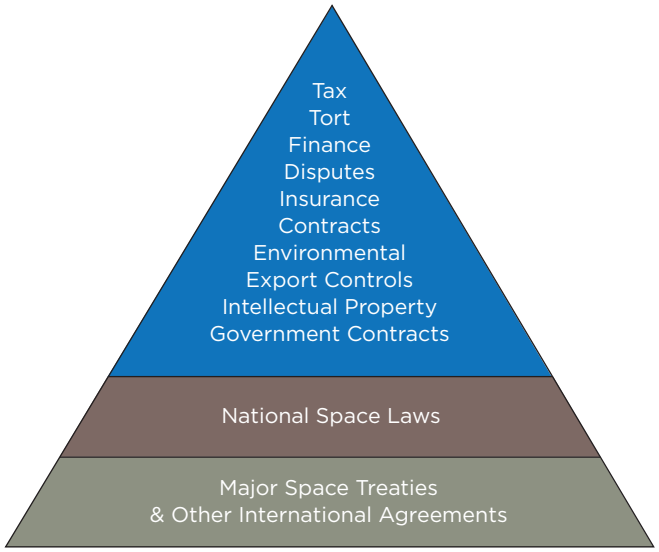
The Outer Space Treaty is the "Magna Carta" of space law. It establishes broad, general principles for the use and exploration of outer space. This Treaty establishes the basic rights, duties, and responsibilities of nations with respect to conducting activities in space. In general, the Outer Space Treaty establishes a legal regime that is favorable to commercial activities in space. It recognizes the legitimacy of activities by private enterprise in outer space, although nations bear responsibility and liability for the space activities of their non-governmental agencies.[10] Furthermore, the Treaty calls for space activities to be conducted with due regard to the corresponding interests of other parties, and if an activity may cause harmful interference with the outer space activities of other parties, consultation should occur before the activity may proceed.[11]

Article I establishes that the exploration and use of outer space shall be conducted "for the benefit and in the interests of all countries . . . and shall be the province of all mankind."

WHAT IS SPACE LAW?



THE CONTEXT



This "common interests" principle must not be confused with the "common heritage of mankind"[12] concept discussed below.[13] The common interests principle is inherently vague and imposes no requirement for direct sharing of benefits in any specific manner; it requires only that space activities be beneficial in a very general sense.[14] Notwithstanding, history has shown that practically every nation has benefited in some manner from the exploration and use of space. These benefits include the availability of weather and other remote sensing information from satellites, access to international and domestic telecommunication satellites, universal use of global positioning information, and increased knowledge about our universe.[15] All of these benefits have been realized by developing countries without their risk of investment capital.

Article I also establishes the principle of the freedom of exploration and use of outer space. As with the freedoms of the high seas,[16] the freedom of use of outer space must be exercised with regard to the interests of other states so that their exercise of such freedoms is not unreasonably denied. Otherwise, there would be no meaning to the freedom-of-use provision. In application, the freedom-of-use-principle probably has been the most important principle in the Outer Space Treaty. It has created a legal environment within which many governmental and non-governmental space activities have been able to flourish.

Article II establishes that outer space is "not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means."[17] The purpose of the non-appropriation clause was to implement the freedom of use principle. Appropriation is inconsistent with freedom of use. This clause also furthers the common interests principle because appropriation of an area may only benefit the appropriator.

Article III extends the U.N. Charter and international law, in general, to space. It beckons nations to conduct space activities "in the interest of maintaining international peace and security and promoting international co-operation and understanding."[18] The general extension of international law to space is very important. Because of Article III, gaps in the space treaties may be filled by principles of customary international law and other international law principles. For example, principles of self-defense and the law of armed conflict are well-defined in other domains, and they may be applied with respect to space.

Article IV addresses arms control issues in space. Nations may not place nuclear weapons or other weapons of mass destruction in earth orbit, on celestial bodies or in other areas of outer space, and the Moon and other celestial bodies are to be used "exclusively for peaceful purposes."[19] This is in accord with U.S. space policy and legislation, which provides that space will be used for "peaceful purposes."[20] In general, the United States and most countries define "peaceful" as being "non-aggressive." For example, it is clear from state practice that military satellites may be placed in space, but such satellites may not be used for acts of aggression.

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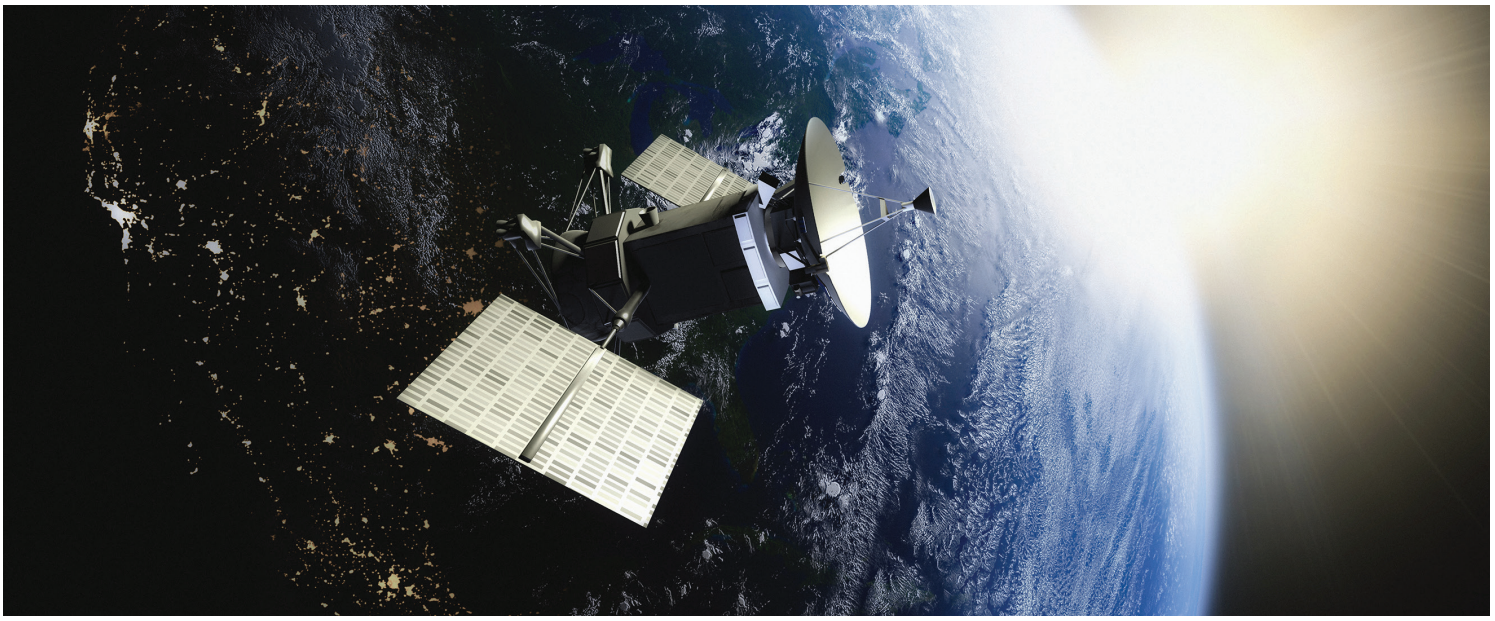
Article V declares astronauts to be "envoys of mankind" and requires parties to render assistance to astronauts in distress and return them to the state of registry of their space vehicle.[21] Parties must also immediately inform other parties or the United Nations of any phenomena in outer space that could endanger the life or health of astronauts. The Rescue and Return Agreement, discussed below, expands on Article V.

Article VI has proven to be quite important, and it forms the basis for much national space law:

> States Parties to the Treaty shall bear international responsibility for national activities in outer space . . . whether such activities are carried on by governmental agencies or by non-governmental entities, and for assuring that national activities are carried out in conformity with the provisions set forth in the present Treaty. The activities of non-governmental entities in outer space . . . shall require authorization and continuing supervision by the appropriate State Party to the Treaty.[22]

During negotiation of the Outer Space Treaty, the Soviet Union wanted only nations to conduct space activities. Article VI provided a compromise pursuant to which non-governmental entities (i.e., individuals and companies) could conduct space activities. Each nation, however, remains responsible for the space activities of its non-governmental entities and must provide "authorization and continuing supervision."[23] This requirement has prompted nations with non-governmental entities conducting space activities to develop laws and regulations licensing such activities to fulfill their obligations under the Outer Space Treaty.

Article VII reinforces the provisions of Article VI and declares that any party "that launches or procures the launching of an object into outer space, . . . and each State Party from whose territory or facility an object is launched, . . . is internationally liable for damage to another State Party . . . ."[24] Articles VI and VII thus firmly establish that nations bear international responsibility and liability for their space activities. The Liability Convention,



addressed below, provides further details on the responsibility and liability of nations for space activities.

Pursuant to Article VIII, parties retain jurisdiction, ownership, and control of their registered space objects. [25] Additionally, space objects or component parts found outside the state of registry must be returned to their state of registry.[26] These aspects underscore the importance of registering space objects and also imply that a registered space object may not be abandoned by its owner. This has important implications for issues related to the problems caused by "orbital debris."[27] The Registration Convention, addressed below, provides further details on the responsibility and liability of nations for space activities.

Articles IX, X, and XI focus on the conduct of space activities. All three Articles require cooperation and mutual assistance. Pursuant to Article IX, parties must avoid harmful contamination of the Moon and other celestial bodies and adverse changes to the Earth's environment, must conduct their space activities with "due regard to the corresponding interests of all other States Parties to the Treaty," and must "undertake appropriate international consultations" before proceeding with any activity or experiment that could cause harmful interference with the activities of other parties.[28] Article X requires parties to consider requests by other parties to observe the flight of space objects launched by those states.[29] Under Article XI, parties are required to inform the United Nations and the international scientific community "of the nature, conduct, locations and results of [outer space] activities."[30]

Pursuant to Article XII, "[a]ll stations, installations, equipment and space vehicles on the moon and other celestial bodies shall be open to representatives of other States Parties to the Treaty on a basis of reciprocity."[31] Reasonable advance notice is to be given to allow appropriate consultations to assure safety and avoid interference with operations in the facility to be visited. This Article establishes a regime similar to that established in the Antarctic Treaty.[32]

The Outer Space Treaty has provided a foundation upon which space activities have been conducted for over 50 years. Because its broad, general principles may be subject to varying interpretations, the efficacy of the Treaty sometimes has been called into question. In 2017, the 50th anniversary of the Outer Space Treaty, Senator Cruz, chairman of the space subcommittee of the Senate Commerce Committee, held hearings to examine whether the Treaty needed revisions.[33] Notwithstanding, the Treaty has stood the test of time, and some of its key principles, including freedom of use and non-appropriation, are considered to have acquired the status of customary international law applicable to all nations. The broad principles of the Outer Space Treaty formed the basis for the subsequent treaties developed within the United Nations.

The Rescue and Return Agreement

The Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space[34] (Rescue and Return Agreement) entered into force in 1968. This treaty has 95 parties[35] and expands on the rescue and return provisions in Articles V and VIII of the Outer Space Treaty. The primary purpose of this treaty is the safety of astronauts. Although the Outer Space Treaty refers to "astronauts," the Rescue and Return Agreement broadens this term to "personnel of a spacecraft."[36]

Articles II through IV address the rescue of personnel of the spacecraft. If a party becomes aware that personnel of the spacecraft are in distress, they must notify the launching authority and United Nations. A party must "immediately take all possible steps" to rescue and assist the personnel of a spacecraft who have landed within that state's territory in distress and must return them promptly to the launching state.[37] If the spacecraft is located on the high seas or another location not under the jurisdiction of any state, parties in a position to do so must assist in search and rescue operations.[38]

The Rescue and Return Agreement also addresses obligations regarding the return of space objects to the launching state. These obligations are less stringent than those requiring the prompt return of the personnel of a spacecraft. Pursuant to Article V, if a space object lands in the territory of another party, the state where the object lands, upon request of the "launching authority," is to take all steps "practicable" to recover the object.[39] Duties to recover the space object are less strict than those with respect to the personnel of the spacecraft; a state need only take all steps "practicable," not all steps "possible." Duties to return the space object also are less rigorous. For example, upon request, the launching authority must provide "identifying data" before return is required.[40] Moreover, the Treaty is silent on issues such as whether the recovering state could seek payment of recovery costs before returning a space object.

The Liability Convention

The Convention on International Liability for Damage Caused by Space Objects[41] (Liability Convention) entered into force in 1972. The objective of the Liability Convention is full and equitable compensation for damage caused by space objects. It has 94 parties[42] and expands considerably on the Outer Space Treaty provisions that launching states are liable to other states for damages caused by space objects. The Liability Convention is significantly longer and more detailed than the other space treaties, and it defines key terms such as "damage," "launching state," and "space object."[43] It establishes absolute liability of the launching state for damage caused on the Earth's surface or to aircraft in flight by its space object.[44] For damages occurring in outer space, however, the launching state is only liable if damage is due to its "fault."[45] Establishing "fault" liability would be a real challenge given the general lack of rules of the road in outer space. When two or more states jointly launch a space object, they are jointly and severally liable for damage caused by the space object.[46]

The provisions of Article VII of the Outer Space Treaty and of the Liability Convention do not require implementing legislation with respect to state responsibility and liability for damage caused by space objects. However, the United States is a party to both agreements and therefore is responsible and liable for damage caused to others by its space objects. Accordingly, the United States has set forth launch safety, regulatory, and insurance requirements in the Commercial Space Launch Act[47] (CSLA), as well as a detailed regulatory regime[48] that includes cross-waivers of liability by all parties to a launch.[49] These will be addressed in part 2 of this series.

Pursuant to the Liability Convention, a party may submit, through diplomatic channels, claims for damages caused by a space object.[50] If the parties are unable to negotiate a resolution of the dispute, a three-member Claims Commission may be formed.[51] Each nation involved appoints one member, and the two appointed members then appoint a third, the chair.[52] The Commission establishes its own procedures, and decisions are by majority vote.[53] Decisions of the Commission are final and binding if the parties so agree; otherwise, they are recommendatory.[54]

The Liability Convention does not require prior exhaustion of any local remedies, and it does not prevent the assertion of private claims in courts or administrative tribunals.[55] A party, however, may not present a claim under the Liability Convention if a private remedy is being pursued.[56]

The Liability Convention has been used once as the basis for a claim. In 1978, Cosmos 954, a Soviet satellite with a nuclear power source, returned to the Earth, failed to burn up in the atmosphere, and crashed in Canada's northern territories.[57] Radioactive debris was spread over a large portion of the northern territories. As

a result of the claim made through diplomatic channels, the USSR paid approximately $3 million Canadian to Canada as a result of this damage on the Earth's surface, for which it was absolutely liable.[58] Although satellites have collided with each other, there have been no instances of claims made for damage occurring in outer space.

The Registration Convention

The Convention on Registration of Objects Launched into Outer Space[59] (Registration Convention) entered into force in 1975. The Registration Convention has 63 parties.[60] It further details the obligations of Article VIII of the Outer Space Treaty. The Registration Convention calls for the establishment of national registries and a register of space objects maintained by the United Nations.[61] Pursuant to the Registration Convention, a launching state must advise the United Nations of the name of the launching nation, description or registration number, date and location of launch, basic orbital parameters, and general function of the space object.[62] This registration must be made as soon as practicable after launch. There is no requirement, however, to update this registration information, and it is not particularly useful in determining where a registered space object may be in orbit at any particular time.

The Moon Agreement

The Agreement Governing the Activities of States on the Moon and Other Celestial Bodies[63] (Moon Agreement) entered into force in 1984.[64] There are 17 Parties to the Moon Agreement.[65] The United States and other space powers are *not* parties to this Agreement. The Moon Agreement applies to the Moon and all other celestial bodies in our solar system except for Earth. Many of its provisions are taken almost directly from the Outer Space Treaty. Aside from provisions relating to the commercial exploitation of natural resources, the Moon Agreement mainly reaffirms or slightly expands existing space law. The provisions regarding natural resources, however, are quite significant and far reaching. Nevertheless, they are mainly of academic interest given the absence of space powers as parties.

The key section of the Moon Agreement with regard to commercial exploitation of natural resources is Article XI, which reiterates the principle that the Moon is not subject to national appropriation. It also addresses property rights. Property such as equipment and installations may be placed on the Moon and moved freely, but its location does not create any rights of ownership to the area at which the property is located.[66] Additionally, property rights cannot be established over the surface or subsurface of the Moon, nor over natural resources "in place."[67] Use of the phrase "in place" is significant because it may permit the establishment of property rights over natural resources that have been extracted.[68] This coincides with the usufructuary nature of mining.

By far the most distinctive aspect of Article XI, however, is its declaration that the Moon and its natural resources are the common heritage of mankind (CHM). The CHM concept has been the subject of a great deal of literature.[69] Developing countries have frequently asserted that the CHM applies to all international common resources including those of the deep seabed, Antarctica, the Geostationary Satellite Orbit, and the radio frequency spectrum (the orbit/spectrum resource), as well as to celestial bodies. Nevertheless, both the definition of the CHM and its status in international law are debatable.

Over the past decades, two primary theories regarding the CHM have been advocated. One theory holds that the CHM establishes common ownership and that all countries are entitled to substantive property rights over the natural resources of an area that is the CHM.[70] In essence, this type of CHM regime would secure economic benefits for developing countries that may have cost them nothing. It is not surprising that many of the proponents of this theory are from developing nations. The other theory regarding the CHM is quite different. It considers that the above theory of the CHM is "foreign to existing international law and may even come into conflict with existing rules of international law."[71] Instead, it holds that the CHM is simply a continuation of the concepts of *res communis* and the common interests clause of the 1967 Outer Space Treaty.[72] A more recent compromise position holds that "[t]he core of the principle of the 'common heritage of mankind' currently seems to be that the legal regime governing outer space resources must be international and not national."[73]

In summary, the Moon Agreement is worded broadly enough to permit varying definitions of its CHM concept. Although these terms will continue to be advocated by developing nations, they will be largely irrelevant to the commercial exploitation of resources in space unless space powers adopt the Moon Agreement, which is highly unlikely.[74] The relevant discussion regarding legal issues relating to commercial exploitation of resources in space, such as asteroid mining and mining on the Moon, mainly involves the interplay between the Outer Space Treaty principles of freedom of use (Article I) and non-appropriation (Article II). This is, and likely will remain, a fertile area for debate among space lawyers.[75]

UNGA Resolutions

In addition to the five treaties discussed above, the U.N. General Assembly has passed five Resolutions establishing declarations and principles applicable to the exploration and use of outer space. Although these Resolutions are nonbinding, they are generally followed and may sometime attain the status of customary international law. The five Resolutions are:

- The Declaration of Legal Principles Governing the Activities of States in the Exploration and Uses of Outer Space.[76]
- The Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting.[77]
- The Principles Relating to Remote Sensing of the Earth from Space.[78]
- The Principles Relevant to the Use of Nuclear Power Sources in Outer Space.[79]
- The Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries.[80]

The first Declaration pre-dated the Outer Space Treaty and formed the basis for many of its principles. All other Declarations post-dated

the Outer Space Treaty and either elaborate on its principles or address specific uses of outer space in light of the Outer Space Treaty principles.

Other International Agreements

There are many other international agreements impacting the use and exploration of outer space. Details of these international agreements are beyond the scope of this article. These international agreements include:

- The International Telecommunication Union (ITU) Constitution, Convention, and Radio Regulations.[81] The ITU is the specialized agency of the United Nations for communications and information technologies. The ITU allocates global radio spectrum and satellite orbits and develops technical standards to ensure that networks and technologies seamlessly interconnect.[82]
- The International Space Station (ISS) Agreements.[83] These Agreements are:
  - The Intergovernmental Agreement (IGA), which is an international treaty between all ISS partner nations establishing a long-term cooperative framework for the design, development, operation, and commercial use of the ISS for peaceful purposes, in accordance with international law.
  - Four Memoranda of Understanding (MOUs) between NASA and the four other Cooperating Agencies (those of Europe, Russia, Canada, and Japan).
  - Implementing arrangements developed as needed between space agencies such as NASA and ESA. They implement the general obligations in the IGA for specific issues and, among other things, enable trading of rights and duties.
- The Convention for the Establishment of a European Space Agency (ESA).[84] This Convention establishes an intergovernmental organization of 22 member states dedicated to the use and exploration of outer space. ESA has functions similar to those of national space agencies such as NASA.

Conclusion

Colorado occupies a predominant role in the aerospace economy. This economy impacts numerous industries and implicates many areas of law. Familiarity with space law will serve Colorado lawyers and their clients well. Stay tuned for part 2 of this series, which will evaluate U.S. laws applicable to the use and exploration of outer space. CL

KEY PRINCIPLES OF INTERNATIONAL SPACE LAW

The key principles of international space law derived from international agreements that relate to the commercial use of outer space are:

- Space is free for use in exploration.
- Space is not subject to appropriation.
- States are responsible and liable for their outer space activities and the activities of their entities.
- Nations retain jurisdiction, ownership, and control of registered space objects.
- Nations are to avoid harmful contamination of outer space.

There is absolute liability for damages caused on the surface of the Earth and fault liability for damages caused in outer space.

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NOTES

1. Zaleski, "How Colorado is trying to cash in on the multibillion-dollar space race," CNBC (July 11, 2017), www.cnbc.com/2017/07/11/colorado-is-cashing-in-on-multibillion-dollar-space-race.html.
2. More than 20 nations have fairly detailed national space laws and regulations. *See, e.g.*, Jakhu, ed., *National Regulation of Space Activities (Space Regulations Library)* (Springer 2010); United Nations Office for Outer Space Affairs, National Space Law Collection, www.unoosa.org/oosa/en/ourwork/spacelaw/nationalspacelaw/index.html.
3. 51 USC §§ 50901 et seq.
4. 15 USC §§ 5601 to 5672 (1992).
5. Pub. L. No. 114-90 (2015).
6. 35 USC § 105 (1990).
7. United Nations Office for Outer Space Affairs, COPUOS, www.unoosa.org/oosa/en/ourwork/copuos/index.html.
8. Outer Space Treaty, Jan. 27, 1967, 18 U.S.T. 2410, 610 U.N.T.S. 205, www.state.gov/t/isn/5181.htm.
9. COPUOS, Status and application of the five United Nations treaties on outer space (Mar. 23 2017), www.unoosa.org/documents/pdf/spacelaw/treatystatus/AC105_C2_2017_CRP07E.pdf.
10. Outer Space Treaty, *supra* note 8 at Articles 6 and 7.
11. *Id.* at Article 9.
12. *Id.* at Article 1. The common interests principle also appears in other areas of the

Outer Space Treaty. *See, e.g.*, Outer Space Treaty Preamble.

13. *See infra* notes 66–70 and accompanying text.

14. Gorove, "Implications of International Space Law for Private Enterprise," 7 *Annals Air & Space L.* 319, 321 (1982). *But see* Matte, *Aerospace Law: Telecommunications Satellites* 78 (Butterworth Feb. 1983) ("[T]here is a basic obligation that falls upon States carrying out space activities to be responsive to the interests of developing countries and to provide for some method of distributing the benefits derived from such activities.").

15. For example, to further world knowledge about the Moon, NASA has provided lunar sample materials to scientists in over 20 nations with a requirement that results of their analyses be published. *See* Staff of Senate Comm. on Commerce, Science, and Transportation, 96th Cong., Agreement Governing The Activities of States on The Moon and Other Celestial Bodies, 281 (U.S. Gov't Printing Office 1980).

16. *See generally* Brownlie, *Principles of Public International Law* 238–40 (Oxford University Press 1979).

17. Outer Space Treaty, *supra* note 8 at Article 2.

18. *Id.* at Article 3.

19. *Id.* at Article 4.

20. 51 USC § 20102(a).

21. Outer Space Treaty, *supra* note 8 at Article 5.

22. *Id.* at Article 6.

23. *Id.*

24. *Id.* at Article 7.

25. *Id.* at Article 8.

26. *Id.*

27. Orbital debris includes useless man-made objects in earth orbit such as defunct satellites, spent rocket stages, and fragmentation debris. NASA, www.nasa.gov/mission_pages/station/news/orbital_debris.html.

28. Outer Space Treaty, *supra* note 8 at Article 9.

29. *Id.* at Article 10.

30. *Id.* at Article 11.

31. *Id.* at Article 12.

32. The Antarctic Treaty, Dec. 1, 1959, 402 U.N.T.S. 71.

33. Foust, "Is it time to update the Outer Space Treaty?" *The Space Review* (June 5, 2017), www.thespacereview.com/article/3256/1.

34. Rescue and Return Agreement, Apr. 22, 1968, 19 U.S.T. 7570, 672 U.N.T.S. 119, www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/rescueagreement.html.

35. COPUOS, *supra* note 9.

36. Rescue and Return Agreement, *supra* note 34 at Article 2.

37. *Id.*

38. *Id.* at Article 5(2).

39. *Id.*

40. *Id.* at Article 5(3).

41. Liability Convention, Mar. 29, 1972, 24 U.S.T. 2389, 961 U.N.T.S. 187, www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/liability-convention.html.

42. www.unoosa.org/documents/pdf/spacelaw/treatystatus/AC105_C2_2017_CRP07E.pdf.

43. Liability Convention, *supra* note 41 at Article I.

44. *Id.* at Article II.

45. *Id.* at Article III.

46. *Id.* at Article V(1).

47. 51 USC §§ 50901 et seq.

48. 14 CFR Chapter III, Subchapter C.

49. 14 CFR § 440.17.

50. Liability Convention, *supra* note 41 at Article IX.

51. *Id.* at Article XIV.

52. *Id.* at Article XV.

53. *Id.* at Article XVI.

54. *Id.* at Article XIX.

55. *Id.* at Article XI.

56. *Id.*

57. *See* Settlement of Claim between Canada and the Union of Soviet Socialist Republics for Damage Caused by "Cosmos 954" (Released on Apr. 2, 1981), www.spacelaw.olemiss.edu/library/space/International_Agreements/Bilateral/1981%20Canada-%20USSR%20Cosmos%20954.pdf.

58. United Nations Office for Outer Space Affairs, Bilateral and Multilateral Agreements Governing Space Activities, www.unoosa.org/oosa/en/ourwork/spacelaw/nationalspacelaw/bi-multi-lateral-agreements/can_ussr_001.html.

59. Registration Convention, Nov. 12, 1974, 28 U.S.T. 695, 1023 U.N.T.S. 15, www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/registration-convention.html.

60. COPUOS, *supra* note 9.

61. Registration Convention, *supra* note 59 at Articles II and III.

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63. Moon Agreement, Dec. 18, 1979, 1363 U.N.T.S. 3, www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/moon-agreement.html.

64. United Nations Office for Outer Space Affairs, Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/intromoon-agreement.html.

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66. Moon Agreement, *supra* note 63 at Article 11(3).

67. *Id.*

68. This interpretation is verified by the negotiating history of the phrase. *See* Menter, "Commercial Space Activities Under the Moon Treaty," Proceedings of the 23rd Colloquium on the Law of Outer Space 35, 39 (1981).

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75. *See, e.g.*, Kfir, "Is Asteroid Mining Legal? The Truth Behind Title IV of the Commercial Space Launch Competitiveness Act of 2015," Deep Space Industries, http://deepspaceindustries.com/is-asteroid-mining-legal (asserting that asteroid mining is legal under the Outer Space Treaty); Dunietz, "Floating Treasure: Space Law Needs to Catch up with Asteroid Mining," *Scientific American* (Aug. 28, 2017), www.scientificamerican.com/article/floating-treasure-space-law-needs-to-catch-up-with-asteroid-mining.

76. G.A. Res. 1962 (XVIII) (Dec. 1963). This Declaration pre-dated the Outer Space Treaty and formed the basis for many of its Principles.

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A Space Law Primer for Colorado Lawyers

Part 2: U.S. Space Law

BY MILTON "SKIP" SMITH

The United States has a robust regulatory scheme addressing activities in space. This article reviews selected aspects of national space law applicable to commercial space activities.

As discussed in Part 1, space activities occur within a framework of international law including, most importantly, the Outer Space Treaty.[1] Pursuant to Article 6 of the Outer Space Treaty, nations bear "international responsibility for national activities in space" whether such activities are carried on by governmental or non-governmental entities.[2] Moreover, the activities of non-governmental entities in outer space require "authorization and continuing supervision."[3] To fulfill these obligations, the United States and many other nations have established detailed statutory and regulatory regimes addressing safety, financial responsibility, licensing, and other matters. The United States has the most robust national space law regime, which is addressed below. Many other nations have also established space laws. A 2010 book details the space laws of 15 countries.[4] Since then, seven additional countries have adopted space laws,[5] and other countries, such as the United Arab Emirates, are in the process of developing their own space laws. Many nations have modeled their laws after those of the United States.

This article provides a high-level review of selected aspects of the U.S. legal regime applicable to commercial space activities[6] with a focus on (1) commercial space launch, (2) satellite remote sensing of the Earth, (3) satellite communications, (4) National Aeronautics and Space Administration (NASA) activities, and (5) space mining. Most of these areas involve U.S. space policy, statutory provisions, and extensive administrative regulations. The regulatory regimes have generally worked well and fostered the development of commercial space activities in the United States. Given the tremendous growth in commercial space activities, however, there are initiatives to streamline some of the extensive regulations and expedite the processing

of license applications by agencies. U.S. space law is likely to mature as the commercialization of space activities progresses.

One recent significant development in space law was the re-codification of U.S. space laws in 2010. Public Law 111-314 enacted a restatement of existing law relating to national and commercial space programs as a new title of the United States Code. The enactment of Title 51 transferred statutes dealing with space programs from various United States Code titles and put them in one place,[7] so most of the laws relevant to commercial use of space are located there.

Commercial Space Launch Activities

Commercial space launch capabilities are important to the United States for many reasons. The 2010 National Space Policy reflects this importance; one of its six goals is to "[e]nergize competitive domestic industries to participate in global markets and advance the development of: . . . space launch[.]"[8] The 2013 National Space Transportation Policy established five goals, including to "[p]romote and maintain a dynamic, healthy, and efficient domestic space transportation industrial base; [and] [e]ncourage and facilitate the U.S. commercial space transportation industry to increase industry robustness and cost effectiveness[.]"[9] The 2013 Policy also directs agencies to "[p]urchase and use U.S. commercial space transportation capabilities and services and facilitate multiple U.S. commercial providers of space transportation services across a range of launch vehicle classes, to the maximum extent practicable."[10] The United States has done so in many ways, including NASA's use of Space Act Agreements, discussed below. Because commercial space launch capabilities are so important, there is a very detailed statutory and regulatory regime applicable to such activities.

The Commercial Space Launch Act[11] (CSLA) was enacted in 1984 to incentivize the commercial space launch industry. The CSLA and its implementing regulations govern commercial space launch activity. The CSLA empowers the Secretary of Transportation, delegated to the Federal Aviation Administration (FAA) Office of Commercial Space Transportation, to (1) authorize and regulate launch and reentry activities of licensees consistent with public health and safety, the environment, national security, and U.S. foreign policy; (2) impose and enforce insurance and financial responsibility requirements on licensees; (3) encourage, facilitate, and promote commercial space launches and reentries by the private sector; and (4) investigate and penalize violations of the CSLA.[12]

The CSLA requires a license for:

- a person to launch a launch vehicle, operate a launch or reentry site, or reenter a reentry vehicle (launch–reentry activities) inside the United States;
- a U.S. citizen to conduct launch–reentry activities outside the United States; and
- a U.S. citizen to conduct launch–reentry activities outside the United States in certain situations involving a foreign government.[13]

The CSLA implementing regulations in Title 14 of the Code of Federal Regulations[14] (CFR) establish procedures to obtain a

- launch license (Part 415);
- license to operate a launch site (Part 420);
- license for launch and reentry of a reusable launch vehicle (Part 431);
- license to operate a reentry site (Part 433); and
- license for reentry of a vehicle other than a reusable launch vehicle (Part 435).

Part 413 of the regulations establishes license application procedures.[15] These procedures include guidance on who must obtain a license or permit, pre-application consultation with the FAA, confidentiality, and license or permit renewal.

Part 440 of the CSLA regulations addresses financial responsibility.[16] The FAA determines "the maximum probable loss (MPL) from covered claims by a third party for bodily injury or property damage, and the United States, its agencies, and its contractors and subcontractors for covered property damage or loss, resulting from a permitted or licensed activity."[17] The MPL is an important concept because the MPL determination "forms the basis for financial responsibility requirements issued in a license or permit order."[18] The licensee or permittee must obtain third party liability insurance or demonstrate financial responsibility in amounts sufficient to compensate for the MPL.[19] The third party MPL amounts are established for each license by the FAA up to a maximum of $500 million or "[t]he maximum liability insurance available on the world market at a reasonable cost."[20] Similar provisions apply to claims by the United States, its agencies, and its contractors and subcontractors, with their MPL capped at $100 million or "[t]he maximum liability insurance available on the world market at a reasonable cost."[21]

Each licensee must also comply with detailed and complex reciprocal waiver of claims requirements.[22] This includes signing a cross-waiver of liability with their customer(s) and the U.S. government.[23] Through these reciprocal waivers each party (1) agrees to be responsible for property damage or loss it sustains, and for personal injury to, death of, or property damage or loss sustained by its own employees, resulting from an activity carried out under the license; and (2) waives claims it may have against the other parties to the agreement.[24] Furthermore, the licensee and its contractors, subcontractors, and customers, as well as the contractors and subcontractors of the customers, are also to extend the requirements of the waiver and release of claims, and the assumption of responsibility, to their contractors and subcontractors.[25] Proper implementation and flow-down of these waivers is critical. Failure to do so can lead to indemnity obligations[26] and other significant consequences, such as exposing parties to potential liability.

With limited exceptions, the government is authorized, subject to congressional appropriations, to pay successful third party claims against the licensee, a contractor, subcontractor, or customer of the licensee, or a contractor or subcontractor of the licensee's customer, in excess of the amount of the licensee's third party liability insurance up to $1.5 billion.[27] In such an event, the President, on the recommendation of the Secretary of Transportation, must submit a compensation plan to Congress recommending the amount of claims to be paid.[28]

In addition to determinations of financial responsibility, the FAA, with assistance from

other government agencies, will conduct policy, safety, payload, and environmental "reviews" for a proposed activity.[29]

In a policy review, the FAA "reviews a license application to determine whether it presents any issues affecting U.S. national security or foreign policy interests, or international obligations of the United States."[30] This may involve interagency coordination with the Department of Defense, the Department of State, and other federal agencies. The processing of these reviews at FAA, and at the National Oceanic and Atmospheric Administration (NOAA), have come under attack from industry due to long delays, sometimes exceeding one year.[31]

Safety reviews vary depending on the specific type of activity. The FAA conducts them to determine whether an applicant is capable of launching a launch vehicle and its payload without endangering public health and safety and the safety of property.[32] These reviews generally include analysis of compliance with acceptable flight risk criteria, flight readiness and communication plans, and accident investigation plans and procedures.[33]

The FAA reviews a proposed payload "to determine whether a license applicant or payload owner or operator has obtained all required licenses, authorization, and permits . . . to determine whether its launch would jeopardize public health and safety, safety of property, U.S. national security or foreign policy interests, or international obligations of the United States."[34] The FAA does not review payloads regulated by the Federal Communications Commission (FCC) or the NOAA, or those owned or operated by the U.S. government.[35]

The FAA's environmental review evaluates the environmental impacts associated with a proposed launch or reentry.[36] The applicant must provide sufficient information for the FAA to evaluate compliance with the National Environmental Policy Act[37] and other statutes.

The FAA regulations require a launch license applicant to describe how it will satisfy the FAA's requirements for avoiding the creation of space debris.[38] Among other things, the application must demonstrate efforts to prevent collisions between components of the launch vehicle and the satellite being launched. As will be seen below, other government agencies including the FCC and NOAA also require debris mitigation plans.

Part 460 of the FAA regulations details requirements for approval of human space flights. These requirements include requirements for the crew, government astronauts, and "space flight participants," defined as "an individual, who is not crew, carried aboard a launch vehicle or reentry vehicle."[39] The CSLA and FAA regulations require crew members and space flight participants to be advised of the risks associated with space travel and to sign waivers releasing the U.S. government and the licensee from any claims arising from injury or property damage associated with their participation in space activities.[40] The CSLA protects private spaceflights from additional regulatory oversight by allowing the industry until October 1, 2023 to develop before government regulators will have a substantial role absent a death, serious injury, or an event that could have led to a death or serious injury.[41]

"Remote sensing of the Earth from space presents significant national security issues. The United States has developed a legal regime based on policies, laws, and regulations to accommodate national security concerns and allow the promotion of commercial remote sensing activities."

It is important to note that while the CSLA and FAA regulations apply to the launch and reentry of space objects, there is no regulation of on-orbit operations by the FAA or any agency. Although there have been proposals to assign responsibility for on-orbit transportation to the FAA or another agency, this regulatory gap remains.

Remote Sensing of the Earth from Space

Remote sensing of the Earth from space[42] presents significant national security issues. The United States has developed a legal regime based on policies, laws, and regulations to accommodate national security concerns and allow the promotion of commercial remote sensing activities. Since 2003, U.S. remote sensing policy has favored commercialization.[43] Pursuant to the 2003 U.S. Commercial Remote Sensing Policy, the U.S. government will:

- rely to the maximum practical extent on U.S. commercial remote sensing space capabilities for filling imagery and geospatial needs for military, intelligence, foreign policy, homeland security, and civil users;
- focus government remote sensing space systems on meeting needs that cannot be effectively, affordably, and reliably satisfied by commercial providers because of economic factors, civil mission needs, national security concerns, or foreign policy concerns;
- develop a long-term, sustainable relationship between the government and the commercial remote sensing space industry;
- provide a timely and responsive regulatory environment for licensing the operations

and exports of commercial remote sensing space systems; and
- enable U.S. industry to compete successfully as a provider of remote sensing space capabilities for foreign governments and foreign commercial users, while ensuring appropriate measures are implemented to protect national security and foreign policy.[44]

Remote sensing in the United States (other than national security operations) started with the government built and operated Landsat series of satellites. Although the government still operates Landsat satellites and provides its images for free, remote sensing has developed into a strong commercial industry.

The Land Remote Sensing Policy Act[45] (LRSPA) and its implementing regulations[46] govern commercial remote sensing operations. The LRSPA's purposes include stimulating the development of the commercial market for unenhanced data; furthering the long-term goal of commercialization of land remote sensing, which will enhance international trade; and promoting widespread access to unenhanced data on a non-discriminatory basis. The LRSPA therefore encourages accessibility to remote sensing data and encourages commercial and scientific cooperation between nations.[47]

The LRSPA authorizes the Secretary of Commerce to license private commercial remote sensing satellite systems and provide unenhanced data produced by private remote sensing systems and government systems to foreign governments and other users pursuant to commercial terms and conditions.[48] Operations under such licenses must be carried out in a manner to preserve U.S. national security and to observe international obligations of the United States.[49] The Secretary of Commerce has delegated his authority to NOAA. Operating requirements of licensees include (1) furnishing complete orbit and data collection characteristics of the remote sensing system, and immediately providing notification of any deviation; and (2) upon termination of operations under the license, making disposition of any satellites in space in a manner satisfactory to the U.S. President.[50]

The NOAA regulations governing licensing of private remote sensing satellite systems are in 15 CFR Part 960. These detailed regulations set forth licensing requirements, prohibitions, and enforcement procedures.

The NOAA regulations apply broadly to any "person," including individuals regardless of citizenship, business entities, and private remote sensing systems having substantial connections with the United States.[51] Appendix 1 to Part 960[52] provides filing instructions and information to be included in the license application, which includes information on the company; launch segment information, such as the launch vehicle, site, and schedule; the space segment, including sensor type, spatial and spectral resolution, fields of view for each sensor, and anticipated system lifetime; ground segment, including data collection and processing capabilities, command and mission data frequencies, and methods to be used to ensure integrity of operations; and other information, including plans for providing access to or distributing unenhanced data, information regarding commercial data distribution and pricing, and a plan for post-mission disposition of the satellite. Such end-of-life plans are now standard within the industry.

In addition, the licensee must notify and seek approval from the Secretary of Commerce regarding any significant or substantial agreement the licensee intends to enter into with a foreign nation, entity, or consortium involving foreign nations or entities, not later than 60 days prior to concluding the agreement.[53] The term "significant or substantial foreign agreement" is defined as an agreement providing for one or more of the following:
- administrative control, which may include distributorship arrangements involving the routine receipt of high volumes of unenhanced data from a licensee's system;
- participation in operations of the system, including direct access to the system's unenhanced data; or
- an equity interest in the licensee held by a foreign nation and/or person if such interest equals or exceeds or will equal or exceed 20% of total outstanding shares or entitles the foreign person to a position on the licensee's board of directors.[54]

In conjunction with the Department of Defense, the Department of State, and other relevant agencies, the Department of Commerce reviews the proposed agreement in light of national security interests, foreign policy, and the government's international obligations. As noted previously, private industry has been critical of the time required to complete these reviews. The LRSPA regulations outline certain requirements such an agreement must meet for approval.[55]

Consistent with the United Nations' Principles Relating to Remote Sensing of the Earth from Outer Space,[56] the LRSPA requires a licensee to make available to the government of any country (including the United States) "unenhanced data" regarding the territory under the jurisdiction of such government as soon as such data are available and on reasonable cost terms and conditions.[57] Unenhanced data, however, will not be provided if the release is contrary to national security concerns, foreign policy, or international obligations, or is otherwise prohibited by law.[58] "Unenhanced data" is defined, in part, as "remote sensing signals or imagery products that are unprocessed or subject only to data preprocessing."[59] In addition to the provision of such data to foreign governments, a licensee (and the U.S. government) must provide unenhanced data designated by the Secretary of Commerce to all users without preference or special arrangement regarding delivery, pricing, or technical considerations. Unenhanced data, however, may be provided on condition that such data are used solely for noncommercial purposes.[60]

A licensee must also maintain operational control of the remote sensing space system from a location within the United States at all times and allow U.S. government representatives to access its facilities for license monitoring and compliance inspections.[61]

Satellite Communications

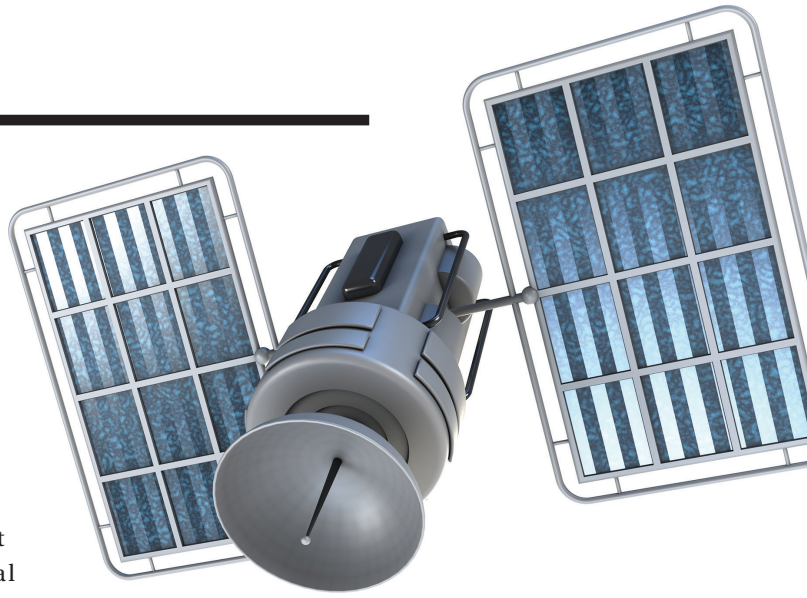
Communication satellites are used in every country and are the most pervasive commercial use of outer space. Satellite communication systems have extensive international regulation through the International Telecommunication Union (ITU)[62] as well as national regulations that are consistent with the ITU regulations. In the United States, the Communications Act

of 1934, as amended[63] (Communications Act), combined and organized federal regulation of telephone, telegraph, and radio communications. The Communications Act has been amended by many acts of Congress since 1934, most extensively by the Telecommunications Act of 1996.[64]

The Communications Act created the FCC to oversee and regulate radio communication activities by non-federal government entities, and the FCC applies this authority to space activities.[65] The FCC's primary function concerning radio communication is to issue licenses and develop rules to further the use of radio in the public interest.[66] The FCC issues licenses based on a demonstration that the proposed operations will serve the public interest, convenience, and necessity. The FCC may also adopt rules to carry out the Communications Act, or the provisions of "any international radio or wire communications treaty or convention, or regulations annexed thereto, including any treaty or convention insofar as it relates to the use of radio, to which the United States is . . . a party."[67]

Part 25 of the FCC's rules provides procedures, technical standards, and other requirements for the licensing and operation of facilities used for satellite communications, including ground stations and satellites.[68] These rules provide technical requirements and enable coordination of satellite systems in the United States and internationally to avoid harmful radio-frequency interference. The FCC regulations also address reporting requirements for satellite operators.[69] The FCC participates in the processes directed by the ITU as the U.S. administration.

FCC regulations address communication satellites operating in the Geostationary Satellite Orbit, where the majority of communication satellites are located, as well as non-geostationary satellites. Geostationary satellites stay in a fixed location relative to the Earth's orbit and can be serviced by stationary antennas. Most geostationary satellites are regulated through a "first-come, first-served" regulatory regime by the ITU and the FCC, which processes licensing applications in the order they are filed.[70] If an application is acceptable for filing, the FCC, on behalf of the applicant, will make a filing for rights with the ITU, enter into the ITU frequency coordination process, and ultimately seek to have the satellite system entered into the ITU's Master International Frequency Register (MIFR). Entry in the MIFR as a conforming assignment provides international recognition and protection against harmful interference from subsequent applicants.[71]



The FCC also regulates non-geostationary satellite (NGSO) systems.[72] These satellites do not stay in a fixed location relative to their Earth stations. Thus, the Earth stations must track the satellites across the horizon. The FCC first determines whether the NGSO application is a "lead application" or a "competing application." Public notice is provided, and the FCC ultimately grants applications that meet the standards.[73] The FCC has procedures for situations where there is insufficient spectrum available for all qualified applicants.[74]

The FCC has adopted rules concerning orbital debris mitigation by satellite systems.[75] In adopting these rules, the FCC stated it would help preserve continued affordable access to space, continued provision of reliable space-based services, and continued safety of persons and property in space and on the Earth's surface.[76]

The FCC's rules require a satellite operator to submit an orbital debris mitigation plan to the FCC addressing:

1. the amount of debris released in a planned manner during normal operations, and the probability of the space station becoming a source of debris by collisions with small debris or meteoroids that could cause loss of control and prevent post-mission disposal;
2. accidental explosions during and after completion of mission operations;
3. the probability of the space station becoming a source of debris by collisions with large debris or other operational space stations; and
4. the quantity of fuel that will be reserved for post-mission disposal maneuvers.[77]

Submission of orbital debris plans is becoming standard practice for launch operations and satellite operators.

Over many decades the ITU and FCC regulations have enabled thousands of communication satellites to effectively provide service for direct television broadcasts, mobile satellite services, telephone communications, and other uses without harmful radio frequency interference.

NASA Space Activities

One year after the Soviet Union launched Sputnik, the National Aeronautics and Space Act of 1958 (Space Act)[78] authorized creation of NASA. Congress declared "it is the policy of the United States that activities in space should be devoted to peaceful purposes for the benefit of all humankind."[79] Congress also declared "the general welfare of the United States requires that the Administration seek and encourage, to the maximum extent possible, the fullest commercial use of space."[80]

The Space Act identifies numerous objectives for NASA, including:

- expansion of human knowledge of the Earth and the phenomena in the atmosphere and space;
- improvement of the usefulness, performance, speed, safety, and efficiency of aeronautical and space vehicles;
- establishment of studies of the benefits from and problems involved in the use of space for peaceful and scientific purposes;

- preservation of U.S. leadership in space science and technology; and
- cooperation with other nations.[81]

International cooperation is exemplified by the International Space Station (ISS).[82] The ISS has a complex legal structure based on an Intergovernmental Agreement signed by the government partners, four Memoranda of Understanding between NASA and other cooperating space agencies, and numerous bilateral implementing arrangements between space agencies that allow them to get things done. The ISS has been a tremendous success and is now facing issues of what to do next. Privatization is one option.

The Space Act enables NASA to acquire, construct, improve, operate, and maintain laboratories, research facilities, aeronautical and space vehicles, and other real and personal property, or any interest therein.[83] Additionally, NASA has authority to enter into "other transactions,"[84] commonly referred to as "Space Act Agreements." These Space Act Agreements may be Reimbursable, Non-reimbursable, or Funded Agreements.[85] NASA used funded Space Act Agreements for the Commercial Orbital Transportation System and the Commercial Crew Program. These agreements facilitated the combination of public and private financing, escaped the burdens of the Federal Acquisition Regulations, and promoted speed and innovation to secure new capabilities. These Space Act Agreements helped SpaceX and Orbital ATK develop commercial space launch vehicles and helped Colorado's Sierra Nevada Corporation Space Systems company develop the Dream Chaser spacecraft, which has now received a NASA contract to provide cargo delivery, return, and disposal service for the ISS.

The Space Act also contains provisions to meet U.S. responsibilities under Article VII of the Outer Space Treaty[86] and the Convention on International Liability for Damage Caused by Space Objects[87] regarding the absolute liability to pay compensation for damage on the Earth's surface caused by a U.S. space object. The Space Act authorizes NASA to provide liability insurance for any "user"[88] of a "space vehicle"[89] to compensate all or a portion of claims by third parties for death, bodily injury, or loss of or damage to property resulting from activities conducted in connection with the launch, operation, or recovery of the space vehicle.[90] Additionally, NASA may indemnify a space vehicle user against claims by third parties for death, bodily injury, or loss of or damage to property resulting from activities carried on in connection with the launch, operations, or recovery of the space vehicle to the extent that such claims are not compensated by the user's liability insurance. Indemnification may not extend to the user's actual negligence or willful misconduct.[91]

> "Congress declared 'it is the policy of the United States that activities in space should be devoted to peaceful purposes for the benefit of all humankind.' Congress also declared 'the general welfare of the United States requires that the Administration seek and encourage, to the maximum extent possible, the fullest commercial use of space.'"

Space Mining

In 2015, the United States adopted the Commercial Space Launch Competitiveness Act.[92] This Act, among other things, adopts provisions relating to mining operations on celestial bodies including the moon and asteroids.[93] Pursuant to this Act, the President, through federal agencies, shall "facilitate commercial exploration for and commercial recovery of space resources by United States citizens."[94] Furthermore, "[a] United States citizen engaged in commercial recovery of an asteroid or space resource . . . shall be entitled to any asteroid resource or space resource obtained, including to possess, own, transport, use, and sell . . . , in accordance with applicable law, including the international obligations of the United States."[95] The Act unequivocally allows U.S. citizens to "engage in commercial exploration for and commercial recovery of space resources . . . in accordance with the international obligations of the United States and subject to authorization and continuing supervision by the Federal Government."[96]

The Act further asserts the "sense of Congress that by the enactment of this Act, the United States does not thereby assert sovereignty or sovereign or exclusive rights or jurisdiction over, or the ownership of, any celestial body."[97] Notwithstanding this "sense of Congress," some scholars contend that recognizing the ownership of space resources is itself an act of sovereignty and the Act violates the non-appropriation clause of the Outer Space Treaty.[98] But that provision must be read in conjunction with the Freedom of Use Principle of the Outer Space Treaty.[99] While this scholarly debate may continue, there has been very little official objection to the legislation from countries within the United Nations or otherwise. In fact, in 2017 Luxembourg enacted legislation very similar to the Commercial Space Launch Competitiveness Act.[100]

Space mining is expected to become viable in the near future. How near is debatable. But it is telling that the Colorado School of Mines recently established the world's first graduate program in Space Resources, which offers Masters and Ph.D. degrees in this emerging field.[101] Given the differing opinions on the legality of space mining, perhaps engineers will need to be accompanied by lawyers when they go into space to mine resources. Any volunteers?

Conclusion

This very brief summary of some of the most significant U.S. space laws and regulations offers a glimpse into the complex legal regime governing the use and exploration of outer space. There are many other U.S. laws that relate to governmental and commercial space activities.

Although international space law flourished in the 1960s and 1970s and has changed relatively little since then, U.S. space law is an evolving and exciting field that is attracting many young lawyers. To those who chose this course, "may the force be with you." CL

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9. Office of Space Commerce, National Space Policy at 2 (2013), https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/national_space_transportation_policy_11212013.pdf.
10. *Id.* at 4.
11. Commercial Space Launch Act of 1984, as amended (CSLA) and re-codified in 51 USC Ch. 509 §§ 50901 to 50923.
12. *See generally* Commercial Space Transportation, www.faa.gov/regulations_policies/faa_regulations/commercial_space.
13. 51 USC § 50904(a).
14. 14 CFR Chapter III, Parts 400 to 460.
15. 14 CFR §§ 413.1 to 413.23.
16. 14 CFR §§ 440.1 to 440.19.
17. 14 CFR § 440.7(a).
18. *Id.*
19. 14 CFR § 440.9(a) and (b).
20. 14 CFR § 440.9(c)(1) and (2).
21. 14 CFR § 440.9(d) and (e).
22. 14 CFR § 440.17.
23. Forms for such cross-waivers are found in the FAA regulations. *See* 14 CFR § 440 Appendices B through E.
24. 14 CFR § 440.17. *See also* 51 USC § 50914(b)(1).
25. 51 USC § 50914(b)(2); 14 CFR § 440.17.
26. 14 CFR § 440.17(c)(2)(i).
27. 51 USC § 50915(a); 14 CFR § 440.19(d). The CSLA requires that the $1.5 billion maximum amount that the United States will pay in excess of the licensee's third party liability insurance be adjusted to reflect inflation. 14 CFR § 440.19(a)(1)(B). The Commercial Space Launch Competitiveness Act of 2015 extended this indemnification of launch providers for extraordinary catastrophic third party losses through 2025. 51 USC § 50915(f).
28. 51 USC § 50915(d).
29. 14 CFR Part 415.
30. 14 CFR § 415.23(a). *See also* § 431.23(a).
31. *See, e.g.*, http://spacenews.com/house-panel-criticizes-commercial-remote-sensing-licensing.
32. 14 CFR Part 415, Subpart C (Safety Review and Approval for Launch From a Federal Launch Range) and Subpart F (Safety Review and Approval for Launch of an Expendable Launch Vehicle From a Non-Federal Launch Site).
33. *Id.*
34. 14 CFR § 415.51.
35. 14 CFR § 415.53.
36. 14 CFR §§ 415.201 to 415.203, 431.91 to 431.93.
37. National Environmental Policy Act, 42 USC § 4321.
38. 14 CFR § 417.129.
39. 14 CFR § 401.5.
40. 14 CFR §§ 460.9, 460.19, and 460.49.
41. 51 USC § 50905(c)(9).
42. Regulations define "remote sensing space system" as "any device, instrument, or combination thereof, the space-borne platform upon which it is carried, and any related facilities capable of actively or passively sensing the Earth's surface, including bodies of water, from space by making use of the electromagnetic waves emitted, reflected, or diffracted by the sensed objects." *See* 15 CFR § 960.3 (2017).
43. Office of Space Commerce, Commercial Remote Sensing Policy at 4 (2003), www.nesdis.noaa.gov/CRSRA/files/Commercial%20Remote%20Sensing%20Policy%202003.pdf.
44. *Id.* at 2. The 2010 National Space Policy also has provisions related to remote sensing.
45. Land Remote Sensing Policy Act, as amended, 15 USC §§ 5601 to 5672 (Pub. L. No. 102-55 (1992)), as amended in 1998 (Pub. L. No. 105-303); now 51 USC §§ 60101 et seq.
46. 15 CFR Part 960.
47. *Id.*
48. 51 USC § 60121(a) and (e). The LRSPA makes it unlawful for any person who is subject to the jurisdiction or control of the United States to operate a private remote sensing space system without a license issued by the Secretary. 51 USC § 60122(a).
49. 51 USC § 60122(b)(1).
50. 51 USC § 60122(b)(4) and (5). In the final rule implementing the LRSPA regulations, NOAA stated it will review post-mission plans on a case-by-case basis. *See* Licensing of Private Land Remote-Sensing Space Systems, Final Rule, 71 Fed. Reg. 24474, 24479 (Apr. 25, 2006).
51. 15 CFR § 960.3.
52. 15 CFR § 960 at Appendix 1.
53. 15 CFR § 960.8. *See also* 51 USC § 60122(b)(6).
54. 15 CFR § 960.3.
55. 15 CFR § 960.8(b).
56. The Principles Relating to Remote Sensing of the Earth from Space, G.A. Res. 41/65 (Dec. 3, 1986), www.unoosa.org/pdf/gares/ARES_41_65E.pdf.

57. 51 USC § 60122(b)(2).

58. 15 CFR § 960.11(b)(10).

59. 15 CFR § 960.3.

60. 51 USC §§ 60122(b)(3) and 60141(b).

61. 15 CFR § 960.11(b)(2) and (3).

62. The ITU is the specialized agency of the United Nations for communications and information technologies. The ITU allocates global radio spectrum and satellite orbits and develops technical standards to ensure that networks and technologies seamlessly interconnect. About ITU, www.itu.int/en/about/Pages/default.aspx.

63. Communications Act of 1934, as amended, 47 USC §§ 151 et seq. (Pub. L. No. 416 (1934)).

64. *See* 110 Stat. 56, Pub. L. No. 104-104 (1996).

65. The FCC's authority does not extend to satellite systems owned and operated by U.S. government agencies. 47 USC § 305. The National Telecommunications and Information Administration (NTIA), U.S. Department of Commerce, has the exclusive authority to manage radio spectrum use by U.S. government agencies and to make frequency assignments to radio stations and classes of radio stations belonging to and operated by the United States. *See* National Telecommunications and Information Administration Organization Act of 1992, as amended (codified at 47 USC §§ 901 et seq.).

66. 47 USC §§ 301, 303. In general, the FCC has jurisdiction only with respect to satellites that communicate with stations in the United States. Thus U.S. citizens are free to operate communications satellites, if licensed by a foreign administration, without FCC authorization as long as no U.S. landing rights are involved.

67. 47 USC § 303(r).

68. *See* 47 CFR Part 25, Satellite Communications.

69. 47 CFR §43.62.

70. 47 CFR § 25.158. Some geostationary satellites operate with frequencies and orbital locations that are planned and do not follow the "first-come, first-served" regulatory regime. *See generally,* https://www.itu.int/en/ITU-R/space/snl/Documents/ITU-Space_reg.pdf.

71. *See generally* www.itu.int/en/ITU-R/terrestrial/broadcast/Pages/MIFR.aspx.

72. 47 CFR § 25.157.

73. 47 CFR § 25.156.

74. 47 CFR § 25.157(d) to (e).

75. 47 CFR § 25-114(d)(14).

76. Mitigation of Orbital Debris, Final Rule, IB Docket 02-54, FCC 04-130, 69 Fed. Reg. 54581 (Sept. 9, 2004) (Mitigation Final Rule).

77. 47 CFR § 25-114(d)(14).

78. National Aeronautics and Space Act of 1958, as amended, 42 USC §§ 2451 to 2484 (Pub. L. No. 85-568 (1958)); re-codified in 51 USC §§ 20102 to 20164.

79. 51 USC § 20102(a).

80. 51 USC § 20102(c).

81. 51 USC § 20102(d).

82. International Space Station, NASA, www.nasa.gov/mission_pages/station/cooperation/index.html.

83. 51 USC § 20113(c).

84. 51 USC § 20113(e).

85. NASA's Space Act Agreement authority is implemented in NASA Policy Directive (NPD) 1050.1I. Additionally, NASA's "Space Act Agreements Guide" provides instructions and guidance for developing Space Act Agreements. *See* NASA Advisory Implementing Instruction (NAII) 1050-1c, https://nodis3.gsfc.nasa.gov/NPD_attachments/NAII_1050_1C.pdf.

86. Outer Space Treaty, *supra* note 1.

87. Convention on International Liability for Damage Caused by Space Objects, Mar. 29, 1972, 24 U.S.T. 2389, 961 U.N.T.S. 187, www.unoosa.org/ oosa/en/ourwork/spacelaw/treaties/liability-convention.html.

88. A "user" of a space vehicle is defined as "anyone who enters into an agreement with [NASA] for use of all or a portion of a space vehicle, who owns or provides property to be flown on a space vehicle, or who employs a person to be flown on a space vehicle." 51 USC § 20138(a)(3).

89. A "space vehicle" is defined as "an object intended for launch, launched, or assembled in outer space, including the space shuttle and other components of a space transportation system, together with related equipment, devices, components, and parts." 51 USC § 20138(a)(1).

90. 51 USC § 20138(b).

91. 51 USC § 20138(c).

92. Pub. L. 114-90, 129 Stat. 704 (2015).

93. 51 USC Ch. 513, Space Resource Commercial Exploration and Utilization.

94. 51 USC § 51302(a)(1).

95. 51 USC § 51303.

96. 51 USC § 51302(a)(3). The "authorization and continuing supervision" requirement fulfills U.S. obligations under the Outer Space Treaty. *See* Outer Space Treaty, *supra* note 1 at Article VI.

97. Pub. L. No. 114-90 § 403, 129 Stat. at 722.

98. *See, e.g.*, Hobe and de Man, "National Appropriation of Outer Space and State Jurisdiction to Regulate the Exploitation, Exploration and Utilization of Space Resources," *German Journal of Air and Space Law* 460–75 (2017).

99. Outer Space Treaty, *supra* note 1 at Article 1.

100. Silver, "Luxembourg passes first EU space mining law. One can possess the Spice," *The Register* (July 14, 2017), www.theregister.co.uk/2017/07/14/luxembourg_passes_space_mining_law.

101. Space Resources Program, Colorado School of Mines, http://space.mines.edu.

SPACENEWS

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FEBRUARY 15, 2021

TALENT CRUNCH

Building a 21st Century Space Workforce

INSIDE

COMMENTARY Milton "Skip" Smith

The crew of Axiom Space's Ax-1 mission (from left): commander Michael López-Alegría and passengers Mark Pathy, Larry Connor and Eytan Stibbe.

Representing the private astronaut

A new step for human spaceflight — and for space lawyers

A new era of human spaceflight was launched with Axiom Space's Jan. 26 announcement of the four private astronauts it will send to the International Space Station early next year aboard a chartered SpaceX Crew Dragon flight. The next week, SpaceX announced the privately funded Inspiration4 mission that will carry four civilians to Earth orbit perhaps as soon as later this year.

The Axiom Ax-1 mission will be the first purely commercial mission to the ISS while the Inspiration4 mission will be the first all-civilian mission to Earth orbit. In addition to adding a new dimension for space travel, these missions create new challenges and opportunities for space lawyers — representing private astronauts, some of whom will spend the approximately $55 million estimated by industry sources for participating in the Ax-1 mission.

The Inspiration4 flight is the creation of Jared Issacman, a wealthy business owner and pilot who reportedly has paid for the entire mission and is donating the other three seats to selected individuals with the goal of raising $200 million for St. Jude Children's Research Hospital. One of the seats will go to a St. Jude health care worker. One will be raffled to St. Jude donors. And one will be given to someone who uses Issacman's Shift4 Payments platform to start an online business.

While the Inspiration4 flight is unique, the Ax-1 flight is the first in a series planned by Axiom. Ax-1 will be commanded by Michael López-Alegría, a former NASA astronaut now with Axiom. With him will be three multinational private astronauts and Axiom customers: Larry Connor of the United States, Mark Pathy of Canada and my client Eytan Stibbe of Israel. All will spend about eight days on the space station.

Axiom provides all the services needed by private astronauts including training, transportation, mission planning, hardware development, life and medical support, crew provisions, safety and hardware certifications, on-orbit operations, and overall mission management. In order to provide these services, Axiom has agreements with SpaceX for launch and Crew Dragon transportation to and from the ISS, and with NASA for accommodations on the ISS.

Axiom, and any other similar service providers, will enter into contracts with

AXIOM SPACE

private astronauts for each mission. Axiom anticipates two missions per year, so there should be at least six private astronauts each year needing legal advice to navigate the complex web of national and international laws related to their contractual rights and obligations.

There are risks associated with every launch and reentry. Those risks are managed, to the extent possible, in many ways. Private astronauts face additional risks – contractual risks, that must also be identified, evaluated and managed, to the extent possible. That is the challenge for the lawyers representing private astronauts.

KEY LEGAL ISSUES

One of the key legal issues, and perhaps the one most familiar to those in the space industry, involves cross-waivers of liability. Many are generally familiar with the waivers applicable to the launch and reentry phases required by the Commercial Space Launch Act and implementing FAA regulations. NASA also has waivers applicable to activities related to the space station. Such waivers are part of the legal regime established by the Outer Space Treaty and other international obligations, including the Intergovernmental Agreement (IGA) between the nations involved with the ISS and associated Memorandums of Understanding (MOUs) between NASA and cooperating space agencies. The IGA and MOUs provide details on use of the ISS, including commercial uses, such as private astronaut missions, and requirements for such uses. Waivers may also apply to terrestrial activities. For example, astronaut training entails certain risks. Those risks will be managed, at least in part, by cross-waivers. Additionally, states in which training, launch and reentry activities may be conducted likely will have their own waivers applicable to all "space flight participants." In short, the web of potentially applicable cross-waivers is extensive and private astronauts need to understand what risks they are waiving and evaluate whether such risks can be managed by insurance or otherwise.

It's important for potential private astronauts to understand the limitations that will apply to their mission. For example, private astronauts going to the ISS will be subject to the ISS Crew Code of Conduct, which establishes a chain of command, sets forth standards for activities, and extensively regulates those activities including what personal effects astronauts may carry to the ISS. They will also be subject to the NASA Interim Directive on the use of the ISS for Commercial and Marketing Activities. These regulations may limit the commercial activities in which private astronauts may want to engage.

What the private astronauts may do regarding research and other activities can be important for a variety of reasons. All the Ax-1 private astronauts will conduct scientific and educational activities on the ISS. For example, Eytan Stibbe will collaborate with the Israel Space Agency and the Scientific and Technology Ministry and donate his ISS time to educational and scientific projects on behalf of the Ramon Foundation. Larry Connor and Mark Pathy will also donate time for scientific and educational purposes to specific organizations. Attorneys should evaluate what, if any, tax advantages could be realized from such donations.

Delays are a fact of life in the space industry and the potential impacts of delays must be considered by the private astronauts and their lawyers. Given that the schedule for missions to the ISS could take years from contract formation to the flight, it's important to understand how delays will be handled contractually. Delays would not just be inconvenient; they could cause the inability of a private astronaut to participate in a mission for a variety of reasons. Provisions for a backup or replacement astronaut ready to take the vacant seat and assume financial responsibility can mitigate the financial risks to the private astronaut who has paid millions but is unable to fly.

In addition to the above key issues, private astronaut agreements will need to address a host of issues including: medical and other qualifications; the price to be charged and payment terms; insurance for possible damage to ISS equipment for which the astronaut and his government might be responsible; the length of the agreement; conditions upon which the astronaut may receive a refund; the impact of force majeure events such as pandemics; rights to media; access to voice and video communications while on the ISS; the responsibilities of Axiom or another service provider; sponsorship; duties while on the ISS including, for example, galley and toilet operations; dispute resolution; events of default; and cure opportunities. As in most legal agreements, the devil is in the details. Lawyers will need to explore those details in great depth with their private astronaut clients.

Additionally, there may also be agreements between the private astronauts and third parties, such as supporting organizations involved in selecting experiments and other activities the private astronauts will conduct on orbit. These agreements must be coordinated with and consistent with the primary private astronaut agreement. Finally, each private astronaut will need to evaluate life insurance and potential exclusions.

In closing, Michael Suffredini and his Axiom team should be congratulated for pioneering this first all-commercial mission to the ISS. That team includes his lawyers who helped identify and address the legal challenges present in the complex contractual arrangements with private astronauts. And Mr. Isaacman is to be applauded for making Earth orbit accessible to the three individuals who will be lucky enough to fly with him. **SN**

MILTON "SKIP" SMITH IS A SPACE LAWYER WITH SHERMAN & HOWARD AND IS ON THE BOARD OF THE INTERNATIONAL INSTITUTE OF SPACE LAW. SMITH REPRESENTED ISRAELI PRIVATE ASTRONAUT EYTAN STIBBE IN CONTRACT NEGOTIATIONS WITH AXIOM.

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

15 CFR Part 960

[Docket No.: 200407–0101]

RIN 0648–BA15

Licensing of Private Remote Sensing Space Systems

AGENCY: National Environmental Satellite, Data, and Information Service (NESDIS), National Oceanic and Atmospheric Administration (NOAA), Department of Commerce (Commerce).

ACTION: Final rule; request for comments.

SUMMARY: The Department of Commerce (Commerce), through the National Oceanic and Atmospheric Administration (NOAA), licenses the operation of private remote sensing space systems under the Land Remote Sensing Policy Act of 1992. NOAA's existing regulations implementing the Act were last updated in 2006. Commerce is now substantially revising those regulations, as described in detail below, to reflect significant changes in the space-based remote sensing industry since that time and to modernize its regulatory approach.

DATES: This rule has been classified as a major rule subject to Congressional review. The effective date is July 20, 2020. However, at the conclusion of the Congressional review, if the effective date has been changed, Commerce will publish a document in the **Federal Register** to establish the actual effective date or to terminate the rule. Additionally, Commerce will accept comments on this final rule until June 19, 2020.

ADDRESSES: You may send comments by the following methods:

Federal eRulemaking Portal: Go to: *www.regulations.gov* and search for the docket number NOAA–NESDIS–2018–0058. Click the ''Comment Now!'' icon, complete the required fields, and enter or attach your comments.

Mail: NOAA Commercial Remote Sensing Regulatory Affairs, 1335 East-West Highway, G101, Silver Spring, Maryland 20910.

Instructions: The Department of Commerce and NOAA are not responsible for comments sent by any other method, to any other address or individual, or received after the end of the comment period. All submissions received must include the agency name and docket number or RIN for this rulemaking. All comments received will be posted without change to *www.regulations.gov,* including any personal or commercially proprietary information provided.

FOR FURTHER INFORMATION CONTACT: Tahara Dawkins, Commercial Remote Sensing Regulatory Affairs, at 301–713–3385, or Glenn Tallia, NOAA Office of General Counsel, at 301–628–1622.

SUPPLEMENTARY INFORMATION: Article VI of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (Outer Space Treaty), provides that the activities of non-governmental entities require authorization and continuing supervision by states that are parties to the treaty. This responsibility falls to the United States (U.S.) Government with respect to the activities in outer space of private entities subject to U.S. jurisdiction. In the Land Remote Sensing Policy Act of 1992, codified at 51 U.S.C. 60101 *et seq.* (Act), Congress authorized the Secretary of Commerce (Secretary) to fulfill this responsibility for private remote sensing space activities, by authorizing the Secretary to issue and enforce licenses for the operation of such systems. The Secretary's authority under the Act has been delegated to the NOAA Assistant Administrator for Satellite and Information Services. NOAA issues licenses under its regulations implementing the Act, found at 15 CFR part 960, most recently updated in 2006 and now replaced in their entirety with this final rule.

Through the National Space Council, this Administration recognizes that long-term U.S. national security and foreign policy interests are best served by ensuring that U.S. industry continues to lead the rapidly maturing and highly competitive private space-based remote sensing market. Towards that end, the Administration seeks to establish a regulatory approach that ensures the United States remains the ''flag of choice'' for operators of private remote sensing space systems.

The President signed Space Policy Directive-2, Streamlining Regulations on Commercial Use of Space (SPD–2), on May 24, 2018. This directive required Commerce to review its private remote sensing licensing regulations in light of SPD–2's stated policy and rescind or revise them accordingly. Commerce began that review by publishing an advance notice of proposed rulemaking (ANPRM) (83 FR 30592, June 29, 2018), seeking public comment on five topics related to the Act. Commerce received nine detailed responses and used that input to inform the drafting of the proposed rule, which Commerce issued last year (84 FR 21282, May 14, 2019).

Commerce's proposed rule laid out a detailed regulatory proposal that attempted to increase transparency and certainty, and to reduce regulatory burdens, without impairing essential governmental interests in preserving U.S. national security, protecting foreign policy interests, and adhering to international obligations. To meet these goals, the proposed rule included a two-category framework, where the license conditions applied to proposed systems were commensurate with the potential risk posed by such systems to the national security and international obligations and foreign policies of the United States. The proposed rule also provided for conducting a full interagency review and the potential for custom license conditions, but only when a proposed system was novel and in the higher risk category. Additionally, the proposed rule published many existing license conditions for the first time and provided a public process for periodically updating such conditions. This meant that the public had a new opportunity to shape the conditions through public comment, whereas in the past, the conditions would be known only to existing licensees and to the U.S. Government before being included in a new license. In short, the proposed rule brought the process for setting new, operational license conditions into the public rulemaking space for the first time, and proposed substantive changes that would help reduce the regulatory burden on licensees.

Commerce received 27 public comments on the proposed rule, and thanks all commenters for their time and consideration. While the public comments on the proposed rule generally supported increased transparency and the two-category system in theory, they nevertheless characterized the proposed rule as overly restrictive and a disincentive to operating in the United States. Despite the procedural benefits (increased transparency, certainty, and public input) that the proposed rule offered, the commenters explained that the proposed rule did not deliver the desired dramatic substantive benefits—namely, immediately reducing the current regulatory restrictions and license conditions imposed on industry-leading remote sensing systems. For example, the proposed rule would have subjected the high-risk conditions (which, as drafted, were liberalized versions of existing conditions) to public scrutiny for the first time. But even with Commerce's liberalizations of

these conditions, public commenters objected to the conditions' continued stringency and the permanency implied by including them in regulations. As another example, Commerce proposed an objective set of criteria that would distinguish low-risk systems from high-risk systems, as a means to provide predictability to potential applicants. Commenters objected to this approach, however, arguing that the criteria were far too conservative, resulting in almost all commercial systems being categorized as high-risk, and moreover that including such a specific list in regulations was too rigid an approach.

Commerce took these concerns very seriously and revised the proposed rule in two key ways in response, resulting in a dramatically less burdensome final rule. First, Commerce will retain the notion of categories of systems, but rather than categorizing systems by a set of objective criteria that could be incrementally modified through future rulemakings, Commerce will adopt a proposal made by several commenters and the Advisory Committee on Commercial Remote Sensing (ACCRES). Specifically, Commerce will categorize systems based on an analysis of whether the unenhanced data to be generated by the proposed system are already available in the United States or in other nations.

Second, Commerce will eliminate most of the permanent license conditions existing in current licenses, license appendices, and included in the proposed rule, retaining only the bare minimum of permanent license conditions (generally only those required by the Act or other laws). Further conditions could be included in a license if, in Commerce's analysis, an application proposes to collect unenhanced data that are entirely novel (*i.e.,* unenhanced data are not available from any source). In this limited case, Commerce would work with the Department of Defense or the Department of State, as appropriate, and the applicant, to craft narrowly tailored license conditions that would be temporary. These temporary conditions would remain in effect for one to three years from the time the licensee begins operations. Such temporary conditions could be extended beyond three years, but only upon a request specifically from the Secretary of Defense or State.

This move to temporary license conditions for novel technologies would shift the burdens under the regulations. The 2006 regulations place burdens of protecting national security and international obligations on private remote sensing systems through extensive and permanent license conditions. Under this final rule, by contrast, temporary conditions are designed to allow the U.S. Government time to adapt its operations to the novel technology where possible. Unlike in 2006, foreign space-based capabilities are significant and constantly increasing, requiring the U.S. Government to adapt regardless of how it regulates U.S. systems. Commerce's approach recognizes this new reality and gives U.S. industry the best chance to continue to innovate and to lead this global market.

Commerce provides a more detailed explanation of its reasoning behind these and other changes to the proposed rule below. Commerce reiterates its gratitude to all persons who commented on the ANPRM and the proposed rule. These comments have been invaluable as Commerce has assessed the best way to modernize and streamline these regulations.

General Overview

Problems With Existing Regulatory Approach

Under the existing regulations, license condition-setting procedures are largely outside of the public rulemaking process: License conditions are set through interagency discussions, without the opportunity for public comment, even when the conditions would apply to all systems. In addition to lacking transparency, this regulatory approach is based on the mechanism of relying on license conditions to address U.S. national security and international obligation and policy concerns: By imposing conditions on certain types of imagery produced by U.S. remote sensing systems, the expectation is that the restriction contributes to protection of the interests in question.

Initially, this combination of setting conditions through a non-public, application-specific process and including restrictive conditions in licenses to protect U.S. national security and meet international obligations was effective. The U.S. remote sensing industry was small and had limited foreign competition, so it was generally believed that there was little risk that the regulatory environment in the United States would disadvantage U.S. industry in relation to any foreign competitors. In addition, restricting the capabilities of U.S. industry through license conditions largely did protect national security, as it was often the only source of such data. But as time has passed, foreign commercial capabilities have emerged—at times, arguably, because U.S. regulations are too restrictive, resulting in some operators establishing their remote sensing businesses overseas.

To illustrate the dramatic changes that now motivate the Administration to take a different approach, Commerce provides the following statistics. When the Act was passed in 1992, there were no private remote sensing space systems. In 2006, when Commerce last updated its regulations, there were 25 U.S. licenses and roughly 29 non-U.S. systems. Today, there are 73 U.S. licenses held by 51 U.S. licensees, and over 80 U.S. licenses have been closed due to the system's end. Stated differently, Commerce issued roughly 25 licenses in the 14 years from the passage of the Act in 1992 until the last update to the regulations in 2006, but in the 14 years since that last update, Commerce has issued well over 100 licenses.

At the same time, since 2006, more than an estimated 250 non-U.S. remote sensing systems have either become operational or are planned (a figure that does not include foreign systems that are not public knowledge). Today, more than 40 countries other than the United States have remote sensing space systems. And since 2006, foreign remote sensing capabilities have extended to advanced phenomenologies such as synthetic aperture radar (SAR) and hyperspectral imaging (HSI), of which there are dozens of foreign systems each.

The pace of foreign competition has intensified, and Commerce anticipates that these trends will continue. Now, any U.S. company with a license restriction is at a disadvantage if a foreign competitor is not subject to the same restriction, all else being equal. The end result is that U.S. operators may not meet, let alone surpass, the capabilities of such foreign competitors. Moreover, even if Commerce loosens license restrictions as soon as it learns that foreign competitors have caught up to a restricted U.S. phenomenology, U.S. industry is guaranteed to be no better than tied for first place.

Take, for example, the U.S. SAR industry. Commerce license conditions prevent such licensees from imaging at finer than 0.5 meters impulse response (IPR), while some foreign competitors sell data at .24 meters IPR. Even a regulatory approach that allows U.S. licensees to sell data at .24 meters IPR would only let U.S. industry meet, not exceed, their foreign competition. This creates a market opportunity for foreign entities to sell data at finer than .24 meters IPR. The U.S. Government has no control over such foreign SAR systems and must adapt to protect its operations, making such a regulatory

approach ultimately ineffective and counterproductive. This approach is also reactive: It presumes that the most highly capable U.S. remote sensing licenses should be conditioned until circumstances render the condition obsolete, rather than presuming that U.S. industry's capabilities should not be conditioned at the outset. This situation is likely to continue so long as the U.S. Government perpetuates current practices.

Such license conditions, of course, have a valid goal: Most often, to protect national security. But Commerce cannot restrict the operation of non-U.S. remote sensing operators. Many national security conditions placed on U.S. remote sensing operators have become or will become ineffective due to uncontrollable foreign competition, and may have in fact encouraged such foreign competition. The emergence of intensifying and uncontrollable foreign competition requires reassessment of the way Commerce licenses remote sensing operators. Commerce believes that it must adapt its regulatory approach to be better able to respond to these changes and help ensure continued U.S. leadership in the global market for space-based remote sensing data.

Final Rule's Approach

As previewed above, two changes in the final rule, as compared with the proposed rule, take the development of foreign competition and commenters' concerns into account. First, the final rule categorizes applicants based on the availability of their unenhanced data from other sources. The proposed rule created categories, but would have instead grouped applicants based on an objective set of criteria that assessed the risk they would pose to national security. This worked under the assumption that remote sensing systems would be regulated so as to prevent them from causing harm to national security: The more risk a system posed to national security, the more restrictive its license would be. But in view of the development of foreign competition that is uncontrollable, regardless of its risk, the final rule takes a different approach to categorizing applicants. Based on suggestions from several commenters, the final rule categorizes applicants based on the degree to which the unenhanced data to be generated by their proposed system are already available (rather than based on the amount of risk they pose to national security).

- If an applicant proposes a system that is capable only of producing unenhanced data substantially the same as unenhanced data available from sources not regulated by Commerce, such as foreign sources, the system will be ''Tier 1,'' and receive the bare minimum of conditions. This is because Commerce cannot prevent the harm that such systems might cause to national security, regardless of how strictly they are regulated, because substantially the same unenhanced data are available from sources outside Commerce's control.
- If an applicant proposes a system that is capable of producing unenhanced data that are substantially the same as unenhanced data available from U.S. sources only, the system will be ''Tier 2.'' As there is no foreign competition for that unenhanced data, a U.S. license restriction *could* be effective.
- If an applicant proposes a system that is capable of producing unenhanced data that are substantially the same as no available unenhanced data—that is, if the applicant has no competitors, foreign or domestic—the system will be ''Tier 3,'' and more stringent controls logically may be applied.

Commerce will also consult with the Departments of Defense and State during the process of assigning a tier to ascertain whether there are national security or international obligations or policy concerns that would recommend a different tier than the tier resulting from the availability analysis.

In addition, the final rule makes a second philosophical change in response to commenters' stated concerns about the stringency of the operating conditions. Instead of formalizing the existing permanent operating conditions for low- and high-risk systems, the final rule eliminates almost all such permanent operating conditions. ''Tier 1'' systems (those which produce unenhanced data available from sources outside Commerce's control) will receive only those conditions required by statute and will not be required to comply with limited-operations directives (colloquially known as ''shutter control'' and referred to in the relevant interagency memorandum of understanding (MOU) as ''modified operations''). This is because where the same capability exists outside the United States, a limited-operations directive would be less effective: even if all U.S. licensees complied fully with a directive restricting certain data, some foreign systems (lying beyond U.S. licensing jurisdiction) would be able to continue to generate such data without restriction. Therefore, Commerce will not require systems whose unenhanced data capabilities are substantially the same as those of entities not licensed by Commerce (such as foreign entities) to comply with shutter control, or with any operational limitations including restrictions on non-Earth imaging (NEI), nighttime imaging, and the like.

In contrast, ''Tier 2'' systems (those with only U.S.-licensed competition) will receive the same minimal conditions as Tier 1, with the addition of one NEI requirement—to obtain the consent of the owner of any Artificial Resident Space Object (ARSO) orbiting the Earth and to notify the Secretary five days before conducting resolved imaging operations of the ARSO—and the requirement to comply with limited-operations directives. Where a certain capability exists only in systems subject to U.S. jurisdiction, a limited-operations directive applying to those licensees will be effective at restricting the dissemination of data. Therefore, to protect national security or meet international obligations, Commerce will continue to require these licensees to be prepared to comply with limited-operations directives.

Finally, with respect to the consent and notification requirement for resolved ARSO imaging, Commerce will reevaluate the necessity of such requirement in approximately two years, in consultation with the Department of Defense. Should such reevaluation conclude that the underlying national security concerns necessitating the requirement have been abated, Commerce will consider appropriate action, including a rulemaking to modify or remove the requirement.

The logic underlying this distinction between Tier 1 and Tier 2 means that these categories are not fixed. As soon as a non-U.S.-licensed entity (such as a foreign commercial entity) has the capability to collect unenhanced data substantially the same as a Tier 2 system, the Secretary may re-categorize the system as Tier 1, removing the requirements addressing the resolved imaging of ARSO and to comply with limited-operations directives. This makes sense because where foreign competition exists, these requirements would be less effective for the type of data at issue.

Finally, the final rule creates a third tier of systems, as requested by several commenters. Tier 3 systems are those having a completely novel capability, such that no foreign or U.S. entity can produce substantially the same unenhanced data. Tier 3 systems will have the same standard conditions as Tier 2, including the requirements addressing resolved imaging of ARSO

and to comply with limited-operations directives, but will also have the potential for temporary, custom license conditions. As provided in the final rule, these temporary conditions will be developed by the Department of Defense or State, as appropriate, and then carefully analyzed by Commerce in consultation with the applicant to determine compliance with legal requirements. These temporary conditions will last only one year (generally starting from initial spacecraft operations), with the possibility of two one-year extensions if the Department requesting the condition meets a burden of proof, following review by Commerce and notification of licensees. The only possible extension beyond three years is if the Secretary of Defense or State requests an additional extension. The authority to request additional extensions may not be delegated below the Secretary of Defense or State.

Temporary conditions on Tier 3 systems shift away from primarily protecting national security by restricting the capabilities of U.S. private remote sensing systems indefinitely, and toward ensuring that the U.S. Government takes timely action to mitigate any harm that could result from remote sensing operations where possible. These temporary restrictions are intended to provide the U.S. Government time to adopt measures to mitigate the harm. Then, once the temporary restriction expires, the system can operate unimpeded by those temporary restrictions, and the U.S. Government will have learned how to protect itself from new technology that, in time, is likely to spread to foreign operators, out of Commerce's control.

Apart from any temporary conditions on Tier 3 systems and the consent and notification requirements for resolved ARSO imaging and limited-operations directives for Tiers 2 and 3, there are no permanent operating conditions. Previously required operating conditions specifically addressing SAR, night-time imaging (NTI), short-wave infrared (SWIR), and other capabilities, are no longer in the rule and will not be automatically included in licenses (except if warranted as a temporary condition for a Tier 3 license). NEI conditions are eliminated for Tier 1 systems, eliminated for unresolved NEI, and greatly reduced for Tiers 2 and 3. Licensees will be free, therefore, to operate under the minimal conditions found in § 960.8 for Tier 1 systems, and in §§ 960.9 and 960.10 for Tier 2 and Tier 3 systems, respectively.

To illustrate how this approach would work, imagine a hypothetical applicant seeking to operate a SAR system. Under the previous (2006) regulations, the applicant would have waited up to 120 days (or more, if the U.S. Government required additional review time), then received a license including conditions restricting its SAR operations in terms of data downlink locations, resolution thresholds, and the like. The applicant, then licensee, would have been guaranteed no prior notice of these conditions. Under the proposed rule, by contrast, the applicant would have known that it would be categorized as ''high-risk'' due to its SAR capabilities; it would have been able to read the SAR conditions in the public rulemakings; and it would have received its license in 90 days. But under the final rule, the applicant's system would likely be categorized as Tier 1 (if it was capable of producing unenhanced data substantially the same as foreign unenhanced data) or Tier 2 (if it was capable of producing unenhanced data that are only available from U.S. sources regulated by Commerce). Accordingly, the license would contain *no* permanent operational conditions restricting its SAR operations. The licensee would only be under the obligation to comply with the consent and notification requirements for resolved ARSO imaging and a limited-operations directive, if it were categorized as Tier 2. Its SAR operations, otherwise, would be unencumbered by regulation.

The final rule also reduces other regulatory burdens. For example, regarding cybersecurity: Under the existing regulations, there are requirements relating to data uplink, downlink, transmission, and storage, and licensees are required to complete, update, and comply with lengthy data protection plans. The proposed rule would have required encryption and industry best practices for protection of tracking, telemetry, and control (TT&C) for all licensed systems; with higher level encryption and protection for both TT&C and mission data transmissions, along with completion of a National Institute of Standards and Technology (NIST) Cybersecurity Framework for ''high-risk'' systems. Under the final rule, the only cybersecurity requirements are that licensees operating spacecraft with propulsion affirm that they have measures in place to ensure positive control of those spacecraft; and for Tier 2 and 3 systems, if a limited-operations directive is issued, the licensee will be required to protect data as specified in the directive, which may include encrypting satellite TT&C and mission data transmissions. Commerce notes that this license condition requires the immediate ability to encrypt data and transmissions in the event of a limited-operations directive. This means that, during an inspection or investigation, Commerce may require a demonstration of the licensee's ability to immediately come into compliance with this requirement, as though a shutter control order had just been issued. But at all other times when a directive has not been issued, the licensee will be free to protect their data as they see fit, in accordance with their own, self-developed plan to manage cybersecurity risk. This shift in approach recognizes that Commerce cannot continue to place the burden of mitigating national security risks posed by data largely on licensees, and also that licensees already have market incentives to protect their data and operations from interference.

While Commerce is not mandating a specific approach to licensees' self-developed plan to manage cybersecurity risk, the following are best practice factors licensees should consider when developing one:

- Incorporating design features and operational measures, consistent with satellite constellation size, sophistication, and propulsion, that protect against current and evolving malicious cyber threats that can disrupt, deny, degrade, or destroy their systems and data. This should include the ability to:
  - Prevent unauthorized access to the system,
  - Identify any unauthorized access,
  - Ensure positive control of spacecraft with propulsion at all times, and
  - Where practicable, use encryption for all communications to and from the on-orbit components of the system related to tracking, telemetry, and control.

In short, the final rule represents a philosophical shift away from a purely risk-based approach. No longer will the U.S. Government assess systems based on the risk they may pose to national security and burden them accordingly to protect against such risk. Nor will the U.S. Government place conditions on licensees when a source of substantially the same unenhanced data exists outside Commerce's control. Instead, the U.S. Government will shift more of the burden of protecting national security to itself, focusing on mitigating the risk posed by the global remote sensing industry. This will help effectuate the President's policy in SPD–2 of encouraging American leadership in space: American industry will never be restricted more than foreign competition. In addition, this new approach will provide additional

incentive to the U.S. Government to change its own operations to minimize the risk from growing domestic and foreign remote sensing capabilities.

Other Alternatives

Commerce considered other alternatives to the approach it took in the final rule. One such alternative was to proceed with the substance of the proposed rule. However, many commenters noted that the proposed rule appeared so rigid as to actually set the commercial remote sensing industry back—perhaps even by decades. Commerce understood based on these comments that a significant change to the substance of the rule was needed.

One way of attempting to create such a significant change would have been to incrementally shift the proposed rule to a more industry-favorable position. For example, Commerce could have adjusted the objective considerations in the proposed rule's § 960.6, which described the difference between low- and high-risk systems. Commerce could have set a less conservative threshold for low-risk systems, as some commenters suggested. In addition, Commerce could have adjusted the permanent license conditions in the proposed rule's §§ 960.13 and 960.20, making them less stringent. However, both of these changes would have further enshrined the risk-based approach that the final rule rejects, and required regular, repeated updates through future rulemaking processes to keep up with changes in foreign competition, imaging technologies, risks, and mitigation techniques.

Other Major Changes

In addition to the shift in how Commerce categorizes and conditions the operation of systems described above, Commerce made additional important changes to the proposed rule. Commerce was not required to make these changes due to its interpretation of the Act, but has chosen to do so based on public comments and to advance the Administration's policy objectives. These are described in greater detail in the Subpart-by-Subpart Overview below, but include:

- Defining remote sensing such that the final rule applies only to systems in orbit of the Earth, capable of producing imagery of the Earth, and clearly excluding instruments used for mission assurance or other technical purposes;
- Defining the scope of remote sensing space systems under this final rule, such that Commerce's requirements apply to the remote sensing instrument and only those additional components that support its operation, receipt of unenhanced data, and data preprocessing, excluding higher-level processing and data storage;
- Eliminating the possibility of conditions imposed unilaterally by Commerce on a licensee after license issuance (colloquially known as ''retroactive conditions'');
- Reducing the timeline for application review to 60 days for all systems, regardless of categorization; and
- Clarifying definitions and expectations, most notably related to foreign investment and agreements.

For space-based activities not requiring a license from Commerce under this final rule, Commerce continues to consider a more comprehensive space regulatory regime for space activities not currently addressed by federal regulatory frameworks. Vice President Pence has directed the Secretary to ''report to the President, through the National Space Council staff, on the authorization of commercial space operations not currently regulated by any other Federal agency; and, in coordination with the Secretary of Transportation, provide a roadmap to enable all current and evolving United States commercial space activities to receive authorization under appropriate Federal regulatory frameworks.'' [1] This report will incorporate this final rule's parameters and provide insight into ensuring that U.S. space operations are, in conformity with treaty obligations, authorized and continuously supervised.

Summary

In summary, Commerce believes the final rule advances the policy of SPD–2 in three areas compared to the previous (2006) regulations. As in the proposed rule, (1) the processes in the final rule are more transparent and more compliant with the Administrative Procedure Act. Additionally, based on public comment on the proposed rule, under the final rule (2) applicants and licensees are categorized into tiers based on unenhanced data availability, rather than a risk assessment; and (3) permanent license conditions are set at an absolute minimum, primarily only those needed to comply with statutory requirements, and only in very narrow circumstances can further conditions be added—which must be temporary. This third group of changes modernizes the remote sensing licensing regime by ensuring that the U.S. Government takes more responsibility for safeguarding U.S. national security, rather than continuing to place this burden largely on the U.S. remote sensing industry. Commerce anticipates that these changes will unleash U.S. innovation and allow it to compete in the global remote sensing industry.

[1] ''Recommendations Approved by the National Space Council to President Trump,'' National Space Council (Aug. 20, 2019) available at: *https://www.space.commerce.gov/secretary-ross-remarks-from-6th-national-space-council-meeting/.*

Response to Comments

Commerce received 27 comments on the proposed rule. These comments originated from industry groups; commercial entities who are currently licensed and will be subject to the final rule; commercial entities who are not licensed or who will not likely be subject to the final rule; academics; an anonymous commenter; and two individual commenters. Commerce thanks each of these commenters, as well as those who commented on the earlier ANPRM, for their time and input.

Many comments were broadly in agreement on desired changes to the proposed rule. As a result, in the interest of clarity, Commerce will not lay out comments one-by-one and respond to them individually. Instead, Commerce has responded to the general tenor of comments above, including the major changes to the final rule that respond to the comments. Below, Commerce describes the final rule's provisions of note. This description includes, where appropriate, responses to comments. Furthermore, as mentioned above, Commerce welcomes further comments on this final rule with comment period in the 30-day period following publication and before this rule becomes effective.

Subpart-by-Subpart Overview

Subpart A—General

Subpart A sets out the purpose, jurisdictional scope, grandfathering mechanisms, and definitions for the final rule. The following provisions are of particular note.

Section 960.1 Purpose

As suggested by a commenter, this section emphasizes Commerce's goal in issuing the final rule: Ensuring U.S. industry continues to lead the global remote sensing market.

960.2 Jurisdiction

Section 960.2(a): The Secretary's jurisdiction attaches in two ways: (1) When the operation of a system occurs within the United States, and (2) when a U.S. person operates a system (see definitions of ''operate,'' ''private remote sensing space system,'' and ''U.S. person'' in § 960.4). Thus, a non-U.S. person falls under the Secretary's jurisdiction by operating within the

United States, and a U.S. person falls within the Secretary's jurisdiction when they operate a system (no matter where they operate it). In response to comments, Commerce has changed the title of this definition from ''U.S. citizen'' to ''U.S. person,'' and has added lawful permanent residents.

Section 960.2(b): Commerce created a list of technical capabilities that it has determined should be exempt from this regulation based on policy and other considerations. Instruments used primarily for mission assurance purposes or other technical purposes are not considered remote sensing instruments under this final rule; therefore, a system that contains only such instruments will not require a Commerce license. Public commenters appreciated the proposed rule's attempt to exempt certain technical capabilities from the definition of ''remote sensing,'' but the details of that exemption confused some readers. In response, Commerce removed the portion of the definition of ''remote sensing'' in the proposed rule that would have exempted certain cameras from the rule's jurisdiction. Instead, to achieve the desired effect of reducing the scope of this final rule's application, Commerce created this paragraph including a nonexclusive list of exceptions. These exceptions are focused on the actual use of the instrument (*e.g.,* mission assurance), rather than the instrument's objective description.

Many of these capabilities are found on space systems that are already regulated by another Federal agency, including the Federal Aviation Administration for instruments on launch vehicles and the Federal Communications Commission for instruments on communications satellites. As noted earlier, Commerce is continuing, separately from this final rule, to work with the National Space Council toward a comprehensive authorizing regime to facilitate space commerce, including non-traditional space activities not currently regulated by another Federal agency.

Section 960.3 Application to Existing Licensees, ''Grandfathering''

Many commenters requested clarification of the grandfathering provisions. Commenters also requested, variously, that the new final rule only apply to existing licensees in part, or apply only to the extent that the licensee so desired, or apply only to the extent that the final rule was more favorable to the licensee than the status quo. Commerce has attempted to provide the public the assurances they asked for by clarifying that the Secretary will retain any applicable waivers or modifications in a new license. Also, the final rule provides 30 days in which the licensee can object to their new draft license. Commerce's decision to replace a license with a new one is appealable. It will be incumbent upon each licensee to specify which conditions, if any, they object to, as part of this process. Examples:

- A licensee with an existing Commerce license would receive a new license on the effective date. The new license would reflect the licensee's tier and include all applicable conditions. The licensee would have 30 days from the delivery of this new license to object to this new license.
- A licensee with an existing license containing waivers or amendments would receive a new license on the effective date. The new license would carry over any waivers or amendments that would still be relevant under the final rule. For example, if the licensee had a waiver from a specific NEI requirement, and that requirement is found in the standard conditions in this final rule, the waiver would carry over into the new license. However, if the licensee had a waiver from one or more of the NTI conditions, the waiver would likely not be applicable simply because the new license would contain no permanent NTI conditions, as permanent NTI conditions are not found in the standard conditions in this final rule.
- A licensee whose system no longer falls under the final rule will receive a notification that their Commerce license has been terminated as moot. Of course, this termination does not mean that the former licensee is prohibited from any activity or that it is not subject to any regulation by the U.S. Government; instead, it means that the system's activities no longer require a Commerce license.

Section 960.4 Definitions

Anomaly: In response to commenters, Commerce narrowed the definition of ''anomaly'' to events that ''could indicate a significant technical malfunction or security threat,'' and clarified that anomalies ''include any significant deviation from the orbit and data collection characteristics of the system.'' This narrowed definition is intended to reduce licensees' burdens by eliminating the requirement to report minor anomalies.

Available: This definition affects the categorization of licenses into tiers (see § 960.6(a)) and the license condition implementing the Kyl-Bingaman Amendment (see § 960.8(a)(9)). It is intended to be akin to the existing Kyl-Bingaman standard as articulated in the 2006 final rule (71 FR 24473, April 25, 2006), but modified slightly. Under this final rule when the term ''available'' is used by itself, Commerce will deem something to be ''available'' if it is readily and consistently obtainable by an entity other than the U.S. Government or a foreign government—but not necessarily only from commercial sources. For example, if certain unenhanced data (see ''unenhanced data'' definition) are routinely made available from a foreign government to the general public (for example, Copernicus Sentinel data), Commerce would deem that they are available. Note that, under the Kyl-Bingaman condition found at § 960.8(a)(9), the data must be available specifically from commercial sources, because the Kyl-Bingaman Amendment requires this. Section 1064, Public Law 104–201.

Days: In response to comments, Commerce removed the definition of ''days.'' Commerce intends that references to ''days'' throughout the rule will now refer to the ordinary meaning of a calendar day. Under the proposed rule, any number of days shorter than ten days referred to working days (*i.e.,* not counting weekends and holidays). Because all days are now calendar days, Commerce lengthened some of the shorter time periods in the final rule. For example, in § 960.8, reporting periods of five (working) days under the proposed rule are now seven (calendar) days under the final rule.

Material fact: Many commenters were confused by the proposed rule's ''material fact'' definition. Under the proposed rule and in the final rule, Commerce intends that a ''material fact'' is *any* fact contained in the application or license. This definition is broad because Commerce is only requesting information that is critically important in the application (see Appendix A), and will only carry over critically important information into the license (see Appendix C). In other words, all facts are material, because Commerce will not request any immaterial facts. But because every fact in the application and license is critically important, every one of those facts—if changed—will require a license modification.

Some commenters asked Commerce to change ''material fact'' to ''a fact the Secretary relied upon in issuing the license.'' Commerce disagrees with this suggestion because it would make it subjective when a license modification is required. The licensee cannot know what facts the Secretary relied upon. Commerce hopes that this revised

definition is clear: To determine whether a fact is material (and therefore whether changing it after license issuance will require a license modification), simply review your license to confirm whether the fact is included therein. If it is, it is a material fact.

Memorandum of Understanding or MOU: In response to comments raising concerns about the potential for the U.S. Government to amend the MOU without notice-and-comment rulemaking, Commerce has clarified in this definition that ''MOU'' refers only to the version of the MOU that was signed on April 25, 2017, which is included as appendix D to the final rule. Even if the U.S. Government amends the MOU at some later date, those amendments would have no effect on this final rule absent a rulemaking, because Commerce will continue to use the 2017 version for all purposes under this rule. Furthermore, it is important to note that if any terms of the MOU conflict with this rule, the definition clarifies that the rule will govern.

Operate: Commerce narrowed the definition of ''operate'' to clarify which activities qualify. The revised definition makes clear that the entity with decision-making authority over the remote sensing instrument's functioning is operating the system. This would include the entity deciding what to image and how to accomplish the desired imaging, but not an individual or service provider merely implementing those commands. This is true regardless of how the commands technically pass to the satellite. In most cases, Commerce anticipates that the instrument owner will be the one who operates, but this may not always be the case.

In addition, Commerce intends that activities such as operating a ground station as a service or operating a spaceborne platform as a service, without more, are not ''operating'' a remote sensing space system. Examples:

- Company A operates a ground station in the United States. Company B owns a spacecraft with a remote sensing instrument. Through a contract, Company B uses Company A's ground station to send command and control communications to and from Company B's spacecraft. Company B is operating the remote sensing system and would require a license, but Company A would not require a Commerce license.
- Company C operates a spacecraft that does not conduct remote sensing. Through a contract, Company C hosts Company D's remote sensing instrument on the same spacecraft. Company D decides what to image with its remote sensing instrument. Commands are sent to Company C for uplink, and unenhanced data are routed back to Company D through Company C's system. Company D is operating the remote sensing system and would require a license, but Company C would not require a Commerce license.

Private remote sensing space system or system: The proposed rule contained separate definitions for ''remote sensing instrument,'' ''remote sensing space system,'' and ''private remote sensing space system.'' Of these, in the interests of clarity and simplicity, the final rule contains only ''private remote sensing space system or system.'' Of particular note, this definition retains the proposed rule's requirement that the system not be owned by an agency or instrumentality of the U.S. Government (which would not be ''private''). It makes clear that every private remote sensing space system consists, at the very least, of a remote sensing instrument (see below). Nothing can be considered a system without such an instrument. A ground station or satellite bus without a remote sensing instrument is not a system.

The definition covers remote sensing instruments that are capable of conducting remote sensing (see ''remote sensing'' definition) and are not otherwise excluded from this rule due to being used primarily for technical or mission assurance purposes (see § 960.2(b)). The definition also limits the scope of the system: It includes components that support the remote sensing instrument's operation, plus receipt of unenhanced data (see ''unenhanced data'' definition); and data preprocessing. This is intended to capture the ground stations from which the remote sensing instrument is commanded, as well as ground stations where data are initially received, but not facilities that conduct only higher-level data processing or storage. This is also intended to capture items such as the satellite bus and all components through which commands and unenhanced data flow, because all these components relate directly to the remote sensing instrument and to remote sensing.

Finally, this definition retains the proposed rule's clarification that the system may include components that are owned or managed by persons or entities other than the licensee. To clarify in response to comments, Commerce intends this to mean that a ground station operated as a service by a third party will be part of a licensed system if it sends operational commands or receives unenhanced data, but it will not constitute a system on its own, and operating it alone will not constitute ''operating'' (see ''operate'' definition). If a licensee chooses to use third parties for some of its operations, it will be responsible for ensuring that those third parties comply with any relevant license conditions (such as through contract terms). If the licensee is unable to do so, then it may not use that third party to support its licensed system. Commerce notes that, due to the dramatic reduction in the number of license conditions, the practical effect of this requirement to ensure third-party compliance with license conditions is minimal. This approach allows maximum flexibility for licensees to contract with the growing number of providers of ground station services, cloud processing, hosted payloads platforms, etc., but does not encourage such use as a means to evade regulation or disadvantage entities that choose to conduct those activities themselves.

Remote sensing: After considering public comments and pertinent policy considerations, this definition now applies only to (1) remote sensing conducted when in orbit of the Earth, rather than in orbit of any celestial body; and (2) to collecting data that can be processed into imagery of the surface features of the Earth. This definition is based on the definition of ''land remote sensing'' found at 51 U.S.C. 60101(4). Therefore, systems that can only produce data that cannot be processed into Earth-surface imagery are not required to obtain a license under this final rule. For example, a system in Earth orbit designed to conduct NEI would likely be conducting remote sensing for the purpose of this rule, because the instruments used for such missions typically are capable of collecting data that can be processed into imagery of the surface features of the Earth. Please see ''Jurisdiction,'' § 960.2, for technical capabilities that are specifically not licensed under this final rule.

Significant or substantial foreign agreement: In response to comments, Commerce clarifies that this definition is intended to cover only foreign agreements the execution of which would add or otherwise change material facts (see ''material fact'' definition and explanation above) and therefore would already require a license modification. In other words, this definition is intended to articulate that ''significant or substantial foreign agreement'' are only agreements that, when executed, will change something about the license.

Some commenters misunderstood the proposed rule's wording, believing that it meant that a change in any fact

involving a foreign country (even a low-value data sale to a foreign country) would require a license modification due to this definition. Commerce has changed the wording of this definition to attempt to eliminate this confusion. The rewording is intended to carry out the proposed rule's intent: That something is a significant or substantial foreign agreement only if its execution would add or otherwise change a material fact. This definition is intended to reduce licensees' compliance burdens by requiring only one process—license modification—rather than including a separate process for review of foreign agreements that do not add or otherwise change material facts.

Some commenters requested that Commerce create a list of favorable nations, transactions with which would not require a significant or substantial foreign agreement process. Commerce disagrees because of the likelihood that national security or foreign policy concerns would outpace Commerce's ability to update this list. One commenter noted that the Act requires only a notification—not a license modification—for a significant or substantial foreign agreement. But as explained above, Commerce has effectively collapsed the significant or substantial foreign agreement process with the license modification process, such that there are *no* significant or substantial foreign agreements that do not separately require a license modification. Commerce believes that it cannot further reduce this regulatory burden. Examples:

- Licensee contracts with a foreign company or government to sell unenhanced data, to be delivered through a cloud service provider. The license (as shown in appendix C) does not list recipients of unenhanced data, whether foreign or within the United States. Therefore, this contract is not a significant or substantial foreign agreement because it does not require a license modification. The Licensee can sign the contract without any approval by or notification to Commerce.
- Licensee contracts with a foreign company or government to sell unenhanced data, to be delivered directly to a ground station at the foreign entity's location. The license lists the location of ground stations that receive unenhanced data. If the license does not already list this ground station, delivering unenhanced data to it would require approval of a license modification. Therefore, it is technically a significant or substantial foreign agreement. However, practically speaking, it would be processed as a license modification request, regardless of whether the ground station in question is foreign or domestic.

Unenhanced data: This definition, based on the definitions of ''unenhanced data'' and ''data preprocessing'' in the Act, attempts to capture all data that are unique to remote sensing operators, including basic imagery products, rather than higher-level products and analyses that could be created by third parties who are not conducting remote sensing themselves. This applies to the definitions of ''operate'' and ''remote sensing space system;'' the categorization process in § 960.6; and the Kyl-Bingaman condition found in § 960.8(a)(9), having the effect of limiting the scope of those definitions.

U.S. person: Some commenters requested that Commerce define ''U.S. person'' rather than ''U.S. citizen.'' Commerce has made this change. Commerce makes a distinction between ''person'' and ''U.S. person.'' As defined in this part, a ''person'' includes anyone, whether foreign or domestic and including juridical persons, who is not the U.S. Government. A ''person'' is required to obtain a license from Commerce to operate a private remote sensing space system in the United States.

By contrast, a ''U.S. person'' is a United States national, either natural or juridical. A ''U.S. person'' must obtain a license from Commerce to operate anywhere in the world, inside or outside the United States. The definition of ''U.S. person'' does *not* limit who may apply for and receive a license from Commerce. Any person who desires to operate a system from within the United States is eligible to apply for a license. ''U.S. person,'' instead, only determines who must obtain a license from Commerce to operate anywhere outside the United States.

Subpart B—License Application Submission and Categorization

Subpart B contains application and license review procedures, and the analysis the Secretary will use for assigning systems to a tier. The following provisions are of particular note.

Section 960.5 Application Submission

Section 960.5(d): In response to comments, Commerce included a seven-day time limit on the Secretary's review of whether an updated application constitutes a new application. If it does, the application review timeline begins afresh.

Section 960.6 Application Categorization

Section 960.6(a): In response to comments and as discussed in detail in the General Overview section above, Commerce eliminated the technical criteria in the proposed rule (which separated ''low-risk'' systems from ''high-risk'' systems) in favor of criteria based solely on unenhanced data availability. Commerce refers to the resulting groups as ''tiers,'' partly due to commenters who suggested that the proposed rule's category names were pejorative, but primarily because the new tier system is not based on risk. A major benefit of this approach is that the tier determination in the final rule is a quintessentially commercial question suited to the Secretary of Commerce. Accordingly, under the final rule, the Secretary makes the determination of the appropriate category, and will consult with other agencies, as appropriate, to resolve a difficult categorization. The Secretary of Defense or State may notify the Secretary of Commerce if they disagree with Commerce's determination of availability, including taking into account matters of national security or international obligations or policies not considered in availability, but such notification must be sent by an official at least as senior as an Assistant Secretary.

This approach to categorization is also akin to some commenters' request for applications to be ''deemed granted'' if they proposed to collect data that were already available; under the final rule, these applications will be Tier 1, receive minimal conditions (see § 960.8), and the Secretary may only deny them if there is a high degree of evidence that they are not eligible for a license (see § 960.7(a)). Finally, this tier determination is appealable after the license is granted (because making it appealable before license grant, as some commenters requested, would unduly slow the application review process, which is quite short (see § 960.7)).

Section 960.6(a)(1): Tier 1 consists of systems which, in the Secretary's analysis, have the capability to collect unenhanced data substantially the same (see definition of ''substantially the same'' in § 960.4 and discussion below) as unenhanced data already available from entities not licensed under this part. If the Secretary determines that unenhanced data outside the Secretary's control are available, and a proposed system's unenhanced data will be substantially the same (in a holistic sense) as that available data, the Secretary will categorize the system as

Tier 1. Primarily, the Secretary will examine what unenhanced data are available from foreign sources when making this determination. More details about the Secretary's analysis are below.

Capability: The Secretary's determination will focus on the system's capability, rather than its business plans or planned mission. For example, if a system's technical specifications demonstrate that it is capable of collecting unenhanced data at 1 meter spatial resolution, but the application states that the operator plans only to collect data at 5 meters spatial resolution, the Secretary will evaluate the system as though it were planning to collect its best technical capability (1 meter data).

Unenhanced data: The Secretary's analysis under § 960.6(a) looks to the system's ability to collect unenhanced data, including preprocessed data and basic imagery products, rather than any processed data or products that will be possible to create with the unenhanced data (see ''unenhanced data'' definition in § 960.4). For example, if a foreign remote sensing space system produces imagery with a spatial resolution of 5 meters, but when combined with data from non-space based sources it can result in imagery with a spatial resolution of 1 meter, the Secretary would consider the spatial resolution of 5 meters for the characterization analysis in § 960.6.

Substantially the same: The Secretary will use a holistic approach when comparing data, taking into account factors such as the spatial resolution, temporal resolution (how frequently data collected over a given spot on the Earth will be available), spectral bands used, collection volume, etc. (see ''substantially the same'' definition in § 960.4). In other words, the Secretary's inquiry is whether the unenhanced data are a market substitute for unenhanced data from other sources, rather than the risk-focused question of whether the unenhanced data pose the same national security risks as other data.

Available: When considering the availability of unenhanced data outside the Secretary's control, the Secretary will consider whether they are ''readily and consistently obtainable by an entity or individual other than the U.S. Government or a foreign government'' (see definition of ''available'' at § 960.4, and discussion above). For purposes of Tier 1, Commerce will consider whether such an entity or individual is able, readily and consistently, to obtain unenhanced data from sources outside the Secretary's control, including foreign sources. This standard is intended to capture arm's-length transactions—essentially, where unenhanced data are available on the open market on ordinary commercial terms. Commerce will perform a thorough analysis using all information at its disposal, and broadly welcomes information from U.S. Government agencies and others to inform this analysis. Commerce also invites applicants to include evidence of the availability of relevant data along with their application (see Appendix A).

Section 960.6(a)(2): Tier 2: The analysis for whether a system is Tier 2 is similar as the analysis for Tier 1; please see above for discussion of the terms ''capable,'' ''unenhanced data,'' ''substantially the same,'' and ''available.'' However, a system is Tier 2 if the Secretary determines that it is capable of producing unenhanced data substantially the same as unenhanced data available only from systems licensed under this part. In other words, Tier 2 will consist only of Commerce-licensed remote sensing systems. Where a certain capability exists only among this group, it belongs in Tier 2 (see discussion of Tier 2 license conditions below) because a restriction placed on this group, such as a limited-operations directive, could effectively limit all access, globally, to such data.

Section 960.6(a)(3): Tier 3: Like with Tiers 1 and 2, the Secretary will determine whether a system is Tier 3 based on whether it is capable of producing unenhanced data substantially the same as otherwise available unenhanced data (see above discussions about those terms). Tier 3 consists of systems that are capable of producing unenhanced data that are not available from any sources. Essentially, Tier 3 consists of entirely novel capabilities. These must be treated differently than systems from which unenhanced data are already available (whether only from Commerce-controlled entities or otherwise), because the U.S. Government is unlikely to have had a chance yet to evaluate how to mitigate any risks the new capability will pose (see discussion below on § 960.10). Note that this does not mean that no such data exist—merely that they are not available as defined in this final rule. For example, if such data only exist due to another Tier 3 system, and that Tier 3 system is still operating under a temporary license condition (see discussion of § 960.10) that prohibits all dissemination of certain data, then a new system proposing to produce such data would also be Tier 3, because the only other such data in the world are not ''available.'' However, as soon as such data are ''available'' due to the expiration of the temporary condition, then the production of that data would no longer make a system Tier 3. All such systems would become Tier 2. Note also that a system's novelty (and therefore its categorization in Tier 3) is tied only to its unenhanced data. A system cannot be categorized as Tier 3 simply because the combination of its unenhanced data with other data, or the post-processing of its unenhanced data, would result in novel products. Commerce will look only to whether the system's unenhanced data alone are not substantially the same as any unenhanced data available anywhere in the world.

Section 960.6(c): The shift to ''tiers'' is also responsive to commenters who raised the concern that Commerce would not be able to update the technical categorization criteria in the proposed rule frequently enough to keep up with technological advances. As this paragraph demonstrates, the tiers in the final rule are dynamic and do not require rulemaking updates to reflect technological advances. Instead, as explained in this paragraph, systems will automatically move to lower-numbered tiers as the unenhanced data they are capable of producing become available. For example, a system might belong in Tier 2 if it is capable of collecting unenhanced SWIR data at 10 meters spatial resolution, and the only other 10-meter unenhanced SWIR data in the world are available only from U.S. remote sensing licensees. As soon as a system outside the Secretary's control (most likely a foreign remote sensing space system) makes substantially the same 10-meter SWIR unenhanced data available, this licensee would receive a Tier 1 license under the procedures in this paragraph. The licensee would no longer be required to comply with limited-operations directives. However, if the reverse happens (a system is Tier 1 due to a single foreign competitor producing the same unenhanced data, but the foreign competitor goes out of operation), the Tier 1 license would *not* become a Tier 2 license. The dynamic nature of this adjustment goes only in the direction of reducing the burdens to industry.

See § 960.13 for a discussion of how a system's tier may change to a higher-numbered tier if the Secretary grants the licensee's voluntary request for a license modification. Note, too, that it is possible that a license application that is significantly altered such that it is deemed withdrawn and refiled under § 960.5(d) may be categorized into a different tier (including a higher tier) than the original application.

Subpart C—License Application Review and License Conditions

Subpart C contains the standard for license grants and denials; license conditions that will apply to each tier, including how temporary license conditions will be set; compliance and monitoring; license modification and waiver procedures; and details about how licenses are terminated. The following provisions are of particular note.

Section 960.7 License Grant or Denial

Describes the application review process, which is now generally the same for all applications.

Section 960.7(a): Consistent with public comment, a presumption of approval applies equally to all applications. Applications are granted or denied based on the Secretary's determination whether the applicant will comply with all legal obligations, and applicants are presumed to comply unless the Secretary has specific, credible evidence to the contrary. The Secretary cannot deny a license based on the capabilities of the proposed system or any determination of risk to national security.

Section 960.7(b): Consistent with public comment, the Secretary will make a grant or denial determination on all applications within 60 days. If no determination is made within that time, the applicant can request a determination, which must be provided within three days unless the Secretary and applicant agree to extend the review period in unusual circumstances.

Section 960.8 Standard License Conditions for All Tiers

This section contains conditions that will be included in licenses for all tiers of systems. It primarily consists of those required to be included in licenses by the Act or other law.

Section 960.8(a)(3): One commenter raised privacy and civil liberty concerns regarding the condition requiring the licensee to provide unenhanced data of a government's territory to that government, noting the potential use of such data. The Act requires Commerce to include this condition, so Commerce cannot lawfully omit this condition. Commerce also notes that the origin of this is a resolution adopted in 1986 by the United Nations General Assembly: ''Principles Relating to Remote Sensing of the Earth from Outer Space.''

Commenters were split on the proposed rule's decision not to designate any data under 51 U.S.C. 60121(e), which resulted in licensees not being required to make any unenhanced data available to the Department of the Interior before deleting any such data. One suggested that the requirement under the existing regulations (that all data must be made available before deletion) is not burdensome and should be retained, while others disagreed. Commerce is choosing to keep the proposed rule's approach designating no data required to be offered, but to avoid any confusion, Commerce removed the standard condition found in the proposed rule. Licensees will not be required to notify Commerce or offer unenhanced data to Interior before purging such data. Commerce believes there is a burden to requiring licensees to store and archive data that they may not otherwise wish to retain, and to seek permission before purging it. However, licensees may offer to donate such data, especially archived data, if they so choose. Commerce can provide any interested licensees with appropriate contacts at the Department of the Interior.

Section 960.8(a)(4): The ANPRM raised the issue of whether Commerce should require liability insurance, perhaps as an alternative to specifying acceptable means of satellite disposal in the regulations, as either option would address the U.S. Government's policy of minimizing orbital debris and reduce the U.S. Government's potential liability for damages caused by licensees under the Convention on International Liability for Damage Caused by Space Objects. In response to ANPRM comments, the proposed rule did not require liability insurance. While one commenter noted that the proposed rule, by not requiring licensees to obtain liability insurance, places risk on the U.S. Government and taxpayers, other commenters supported the decision to require compliance with generally accepted disposal guidelines instead.

However, as a commenter noted, nearly all Commerce-licensed systems are also licensed by the Federal Communications Commission (FCC), and FCC licenses already address orbital debris and disposal issues in a comprehensive manner (and are in the process of being revised, subject to a separate public rulemaking process (84 FR 4742, February 19, 2019)). To avoid duplicative regulation, Commerce has opted to defer to FCC license requirements regarding orbital debris and spacecraft disposal, and therefore there is no longer any license condition requiring specific orbital debris or spacecraft disposal practices in this final rule, and Commerce licenses will not include any such condition. § 960.8(a)(4) simply contains the text required by the Act: That ''upon termination of operations under the license, [the licensee shall] make disposition of any satellites in space in a manner satisfactory to the President.'' Commerce clarifies that, until further updates, the disposition manner satisfactory to the President is to follow the relevant FCC license.

Note, however, that Commerce may issue guidance or undertake a separate, narrow rulemaking to revise this license condition as future developments may warrant.

Section 960.8(a)(5): Commerce consolidated all reporting requirements into one condition and increased the time to report to seven days. As noted above, Commerce revised the definition of anomaly in response to comments so fewer anomalies would fall under this condition and require reporting.

Section 960.8(a)(7): In response to a comment, all systems now require only annual certification of the continued accuracy of material facts in the license, as opposed to semiannual reporting as required for some systems in the proposed rule. See discussion of § 960.14 for more details about this certification.

Section 960.8(a)(8): The rule retains the possibility of physical site inspections, but does not require them. It now provides a minimum of 48 hours' notice, but does not require any prior evidence to suggest non-compliance or risk, as some commenters requested. This is an important tool to ensure compliance. Commerce disagrees with comments suggesting that physical inspections are always outdated and cost-ineffective, but Commerce will continually evaluate whether particular inspections are necessary. Note that in response to comments, Commerce greatly restricted the definition of a system, which has the effect of limiting the facilities that could be subject to inspection. For example, because data storage facilities are now excluded from the definition of a system, if system data are stored in a commercial cloud, Commerce will not require the ability to inspect those physical data centers.

Section 960.8(a)(9): In response to comments, the rule does not specify a resolution threshold for imagery over the State of Israel. Instead, Commerce will regularly evaluate the resolution available from commercial sources, using the definition of ''available'' found in this part, and specify the requirement in the **Federal Register**. Commerce encourages the public to provide evidence of data available from commercial sources of the State of Israel at a resolution finer than our latest **Federal Register** notice. At the time of

issuance of this final rule, the latest such notice sets this resolution threshold at 2 meters spatial resolution (83 FR 51929, October 15, 2018).

Section 960.9 Additional Standard License Conditions for Tier 2 Systems

Tier 2 systems have no conditions restricting the operation of the system apart from the requirements to: (1) Obtain the written consent of the owner of an Artificial Resident Space Object (ARSO) before conducting resolved imaging of the ARSO and providing the Secretary notification five days in advance of such imaging and, (2) comply with limited-operations directives. The proposed rule contained significantly restrictive conditions on specific types of imaging, including NTI, SWIR, and SAR. Future updates to the regulations could have revised or removed some of these restrictions, but also could have added new restrictions for other imaging types. Commenters were strongly opposed to these conditions as they applied to high-risk systems in the proposed rule. Accordingly, Commerce has removed them altogether. There are no permanent conditions restricting any imaging techniques in this final rule. Furthermore, because Commerce has previously licensed all of the above techniques, all such systems would either be Tier 1 or Tier 2 and therefore have no possibility of additional conditions, unless they produce unenhanced data that are novel in some way, in which case they would be categorized as Tier 3.

Section 960.9(a)(1): To ensure compliance if a limited-operations directive is issued in an emergency, Tier 2 systems must be capable of encrypting telemetry tracking and control and data specified in the limited-operations directive. Tier 2 systems must also be capable of implementing other best practice measures to prevent unauthorized access to the system. For the purposes of complying with this condition, however, such encryption and other measures need not be active in the absence of a current limited-operations directive, so long as the system can immediately comply with a directive when it is issued. Note that during an inspection or investigation, Commerce may require the licensee to demonstrate that sufficient encryption and other measures could become active immediately as though a limited-operations directive had just been issued. If the licensee is unable to demonstrate this ability, the licensee would be out of compliance with this condition even absent a real-world limited-operations directive. Through this structure, Commerce is striking a balance between some commenters' request that Commerce not require specific encryption, and the legitimate need to encrypt sensitive data in the event of a national-security emergency.

It is Commerce's understanding, at the time of this writing, that encryption of data in some or all cases cannot be turned on and off. Therefore, Commerce believes that, in those cases, licensees will in practice be required to encrypt data at all times; otherwise, they will not be able to turn encryption on immediately in the event of a limited-operations directive, which means they would already be in violation of this license condition. However, Commerce welcomes updated information about the technical capabilities in this area.

While some comments supported the proposed rule's approach requiring National Institute of Standards and Technology (NIST)-approved encryption, one commenter suggested this was overly prescriptive. Commerce believes that this approach provides some benchmark of what encryption will be acceptable during an emergency, which provides a ''safe harbor'' for licensees who want to ensure that their preparation for a limited-operations directive will suffice. However, Commerce notes that applicants and licensees can always seek a waiver or modification if they prefer to take a different approach. Also in response to comments, Commerce will no longer require completion of a NIST Cybersecurity Framework document, and industry best practice is relative to the system operator's business size. Nonetheless, Commerce has provided some best practice factors above in the preamble to this final rule for licensees to consider regarding cybersecurity.

Section 960.10 Additional Standard and Temporary License Conditions for Tier 3 Systems

In addition to the standard license conditions in § 960.9 applicable to Tier 2, Tier 3 systems will need to comply with possible temporary conditions. This section describes the process for imposing such temporary conditions.

Section 960.10(b): The first step in setting a temporary license condition on a Tier 3 system is Commerce's notification to the Secretaries of Defense and State. The notified Secretaries will have 21 days from that notification to craft any temporary conditions. This limited time frame will avoid the long delays that have regularly occurred during the review of applications for novel phenomenologies. Importantly, the temporary condition must be designed to expire within one year from the date the Secretary obtains data suitable for evaluating the system's capabilities (generally, the date of initial operating capabilities). As explained above, temporary conditions are designed to give the U.S. Government an opportunity to mitigate the risk it foresees from novel technology; Commerce anticipates that one year will be sufficient, in many cases, to allow the U.S. Government to understand how to mitigate such risk (see discussion of § 960.10(e) for information about extensions).

Section 960.10(c): Commerce will not simply impose the Secretary of Defense or State's proposed temporary condition directly in a Tier 3 license. Instead, this paragraph lays out the stringent criteria and process through which Commerce will evaluate the proposed condition. The relevant criteria include considerations of applicable law, with the intent to ensure that the condition is as narrowly tailored to the risk as possible. Also, this paragraph specifies that Commerce will consult with the Secretary requesting the condition and with the applicant or licensee. This consultation is aimed at resulting in the least restrictive possible temporary condition. Of particular note, the paragraph considers whether the applicant or licensee can mitigate the concern another way: This is intended to give the applicant or licensee an opportunity to creatively alter their technical or business plan, if possible, to avoid the identified risk.

Section 960.10(e): Commerce recognizes that, in some cases, an extension of the temporary condition beyond one year may be necessary. However, Commerce also recognizes that indefinite extensions would render temporary conditions effectively permanent, meaning that applicants would have no certainty that the conditions will actually expire at some point and allow them to fully exploit their system's capabilities. This paragraph attempts to strike an appropriate balance between those concerns. It sets out stringent requirements for Commerce to extend a temporary condition at the request of the Secretary of Defense or State. These requirements include notification no less than 60 days before the expiration of the condition (to give licensees fair notice of a potential extension) and a showing of the necessity of continuing the condition under paragraph (c). If Commerce finds these requirements are met, it may extend the temporary condition for one year. With the exception of a request specifically from the Secretary of Defense or State and the requisite showing of need, Commerce

may not grant more than two one-year extensions. Therefore, a temporary condition will, absent an approved Secretarial request, last for an absolute maximum of three years. Commerce anticipates that no more than three years should be needed for the U.S. Government to take necessary steps to protect itself from a new technology. Even if the U.S. Government is unable to mitigate to the level it would like to, by this point, it is likely that foreign capabilities would be under development, and allowing temporary conditions to possibly become permanent would only encourage the development of such foreign capabilities.

Section 960.10(f): Some comments raised concerns with the number of times in the proposed rule that Commerce would consult with the Secretaries of Defense and State, because each consultation required any disagreement to be resolved via the MOU, potentially resulting in prolonged delays. Due to the philosophical changes described above, Commerce does not need to consult with other agencies under the final rule nearly as often as it would under the proposed rule. Moreover, most of the consultations that remain do not require interagency concurrence. Temporary conditions, as discussed further below, are a unique exception that require the expertise and authority of the Departments of Defense and State. Accordingly, § 960.10(e) is the sole provision to use the MOU's complete interagency dispute resolution procedures in the final rule. Note that § 960.6(b) uses the MOU's interagency dispute resolution procedures as well, but only the higher level procedures, and only after an Assistant Secretary has asked the Secretary to reconsider a system categorization.

Section 960.11 No Additional Conditions

This confirms that neither Commerce nor the Departments of Defense or State may impose any conditions on a system other than those described in §§ 960.8, 960.9, 960.10, and temporary conditions developed pursuant to the process in § 960.10. Therefore, existing conditions (including Geographic Exclusion Areas, license appendices, and Data Protection Plan requirements) will not automatically or permanently be included in any license. This inability to impose any additional conditions also includes a ban on ''retroactive'' conditions (that is, conditions required by the U.S. Government after license issuance, other than due to a licensee's voluntary request for a license modification), which is consistent with many comments which indicated the possibility of such conditions were very harmful to individual companies, investment, and the reputation of the U.S. business environment. The Act still contains an authority for retroactive conditions: 51 U.S.C. 60147(d) allows Commerce to require the Secretary of Defense to reimburse a licensee for imposing a technical modification. However, because § 960.11 now prohibits Commerce from imposing any retroactive conditions, the question of reimbursing licensees for any such conditions is moot.

Note that additional conditions may be necessary if a licensee voluntarily requests a license modification, and the modification would require the system's re-categorization to Tier 3, which can involve temporary conditions (see § 960.13(b)). But in that case, the licensee will have an opportunity to withdraw or revise the modification request if the licensee wishes to avoid any such conditions.

Section 960.12 Applicant-Requested Waiver Before License Issuance

For clarity, Commerce moved these provisions into their own section, whereas the proposed rule included them along with the standard license conditions for low- and high-risk conditions. On a related note, some commenters requested that Commerce eliminate the provision that certain standard conditions in the proposed rule could not be waived. Commerce notes that those conditions were largely ones that were required by the Act (51 U.S.C. 60122) or other law, so Commerce may not have the authority to waive them. Nevertheless, Commerce now addresses this issue in § 960.12 by requiring the Secretary to determine, before granting a waiver (or perhaps adjusting a condition, rather than waiving it altogether), that granting the waiver or adjustment would not violate the Act or other law. Consequently, Commerce has removed the distinction between inherently waivable and non-waivable conditions.

Section 960.13 Licensee-Requested Modifications After License Issuance

This section contains the process for requesting a modification to a license. Such a modification could be to change a material fact in the license or to amend a license condition. As described in the definitions, ''waiver'' will exclusively refer to a request to amend a license condition prior to license issuance, while ''modification'' will refer to a request to amend the text of the license after license issuance.

Section 960.14 Routine Compliance and Monitoring

Commerce notes that the minimal compliance and monitoring requirements in this section are intended to streamline, to the greatest extent possible, all paperwork burdens for licensees. But licensees must understand how critical it is to comply with this requirement carefully. Once each year, licensees will be required to certify that each material fact in their license remains true (see ''material fact'' definition in § 960.4). The annual certification is not a substitute for a license modification request; instead, if a material fact is no longer true at the time of the annual certification, the licensee is already out of compliance with the requirement to obtain approval for a license modification prior to a change in any material fact (see § 960.16(d)).

Subpart D—Prohibitions and Enforcement

Subpart D contains prohibitions and enforcement mechanisms. The following provisions are of particular note.

Section 960.16 Prohibitions

Section 960.16(a): This clarifies that a person (whether an individual or a legal entity; see definition of ''person'' in § 960.4) is prohibited from operating a remote sensing space system (see definition of ''private remote sensing space system'' in § 960.4) without a Commerce license, if (1) the person operates a system from a location within the United States, regardless of their nationality, or (2) the person is a U.S. person (see definition of ''U.S. person'' in § 960.4) who operates a system from any location.

Section 960.16(d): This clarifies that a licensee must not only refrain from violating license conditions (per § 960.16(b)), but must also obtain approval of a license modification before taking any action that would change a material fact in the license. For example, the location of the system's mission control center is a material fact included in the license template in appendix C. Prior to changing the location from the one listed in the license, the licensee must obtain approval of a license modification. Failing to do so violates the prohibition described in this paragraph.

Section 960.17 Investigations and Enforcement

This provision simply notes Commerce's statutory investigation and enforcement authorities without restating them. These authorities

include conducting investigations, issuing civil penalties, seizing objects pursuant to a warrant, and seeking an injunction from a U.S. district court to terminate, modify, or suspend licenses in order to investigate, penalize noncompliance, and prevent future noncompliance.

Subpart E—Appeals Regarding Licensing Decisions

Subpart E describes administrative appeals. The following provisions are of particular note.

Section 960.18 Grounds for Adjudication by the Secretary

This provision describes the types of actions subject to administrative appeal and the legal grounds for appeal of those actions.

Section 960.18(c): One commenter expressed concern with the exception for an appeal ''to the extent that there is involved a military or foreign affairs function of the United States.'' This exception, however, is required by the Administrative Procedure Act, 5 U.S.C. 554(a)(4). To clarify, a person may appeal an action that involves such a function, but any portion of the appeal that involves that function cannot be considered during the appeal. For example, the rationale for a temporary license condition under § 960.10 may involve a military function. A licensee may appeal to determine whether Commerce followed the correct administrative procedures, such as those in § 960.10, and considered the factors in paragraph (c), but the appellant could not appeal the military rationale itself.

Per multiple comments, Commerce has added the categorization of the system and the Secretary's failure to make a final determination on an application or modification request to the list of actions subject to appeal.

Section 960.19 Administrative Appeal Procedures

This provision describes the process for appealing one of the actions described in § 960.18.

Appendices

The appendices include (A) a sample application, (B) application instructions, (C) a sample license, and (D) the MOU.

Appendix A: Application

Note that all responses to questions in this application constitute material facts (see definition of ''material fact'' at § 960.4, and discussion of the importance of material facts in the preamble sections describing §§ 960.14 and 960.16 above).

In response to comments, Commerce dramatically increased the threshold for reporting foreign ownership: The proposed rule required reporting of *any* foreign ownership, but the final rule requires only the reporting of foreign ownership interests of 10 percent or greater, and only if the overall U.S. ownership is not at least 50 percent. Examples:

- Company A is 51 percent owned by a U.S. entity and 49 percent owned by a foreign entity. Company A does not need to list the foreign entity in its application (but it would need to list the U.S. entity, as it is a single owner with greater than 50 percent ownership).
- Company B is 40 percent owned by U.S. entities, and twelve foreign entities own 5 percent each. Although Company B is below majority U.S. ownership, none of the foreign owners have at least 10 percent ownership, so Company B does not need to list the foreign entities in its application.
- Company C is 25 percent owned by U.S. entities, 25 percent owned by foreign entity X, and ten other foreign entities own 5 percent each. Company C must report only foreign entity X.
- Company D is 40 percent owned by two different U.S. entities, and 10 percent owned by six different foreign entities. Company D must report those six foreign entities.

Because the final rule does not use the objective criteria the proposed rule used to categorize systems as low- or high-risk, Commerce will no longer consider whether there is ''no'' foreign investment when categorizing applicants. Many commenters raised concerns with this criterion. Instead, as discussed above, Commerce will only consider the availability of substantially the same unenhanced data when categorizing applicants. To aid this analysis, the application includes a number of questions about the technical capabilities of the proposed system.

Because the scope of the definition of ''private remote sensing space system'' (see § 960.4) is greatly reduced, the application now requests much less information about downstream components of the system. For example, there is no need to report the location of or any other details about any cloud storage facilities.

Appendix C: Sample License

As with the application, all facts included in the license will be material facts. Any deviation from these material facts requires approval of a license modification request.

Appendix D: 2017 Memorandum of Understanding (MOU)

Commerce appreciated the comments raising concerns about the frequent use of the MOU's dispute resolution and escalation procedures in the proposed rule. Due to these comments, and due to the dramatically decreased role of interagency consultation in the final rule, the final rule uses the MOU's dispute resolution procedures only twice: In § 960.10, and in an abbreviated manner in § 960.6. Under all other circumstances, Commerce will make regulatory determinations, consulting with another agency as appropriate, as specified in the rule. Please also see the discussion of the refined definition of ''MOU'' in § 960.4.

Other Comments

Some commenters requested that Commerce address privacy concerns. However, such concerns are outside the scope of the Act. These requests are better addressed to Congress.

Some commenters asked for an explicit statement that Commerce would respect the protections afforded under the Freedom of Information Act for proprietary information. Commerce understands the concern, but wishes to reassure the public that regardless of any explicit statement in the final rule, Commerce will follow all legal requirements to protect trade secrets and commercial proprietary information. Commerce believes that it is superfluous to say so in the final rule.

Conversely, at least two commenters asked Commerce to make applications and licenses publicly available. Due to the risk of exposing proprietary information, Commerce cannot make full applications or licenses available. Additionally, due to the philosophical approach that the rule should impose as few requirements on licensees as possible, Commerce will not require licensees to prepare publicly releasable summaries. However, Commerce may make non-privileged summaries of licensed systems available in its discretion.

Classification

Background

Commerce has evaluated whether this rule is a logical outgrowth of the proposed rule as required by the Administrative Procedure Act (APA, 5 U.S.C. 500 *et seq.*). Commerce has also examined the impacts of this rule as required by E.O. 12866 on Regulatory Planning and Review (September 30, 1993), E.O. 13563 on Improving Regulation and Regulatory Review (January 18, 2011), E.O. 13771 on

Reducing Regulation and Controlling Regulatory Costs (January 30, 2017), the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*), the Paperwork Reduction Act (PRA, 44 U.S.C. 3501 *et seq.*), the National Environmental Policy Act (42 U.S.C. 4321 *et seq.*), the Unfunded Mandates Reform Act (2 U.S.C. 1531 *et seq.*), E.O. 13132 (August 10, 1999), E.O. 13175 (November 9, 2000), and the Congressional Review Act (5 U.S.C. 801 *et seq.*).

Logical Outgrowth—APA

Commerce acknowledges that some of the changes between the proposed rule and the final rule may appear dramatic to some. However, Commerce believes that the changes are logical outgrowths of the proposed rule, as required by the APA. The APA's logical outgrowth requirement is directed at ensuring that the public had adequate notice of the final rule that could result from a proposed rule, so that the public had an opportunity to comment on all matters. As a result, a final rule is a logical outgrowth of a proposed rule if the public should have anticipated that certain changes were possible.

In this case, the two most significant changes between the proposed rule and the final rule are: (1) The elimination of nearly all permanent operational license conditions, and (2) the revised approach to categorizing systems. Importantly, Commerce specifically called attention to these two areas and requested comment on them. The proposed rule's preamble reads: ''Of particular note, Commerce seeks feedback on the proposed rule's criteria used to distinguish between low- and high-risk systems, and the standard license conditions proposed for low- and high-risk systems, respectively (including cost of complying with such conditions and suggested alternative approaches).'' 84 FR 21283.

As for the first major change, removing most operational conditions: Public comments were in nearly unanimous agreement that the proposed rule's operational conditions were too stringent. Commerce believes that it was foreseeable that Commerce might remove these proposed conditions, and courts have recognized that it is always foreseeable that an agency may drop a portion of a proposed rule. See *Mid Continent Nail Corp.* v. *United States,* 846 F.3d 1364, 1374 (Fed. Cir. 2017).

The second major change was from categorizing systems into high-risk and low-risk categories, based on an objective set of technical criteria to evaluate risk, to the final rule's approach of categorizing systems into tiers based on commercial availability. Commerce believes that this change was foreseeable to commenters. First, several commenters, including NOAA's Advisory Committee on Commercial Remote Sensing, specifically requested this change, which suggests that the public in fact foresaw that possibility.

Moreover, this change may appear larger than it truly is from an APA perspective: Under both the proposed rule's and final rule's approach, Commerce would treat categories of licensees proportionally, in a predictable, uniform way. Under the proposed rule, Commerce proposed to do this by looking only to risk: The logic was that a system should have conditions commensurate to the amount of risk that the system posed to U.S. Government. But commenters pointed out that the U.S. Government would act illogically if it looked at U.S. systems in a vacuum, not considering the capabilities of comparable systems abroad. As a result, some commenters suggested categorizing systems based on commercial availability, and Commerce accepted this suggestion.

This approach does not abandon the consideration of risk. Instead, the final rule logically tailors the U.S. Government's consideration of risk to those types of capabilities that the U.S. Government can uniquely control. Specifically, the final rule distinguishes between Tiers 1 (no exclusive U.S. control) and 2 (exclusive U.S. control) systems, and it creates Tier 3 (exclusive U.S. control over completely novel capability), recognizing the potential for unforeseeable risk posed by truly novel systems. In other words, the new tiering approach is conceptually derived from the proposed rule's risk-focused approach, but it is informed by public comment and results in a rational outcome, wherein the categories (now called tiers) are tied to the amount of control over a system that the U.S. Government realistically can exert. Therefore, Commerce believes that this change, like the changes to the permanent operating conditions, is a logical outgrowth of the proposed rule.

The other, more minor, changes in the draft final rule as compared with the proposed rule are all the direct result of public comment. For example, Commerce reduced the scope of its jurisdiction over remote sensing in the orbit of celestial bodies other than Earth; scoped down the definition of ''anomaly;'' and scoped down the definition of ''remote sensing'' and ''remote sensing space system.'' All of these changes were specifically requested by public comments to the proposed rule, as invited by the proposed rule. Commerce believes that these changes, therefore, were reasonably foreseeable and meet the requirements of logical outgrowth.

For these reasons, Commerce believes that the final rule represents a logical outgrowth of the proposed rule. However, because Commerce recognizes that the final rule is substantially revised from the proposed rule, Commerce is issuing this final rule as a final rule with comment period. This will provide 30 days for additional public comment. After this point, assuming the public does not provide comments that justify further revising the final rule, the final rule will go into effect after 60 days from publication.

Regulatory Planning and Review—E.O.s 12866 and 13563

E.O.s 12866 and 13563 direct agencies to assess all costs and benefits of available regulatory alternatives and, if regulation is necessary, to select regulatory approaches that maximize net benefits (including potential economic, environmental, public health and safety effects, distributive impacts, and equity). Section 3(f) of E.O. 12866 defines a ''significant regulatory action'' as an action that is likely to result in a rule (1) having an annual effect on the economy of $100 million or more in any single year, or adversely and materially affecting a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or state, local or tribal governments or communities (also referred to as ''economically significant''); (2) creating a serious inconsistency or otherwise interfering with an action taken or planned by another agency; (3) materially altering the budgetary impacts of entitlement grants, user fees, or loan programs or the rights and obligations of recipients thereof; or (4) raising novel legal or policy issues arising out of legal mandates, the President's priorities or the principles set forth in the E.O. This rule is significant under E.O. 12866.

E.O. 13563 reaffirms the principles of E.O. 12866 while calling for improvements in the nation's regulatory system to promote predictability, to reduce uncertainty, and to use the best, most innovative, and least burdensome tools for achieving regulatory ends. The E.O. directs agencies to consider regulatory approaches that reduce burdens and maintain flexibility and freedom of choice for the public where these approaches are relevant, feasible, and consistent with regulatory objectives. E.O. 13563 emphasizes further that regulations must be based on the best available science and that the rulemaking process must allow for

public participation and an open exchange of ideas. Commerce has developed this rule in a manner consistent with these requirements.

This rule is consistent with E.O. 13563, and in particular with the requirement of retrospective analysis of existing rules, designed ''to make the agency's regulatory program more effective or less burdensome in achieving the regulatory objectives.'' The final rule is dramatically less burdensome for the regulated community because it eliminates most permanent license conditions and makes any specialized license conditions temporary. Additionally, it greatly reduces paperwork burdens and associated administrative costs. For example, while the proposed rule required much of the regulated community to file a certification of compliance biannually, the final rule only requires such filing annually.

Commerce believes that there is substantial information demonstrating the need for and consequences of the proposed action because it has engaged with the industry and the public in recent years, including through ACCRES, to study changes in the industry. Through direct contact with the remote sensing space industry, ACCRES, and other fora, Commerce is well informed about the growth in the industry and the challenges imposed by the existing regulations. Commerce also sought public input on the proposed rule to obtain even more information about the need for and consequences of its proposed course of action. Commerce has incorporated the public comments to the greatest extent feasible to reduce the regulatory burden.

Commerce believes that the rule will reduce the monetary and non-monetary burdens imposed by the regulation of remote sensing. Moreover, Commerce believes that the potential benefits to society resulting from the rule are large relative to any potential costs, primarily because it is the longstanding policy of the United States to endeavor to keep the United States as the world leader in the strategic remote sensing industry. Because the final rule is structured to ensure that U.S. remote sensing licensees cannot be subject to greater burdens than their foreign counterparts, Commerce believes that the final rule will promote this policy.

In Commerce's view, the benefit to society of this regulatory program is that it promotes the growth and continued innovation of the U.S. remote sensing industry, which is a significant component of the U.S. commercial space sector. Another benefit to society is to preserve long-term U.S. national security, which is admittedly difficult to quantify. Due to the national security benefits that accrue, it is critical that the most innovative and capable remote sensing systems be licensed to do business from within the United States. A regulatory approach that is less burdensome to industry and thereby encourages businesses not to leave the United States, therefore, is a benefit to U.S. national security. In addition, a regulatory approach that encourages potential foreign operators of private remote sensing systems to choose to be licensed in and operate from the United States also significantly benefits U.S. national security.

Commerce believes that the rule will result in no incremental costs to society as compared with the status quo. Generally, the costs to society that might be expected from regulations implementing the Act would be additional barriers to entry in the remote sensing field, and increased costs to operate in this industry. However, the rule takes a significantly lighter regulatory approach than the existing regulations, eliminating most permanent license conditions, and increases certainty, transparency, and predictability, while still allowing Commerce to preserve U.S. national security and observe international obligations as required by the Act. For these reasons, Commerce believes that the benefits of the proposed rule vastly outweigh its costs, which are expected to be reduced by the rule.

E.O. 13771

As described in the preamble, the rule dramatically decreases regulatory burdens. For example, the rule eliminates most license conditions, and makes all license-specific license conditions temporary. It also decreases administrative burdens associated with compliance, such as by eliminating much of the paperwork burden (see below section on Paperwork Reduction Act impacts) and by decreasing the amount and frequency of reporting requirements. Accordingly, Commerce has determined that the rule is a deregulatory action under E.O. 13771.

Regulatory Flexibility Act

Under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*), whenever a Federal agency is required to publish a notice of rulemaking for any proposed rule, it must prepare a regulatory flexibility analysis (RFA) that describes the effect of the rule on small entities (*i.e.,* small businesses, small organizations, and small government jurisdictions). Accordingly, Commerce has prepared the below RFA for this rule.

This RFA describes the economic impact this rule is anticipated to have on small entities in the space-based remote sensing industry (NAICS 336414, defined as having fewer than 1,250 employees). A description of the reasons for the action, the objectives of and legal basis for this action are contained in the preamble. The reporting, recordkeeping, and compliance requirements are described in the Paperwork Reduction Act analysis below and the Subpart-by-Subpart Overview. Commerce does not believe there are other relevant Federal rules that duplicate, overlap, or conflict with this rule.

At the time of the last issuance of a final rule on this subject, Commerce found that the rule would not have a significant economic impact on a substantial number of small entities due to the ''extraordinary capitalization required'' to develop, launch, and operate a private remote sensing space system. Since that time, significant technological developments have greatly reduced these costs: For example, such developments have resulted in reduced costs to launch partly due to greater competition, and small satellites have become cheaper to produce due to standardization. These changes and others have enabled small businesses, universities, secondary and elementary school classes, and other small entities to enter this field. Based on an analysis of the last decade's license applications and an attempt to project those trends into the future, Commerce estimates that several dozen and up to a couple hundred small entities may be affected by this rule in the years to come.

Commerce received public comment on the question of whether economic benefits would accrue to small businesses under the proposed rule. A major difference between the proposed rule and the final rule is that the proposed rule would have categorized entities not based on whether their unenhanced data are available, but based on the objective risk they posed to national security. The objective criteria for this analysis in the proposed rule were so stringent that, according to public comment, very few businesses (including small businesses) would have benefited from the light regulatory touch of the proposed rule's ''low risk'' category. Commerce has taken into account these public comments, and believes that the final rule will be much more economically advantageous for small businesses than the proposed rule would have been.

Commerce has attempted to minimize the economic impact to small businesses in its final rule. Most notably, Commerce will evaluate applicants and licensees on the basis of whether the unenhanced data their system can collect is substantially the same as unenhanced data otherwise available, and not under the control of Commerce. If it is, Commerce will treat that system with a very light regulatory touch, applying the bare minimum of regulatory requirements. For example, if an applicant proposes to collect panchromatic imagery at a spatial resolution of 2 meters, and substantially the same unenhanced data are available from foreign sources on the open market Commerce will treat that system as ''Tier 1,'' resulting in the system being granted a license with very few conditions and regulatory requirements. Commerce anticipates that most small businesses will fall into this category. Therefore, Commerce anticipates that small businesses will receive a significant economic benefit under this rule, as compared with the status quo.

Even if small businesses operate systems that would be categorized as Tier 2 or Tier 3 under the final rule, the majority of them will nevertheless receive significant benefits compared to the status quo. These systems will receive the same bare minimum license conditions as those categorized as Tier 1, with the addition of the consent and notification requirement for conducting resolved ARSO imaging and requirement to comply with limited-operations directives, and some associated requirements to be able to protect sensitive data. Additionally, Tier 3 licensees may receive temporary, system-specific license conditions. As compared with the status quo, even systems such as these will have far fewer regulatory requirements.

Commerce considered five alternatives to the proposed rule. The first four alternatives, none of which garnered support in the public comments, were to:

1. Retain the status quo and not update the regulations;

2. Retain the bulk of the existing regulations and edit them in minor ways only to account for technological changes since 2006;

3. Repeal the status quo regulations and not replace them, instead relying solely on the terms of the Act; or

4. Update the status quo regulations to provide an expanded role for the Departments of Defense and State, and the Office of the Director of National Intelligence, in recognition of the threat to national security posed by some of the latest technological developments.

A fifth alternative became clear after the proposed rule: Commerce could have gone forward with the proposed rule's approach of categorizing systems based on risk and imposing permanent license conditions. However, that approach would have been less responsive to public comment, which favored a lighter regulatory touch and more flexible categorization of systems (not based on objective technical criteria).

Paperwork Reduction Act

This rule contains a revised collection-of-information requirement subject to the Paperwork Reduction Act (PRA, 44 U.S.C. 3501 *et seq.*) that will modify the existing collection-of-information requirement that was approved by OMB under control number 0648–0174 in January 2017. This revised requirement will be submitted to OMB for approval along with the rule.

Public reporting burden for this requirement is estimated to average: 15 hours for the submission of a license application; 1 hour for the submission of a notification of each deployment to orbit; 1 hour for the submission of notification of a system anomaly or disposal; 1 hour for notification of financial insolvency; 1 hour for a license modification request (if the licensee desires one); and 2 hours for an annual compliance certification. Commerce estimates that this burden is less than a fifth of the existing paperwork burden (an estimated 21 hours compared with 110). It is also less than the proposed rule's collection-of-information requirement, because the Cybersecurity Framework is no longer required, and all systems must only complete one annual compliance certification (whereas under the proposed rule, high-risk systems had to complete two certifications each year).

The public burden for this collection of information includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Regardless of any other provision of law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with, a collection of information subject to the requirements of the PRA, unless that collection of information displays a currently valid OMB Control Number.

For ease of comparison between the existing, proposed rule's, and final rule's paperwork burdens, Commerce provides the following table:

TABLE 1

Document	Existing burden (hrs)	Proposed rule (hrs)	Final rule (hrs)
Application	40	20	15
Data Protection Plan	23	n/a	n/a
Cybersecurity Framework	n/a	10	n/a
License Amendment (Modification)	10	1	1
Public summary	2	n/a	n/a
Foreign agreement notification	2	n/a	n/a
Completion of Pre-ship review	1	n/a	n/a
Information when Spacecraft Launches or Deploys; Disposal of Spacecraft; Detection of Anomaly; or Financial Insolvency or Dissolution.	8	5	5
Orbital Debris Mitigation Standard Practices Plan	Comparable to existing part of application	10	n/a
Planned Information Purge	2	n/a	n/a
Operational Quarterly Report	3	n/a	n/a
Semiannual Compliance Certification (high-risk only)	n/a	2	n/a
Annual compliance audit (certification)	8	2	2
Annual Operational audit	10	n/a	n/a
Total	110	48	21

National Environmental Policy Act

Publication of this rule does not constitute a major Federal action significantly affecting the quality of the human environment. Therefore, an environmental impact statement is not required.

Unfunded Mandates Reform Act (UMRA)

This action does not contain an unfunded mandate of $100 million or more as described in UMRA, 2 U.S.C. 1531–1538, and does not significantly or uniquely affect small governments.

E.O. 13132: Federalism

This action does not have federalism implications, as specified in E.O. 13132 (64 FR 43255, August 10, 1999).

E.O. 13175: Consultation and Coordination With Indian Tribal Governments

This action does not have tribal implications as specified in E.O. 13175 (65 FR 67249, November 9, 2000).

Congressional Review Act (CRA)

This action is subject to the CRA, 5 U.S.C. 801 *et seq.,* and Commerce will submit a rule report to each House of the Congress and to the Comptroller General of the United States. This action is a ''major rule'' as defined by 5 U.S.C. 804(2).

List of Subjects in 15 CFR Part 960

Administrative practice and procedure, Confidential business information, Penalties, Reporting and record keeping requirements, Satellites, Scientific equipment, Space transportation and exploration.

Dated: May 13, 2020.

Stephen Volz,

Assistant Administrator for Satellite and Information Services, National Oceanic and Atmospheric Administration, Department of Commerce.

■ For the reasons set forth above, 15 CFR part 960 is revised to read as follows:

PART 960—LICENSING OF PRIVATE REMOTE SENSING SPACE SYSTEMS

Subpart A—General

Subpart B—License Application Submission and Categorization

Subpart C—License Application Review and License Conditions

Subpart D—Prohibitions and Enforcement

Subpart E—Appeals Regarding Licensing Decisions

Authority: 51 U.S.C. 60124.

Subpart A—General

§ 960.1 Purpose.

(a) The regulations in this part implement the Secretary's authority to license the operation of private remote sensing space systems under the Land Remote Sensing Policy Act of 1992, as amended, codified at 51 U.S.C. 60101 *et seq.,* and are intended to promote continued U.S. private sector innovation and leadership in the global remote sensing industry.

(b) In carrying out this part, the Secretary takes into account the following considerations:

(1) Technological changes in remote sensing;

(2) Non-technological changes in the remote sensing space industry, such as to business models and practices;

(3) The relative burden to licensees and benefits to national security and international policies of license conditions;

(4) Changes in the methods to mitigate risks to national security and international policies;

(5) International obligations of the United States;

(6) The availability of data from sources in other nations;

(7) The remote sensing regulatory environment in other nations; and

(8) The potential for overlapping regulatory burdens imposed by other U.S. Government agencies.

§ 960.2 Jurisdiction.

(a) The regulations in this part set forth the requirements for the operation of private remote sensing space systems within the United States or by a U.S. person.

(b) Instruments used primarily for mission assurance or other technical purposes, including but not limited to navigation, attitude control, monitoring spacecraft health, separation events, or payload deployments, such as traditional star trackers, sun sensors, and horizon sensors, shall not be subject to this part.

(c) In the case of a system that is used for remote sensing and other purposes, as determined by the Secretary, the scope of the license issued under this part will not extend to the operation of instruments that do not support remote sensing.

(d) The Secretary does not authorize the use of spectrum for radio communications by a private remote sensing space system.

§ 960.3 Applicability to existing licenses.

(a) After reviewing each license existing prior to July 20, 2020, on July 20, 2020, the Secretary will either:

(1) Replace the existing license with one developed in accordance with this part, retaining any applicable waivers and modifications; or

(2) If the Secretary determines that an existing licensee no longer requires a license under this part the Secretary will notify the existing licensee that the license is terminated.

(b) The replacement license or termination determination will be effective 30 days after delivery by the Secretary to existing licensees. Existing licensees who object to their existing license being replaced or terminated must notify the Secretary in writing within those 30 days, and specify their objection in the notification.

§ 960.4 Definitions.

For purposes of this part, the following terms have the following meanings:

Act means the Land Remote Sensing Policy Act of 1992, as amended, codified at 51 U.S.C. 60101, *et seq.*

Anomaly means an unexpected event or abnormal characteristic affecting the operations of a system that could indicate a significant technical malfunction or security threat. Anomalies include any significant deviation from the orbit and data collection characteristics of the system.

Appellant means a person to whom the Secretary has certified an appeal request.

Applicant means a person who submits an application to operate a private remote sensing space system.

Application means a document submitted by a person to the Secretary that contains all the information described in appendix A of this part.

Available means readily and consistently obtainable by an entity or individual other than the U.S. Government or a foreign government.

Ground sample distance or *GSD* refers to the common measurement for describing the spatial resolution of unenhanced data created from most remote sensing instruments, typically measured in meters. A resolution ''finer than'' X meters GSD means the resolution is a number lower than X. For example, 5 meters GSD is finer than 10 meters GSD.

In writing or *written* means written communication, physically or electronically signed (if applicable), transmitted via email, forms submitted on the Secretary's website, or traditional mail.

License means a license granted by the Secretary under the Act.

Licensee means a person to whom the Secretary has granted a license under the Act.

Material fact means a fact an applicant provides in the application, or a fact in Parts C or D of a license.

Memorandum of Understanding or *MOU* means the April 25, 2017 version of the ''Memorandum of Understanding Among the Departments of Commerce, State, Defense, and Interior, and the Office of the Director of National Intelligence, Concerning the Licensing and Operations of Private Remote Sensing Satellite Systems,'' which is included as appendix D of this part. In the event that any provisions of the MOU conflict with this part, this part shall govern.

Modification means any change in the text of a license after issuance.

Operate means to have decision-making authority over the functioning of a remote sensing instrument. If there are multiple entities involved, the entity with the ultimate ability to decide what unenhanced data to collect with the instrument and to execute that decision, directly or through a legal arrangement with a third party such as a ground station or platform owner, is considered to be operating that system.

Person or *private sector party* means any entity or individual other than agencies or instrumentalities of the U.S. Government.

Private remote sensing space system or *system* means an instrument that is capable of conducting remote sensing and which is not owned by an agency or instrumentality of the U.S. Government. A system must contain a remote sensing instrument and all additional components that support operating the remote sensing instrument, receipt of unenhanced data, and data preprocessing, regardless of whether the component is owned or managed by the applicant or licensee, or by a third party through a legal arrangement with the applicant or licensee.

Remote sensing means the collection of unenhanced data by an instrument in orbit of the Earth which can be processed into imagery of surface features of the Earth.

Secretary means the Secretary of Commerce, or his or her designee.

Significant or substantial foreign agreement means a contract or legal arrangement with a foreign national, entity, or consortium involving foreign nations or entities, only if executing such contract or arrangement would require a license modification under § 960.13.

Subsidiary or affiliate means a person who directly or indirectly, through one or more intermediaries, controls or is controlled by or is under common control with, the applicant or licensee.

Substantially the same means that one item is a market substitute for another, taking into account all applicable factors. When comparing data, factors include but are not limited to the data's spatial resolution, spectral bandwidth, number of imaging bands, temporal resolution, persistence of imaging, local time of imaging, geographic or other restrictions imposed by foreign governments, and all applicable technical system factors listed in the application in appendix A of this part.

Unenhanced data means the output from a remote sensing instrument, including imagery products, which is either unprocessed or preprocessed. Preprocessing includes rectification of system and sensor distortions in data as it is received directly from the instrument in preparation for delivery to a user, registration of such data with respect to features of the Earth, and calibration of spectral response with respect to such data, but does not include conclusions, manipulations, or calculations derived from such data, or a combination of such data with other data.

U.S. person means:

(1) Any individual who is a citizen or lawful permanent resident of the United States; and

(2) Any corporation, partnership, joint venture, association, or other entity organized or existing under the laws of the United States or any State, the District of Columbia, Puerto Rico, American Samoa, the United States Virgin Islands, Guam, the Northern Mariana Islands, and any other commonwealth, territory, or possession of the United States.

Waiver means any change from the standard license text in § 960.8, § 960.9, or § 960.10, which change is included in a license upon license issuance, in response to a request by the applicant pursuant to § 960.12.

Subpart B—License Application Submission and Categorization

§ 960.5 Application submission.

(a) Before submitting an application, a person may consult informally with the Secretary to discuss matters under this part, including whether a license is likely to be required for a system.

(b) A person may submit an application for a license in accordance with the specific instructions found in appendix B of this part. The application must contain fully accurate and responsive information, as described in appendix A of this part. Responses an applicant provides to each prompt in the application constitute material facts.

(c) Within seven days of the submission, the Secretary shall determine, after consultation with the Secretaries of Defense and State, whether the submission is a complete application meeting the requirements of appendix A of this part. If the submission is a complete application, the Secretary shall immediately notify the applicant in writing. If the submission is not a complete application, the Secretary shall inform the applicant in writing of what additional information or clarification is required to complete the application.

(d) If any information the applicant submitted becomes inaccurate or incomplete at any time after submission to the Secretary but before license grant or denial, the applicant must contact the Secretary and submit correct and updated information as instructed by the Secretary. The Secretary will determine whether the change is significant. If the Secretary determines that the change is significant, the Secretary will notify the applicant within seven days of receipt of the correct and updated information that the revision constitutes a new application submission under paragraph (b) of this section, and that the previous application is deemed to have been withdrawn.

(e) Upon request by the applicant, the Secretary shall provide an update on the status of their application review.

§ 960.6 Application categorization.

(a) Within seven days of the Secretary's notification to the applicant under § 960.5(c) that the application is complete, the Secretary shall determine, after consultation with the Secretaries of Defense and State as appropriate, the category for the system as follows:

(1) If the application proposes a system with the capability to collect unenhanced data substantially the same as unenhanced data already available from entities or individuals not licensed under this part, such as foreign entities, the Secretary shall categorize the application as Tier 1;

(2) If the application proposes a system with the capability to collect unenhanced data substantially the same as unenhanced data already available, but only from entities or individuals licensed under this part, the Secretary shall categorize the application as Tier 2; and

(3) If the application proposes a system with the capability to collect unenhanced data not substantially the same as unenhanced data already available from any domestic or foreign entity or individual, the Secretary shall categorize the application as Tier 3.

(b) If the Secretary of Defense or State disagrees with the Secretary's determination in paragraph (a) of this section, the Secretary of Defense or State may notify the Secretary and request the Secretary's reconsideration. Such a request for reconsideration may not be delegated below the Assistant Secretary level. If the Secretary of Defense or State disagrees with the Secretary's reconsideration decision, the Secretary of Defense or State may appeal that tier categorization pursuant to the interagency dispute resolution procedures in Section IV(B) of the MOU, but only at the Advisory Committee on Private Remote Sensing Space Systems level or higher. The Secretary shall categorize the system in accordance with the decision resulting from such MOU procedures.

(c) The system shall remain in the tier assigned to it under paragraph (a) in this section until such time as the Secretary determines, after consultation with the Secretaries of Defense and State as appropriate, that the system belongs in a lower-numbered tier due to the advancement of non-U.S. commercial remote sensing capabilities or due to other facts, or until the Secretary grants the licensee's request for a license modification that results in re-categorization under § 960.13. When the Secretary determines that a lower-numbered tier is appropriate due to reasons other than a modification under § 960.13, the Secretary will notify the applicant or licensee in writing that the system falls under a lower-numbered tier than the one previously assigned under this section. Upon receiving that notification, the applicant or licensee will be responsible for complying only with the license conditions applicable to the new tier.

Subpart C—Application Review and License Conditions

§ 960.7 License grant or denial.

(a) Based on the Secretary's review of the application, the Secretary must determine whether the applicant will comply with the requirements of the Act, this part, and the license. The Secretary will presume that the applicant will comply, unless the Secretary has specific, credible evidence to the contrary. If the Secretary determines that the applicant will comply, the Secretary shall grant the license.

(b) The Secretary shall make the determination in paragraph (a) of this section within 60 days of the notification under § 960.5(c), and shall notify the applicant in writing whether the license is granted or denied.

(c) If the Secretary has not notified the applicant whether the license is granted or denied within 60 days, the applicant may submit a request that the license be granted. Within three days of this request, the Secretary shall grant the license, unless the Secretary determines with specific, credible evidence that the applicant will not comply with the requirements of the Act, this part, or the license, in which case the Secretary will deny the license, or the Secretary and the applicant mutually agree to extend this review period.

§ 960.8 Standard license conditions for all tiers.

All licenses granted under this part shall specify that the licensee shall:

(a) Comply with the Act, this part, the license, applicable domestic legal obligations, and the international obligations of the United States;

(b) Operate the system in such manner as to preserve the national security of the United States and to observe international obligations and policies, as articulated in the other conditions included in this license;

(c) Upon request, offer to the government of any country (including the United States) unenhanced data collected by the system concerning the territory under the jurisdiction of such government without delay and on reasonable terms and conditions, unless doing so would be prohibited by law or license conditions;

(d) Upon termination of operations under the license, make disposition of any satellites in space in a manner satisfactory to the President;

(e) Notify the Secretary in writing of each of the following events, no later than seven days after the event:

(1) The launch and deployment of each system component, to include confirmation that the component matches the orbital parameters and data collection characteristics of the system, as described in Part D of the license;

(2) Each disposal of an on-orbit component of the system;

(3) The detection of an anomaly; and

(4) The licensee's financial insolvency or dissolution;

(f) Request and receive approval for a license modification before taking any action that would change a material fact in the license;

(g) Certify that all material facts in the license remain accurate pursuant to the procedures in § 960.14 no later than October 15th of each year;

(h) Cooperate with compliance, monitoring, and enforcement authorities described in the Act and this part, and permit the Secretary to access, at all reasonable times and with no shorter notice than 48 hours, any component of the system for the purpose of ensuring compliance with the Act, this part, and the license; and

(i) Refrain from disseminating unenhanced data, or processed data or products derived from the licensee's system, of the State of Israel at a resolution finer than the resolution most recently specified by the Secretary in the **Federal Register** as being available from commercial sources.

§ 960.9 Additional standard license conditions for Tier 2 systems.

If the Secretary has categorized the system as Tier 2 under § 960.6, the license shall specify that the licensee shall comply with the conditions listed in § 960.8 and further shall comply with the following conditions until the Secretary notifies the licensee that the system belongs in a lower-numbered tier:

(a) Comply with limited-operations directives issued by the Secretary, in accordance with a determination made by the Secretary of Defense or the Secretary of State pursuant to the procedures in Section IV(D) of the MOU, that require licensees to temporarily limit data collection and/or dissemination during periods of increased concerns for national security and where necessary to meet international obligation or foreign policy interests; and:

(1) Be able to comply with limited-operations directives at all times. This includes:

(i) The ability to implement National Institute of Standards and Technology-approved encryption, in accordance with the manufacturer's security policy, wherein the key length is at least 256 bits, for communications to and from the on-orbit components of the system related to tracking, telemetry, and control and for transmissions throughout the system of the data specified in the limited-operations directive; and

(ii) Implementing measures, consistent with industry best practice for entities of similar size and business operations, that prevent unauthorized access to the system and identify any unauthorized access in the event of a limited-operations directive;

(2) Provide and continually update the Secretary with a point of contact and an alternate point of contact for limited-operations directives; and

(3) During any such limited-operations directive, permit the Secretary to immediately access any component of the system for the purpose of ensuring compliance with the limited-operations directive, the Act, this part, and the license.

(b) Conduct resolved imaging of other artificial resident space objects (ARSO) orbiting the Earth only with the written consent of the registered owner of the ARSO to be imaged and with notification to the Secretary at least five days prior to imaging. For purposes of this paragraph (b), ''resolved imaging'' means the imaging of another ARSO that results in data depicting the ARSO with a resolution of 3 x 3 pixels or greater.

§ 960.10 Additional standard and temporary license conditions for Tier 3 systems.

(a) If the Secretary has categorized the system as Tier 3 under § 960.6, the license shall specify that the licensee shall comply with the conditions listed in § 960.8 and further shall comply with the following conditions until the Secretary notifies the licensee that the system belongs in a lower-numbered tier for which the following conditions are not required:

(1) Comply with limited-operations directives issued by the Secretary, in accordance with a determination made by the Secretary of Defense or the Secretary of State pursuant to the procedures in Section IV(D) of the MOU, that require licensees to temporarily limit data collection and/or dissemination during periods of increased concerns for national security and where necessary to meet international obligations or foreign policy interests; and:

(i) Be able to comply with limited-operations directives at all times. This includes:

(A) The ability to implement National Institute of Standards and Technology-approved encryption, in accordance with the manufacturer's security policy, wherein the key length is at least 256 bits, for communications to and from the on-orbit components of the system related to tracking, telemetry, and control and for transmissions throughout the system of the data specified in the limited-operations directive; and

(B) Implementing measures, consistent with industry best practice for entities of similar size and business operations, that prevent unauthorized access to the system and identify any unauthorized access in the event of a limited-operations directive;

(ii) Provide and continually update the Secretary with a point of contact and an alternate point of contact for limited-operations directives; and

(iii) During any such limited-operations directive, permit the Secretary to immediately access any component of the system for the purpose of ensuring compliance with the limited-operations directive, the Act, this part, and the license.

(2) Conduct resolved imaging of other artificial resident space objects (ARSO) orbiting the Earth only with the written consent of the registered owner of the ARSO to be imaged and with notification to the Secretary at least five days prior to imaging, or as may otherwise be provided in a temporary license condition developed under paragraphs (b) and (c) of this section. For purposes of this paragraph (a)(2), ''resolved imaging'' means the imaging of another ARSO that results in data depicting the ARSO with a resolution of 3 x 3 pixels or greater.

(3) Comply with any temporary license conditions developed in accordance with paragraphs (b) and (c) of this section until their specified expiration date, including any extensions of the expiration date.

(b) To determine whether additional temporary license conditions are necessary, the Secretary shall notify the Secretaries of Defense and State of any system categorized as Tier 3 under § 960.6. The Secretaries of Defense and State shall determine whether any temporary license conditions are necessary (in addition to the standard license conditions in § 960.8) to meet national security concerns or international obligations and policies of the United States regarding that system. Within 21 days of receiving the notification, the Secretary of Defense or State shall notify the Secretary of any such conditions and the length of time such conditions should remain in place, which shall not exceed one year from the earlier of either when the licensee first delivers unenhanced data suitable for evaluating the system's capabilities to the Secretary (under reasonable terms and conditions or other mutually agreed arrangement with the Secretary of Defense or State), or when the Secretary of Defense or State first obtains comparably suitable data from another source, unless the length of such condition is extended in accordance with paragraph (e) of this section.

(c) The Secretary shall review the notification from the Secretary of Defense or State under paragraph (b) of this section and aim to craft the least restrictive temporary license condition(s) possible, before the expiration of the 60-day application review period under § 960.7(b). In crafting such conditions the Secretary shall consult, as appropriate, with the Secretaries of Defense and State and the applicant or licensee, to determine whether the proposed condition would be consistent with applicable laws. In making this determination, the Secretary shall consider whether:

(1) The risk addressed by the proposed condition is specific and compelling;

(2) The proposed condition would be effective against the risk;

(3) The proposed condition addresses only the data proposed to be collected that are not available from any domestic or foreign source;

(4) The U.S. Government cannot currently mitigate the risk without the proposed condition;

(5) The U.S. Government cannot address the risk by some less restrictive means than the proposed condition; and

(6) The applicant or licensee can mitigate the risk by taking alternative action.

(d) When considering the factors under paragraphs (c)(1) through (6) of this section, the Secretary shall accept as final the determinations made by the Secretary of Defense or State as appropriate, in such Secretary's notification to the Secretary of the need for such conditions. If the Secretary determines that a condition proposed by the Secretary of Defense or State would be consistent with applicable law, the Secretary shall include such condition in the license, absent any elevation of a dispute under paragraph (f) of this section.

(e) The Secretary will notify the Secretaries of Defense and State 90 days before the expiration of a temporary condition imposed under this section. If, within 30 days after such notification, either the Secretary of Defense or State notifies the Secretary that an extension is needed, the Secretary shall consult with the Secretary of Defense or State about the ongoing need for the temporary condition. The Secretary may extend the expiration date of the temporary condition for a maximum of one year, and may extend the condition no more than two times unless requested by the Secretary of Defense or State. The authority to request such additional extensions shall not be delegated by the Secretary of Defense or State. Therefore, absent a request specifically from the Secretary of Defense or State, any temporary condition may exist for no more than a total of three years. The Secretary shall grant an extension if the Secretary determines that:

(1) The Secretary requesting the extension has shown that the considerations in paragraph (c) of this section justify an extension; and

(2) The Secretary has notified the affected licensee no less than 60 days before the expiration of the temporary condition that an extension is being sought.

(f) If, at any point during the procedures in this section, the Secretary, the Secretary of Defense, or the Secretary of State objects to any determination, they may elevate the objection pursuant to the interagency dispute resolution procedures in Section IV(B) of the MOU.

§ 960.11 No additional conditions.

No other conditions shall be included in a license granted under this part, or imposed in such a license after the license has been issued, except in accordance with the provisions of § 960.13 or § 960.17.

§ 960.12 Applicant-requested waiver before license issuance.

As part of the application, the applicant may request that any condition listed in § 960.8, § 960.9, or § 960.10 be waived or adjusted. The Secretary may approve the request to waive or adjust any such condition if the Secretary determines, after consultation with the Secretaries of Defense and State as appropriate, that the Secretary may waive or adjust the condition without violating the Act or other law, and:

(a) The requirement is not applicable due to the nature of the applicant or the proposed system;

(b) The applicant will achieve the goal in a different way; or

(c) There is other good cause to waive or adjust the condition.

§ 960.13 Licensee-requested modification after license issuance.

(a) The licensee may request in writing that the Secretary modify the license after the license is issued. Such requests should include the reason for the request and relevant supporting documentation.

(b) If the Secretary determines that the requested modification of a license would result in its re-categorization from Tier 1 to Tier 2 under § 960.6, the Secretary shall notify the licensee that approval would require issuance of the conditions in § 960.9, and provide the licensee an opportunity to withdraw or revise the request.

(c) If the Secretary determines that the requested modification of a license would result in its re-categorization from Tier 1 or 2 to Tier 3 under § 960.6, the Secretary shall consult with the Secretaries of Defense or State, as appropriate, to determine whether approval of the request would require additional temporary conditions in accordance with the procedures in § 960.10. If so, the Secretary shall notify the licensee that approval would require such additional temporary conditions, and provide the licensee an opportunity to withdraw or revise the request.

(d) The Secretary shall approve or deny a modification request after consultation with the Secretaries of Defense and State as appropriate, and shall inform the licensee of the approval or denial within 60 days of the request, unless the Secretary and the applicant mutually agree to extend this review period.

§ 960.14 Routine compliance and monitoring.

(a) Annually, by the date specified in the license, the licensee will certify in writing to the Secretary that each material fact in the license remains accurate.

(b) If any material fact in the license is no longer accurate at the time the certification is due, the licensee must:

(1) Provide all accurate material facts;

(2) Explain the reason for any discrepancies between the terms in the license and the accurate material fact; and

(3) Seek guidance from the Secretary on how to correct any errors, which may include requesting a license modification.

§ 960.15 Term of license.

(a) The license term begins when the Secretary transmits the signed license to the licensee, regardless of the operational status of the system.

(b) The license is valid until the Secretary confirms in writing that the license is terminated, because the Secretary has determined that one of the following has occurred:

(1) The licensee has successfully disposed of, or has taken all actions necessary to successfully dispose of, all on-orbit components of the system, and is in compliance with all other requirements of the Act, this part, and the license;

(2) The licensee never had system components on orbit and has requested to end the license term;

(3) The license is terminated pursuant to § 960.17; or

(4) The licensee has executed one of the following transfers, subsequent to the Secretary's approval of such transfer:

(i) Ownership of the system, or the operations thereof, to an agency or instrumentality of the U.S. Government; or

(ii) Operations to a person who is not a U.S. person and who will not operate the system from the United States.

Subpart D—Prohibitions and Enforcement

§ 960.16 Prohibitions.

Any person who operates a system from the United States and any person who is a U.S. person shall not, directly or through a subsidiary or affiliate:

(a) Operate a system without a current, valid license for that system;

(b) Violate the Act, this part, or any license condition;

(c) Submit false information, interfere with, mislead, obstruct, or otherwise frustrate the Secretary's actions and responsibilities under this part in any form at any time, including in the application, during application review, during the license term, in any compliance and monitoring activities, or in enforcement activities; or

(d) Fail to obtain approval for a license modification before taking any action that would change a material fact in the license.

§ 960.17 Investigations and enforcement.

(a) The Secretary may investigate, provide penalties for noncompliance, and prevent future noncompliance, by using the authorities specified at 51 U.S.C. 60123(a).

(b) When the Secretary undertakes administrative enforcement proceedings as authorized by 51 U.S.C. 60123(a)(3) and (4), the parties will follow the procedures provided at 15 CFR part 904.

Subpart E—Appeals Regarding Licensing Decisions

§ 960.18 Grounds for adjudication by the Secretary.

(a) In accordance with the procedures in this subpart, a person may appeal the following adverse actions for adjudication by the Secretary:

(1) The denial of a license;

(2) The categorization of a system in a tier;

(3) The failure to make a final determination on a license grant or denial or a licensee's modification request within the timelines provided in this part;

(4) The imposition of a license condition;

(5) The denial of a licensee-requested license modification; and

(6) The replacement of an existing license with a license granted under § 960.3(a)(1) or termination of an existing license under § 960.3(a)(2).

(b) The only acceptable grounds for appeal of the actions in paragraph (a) of this section are as follows:

(1) The Secretary's action was arbitrary, capricious, or contrary to law; or

(2) The action was based on a clear factual error.

(c) No appeal is allowed to the extent that there is involved the conduct of military or foreign affairs functions.

§ 960.19 Administrative appeal procedures.

(a) A person wishing to appeal an action specified at § 960.18(a) may do so within 21 days of the action by submitting a written request to the Secretary.

(b) The request must include a detailed explanation of the reasons for the appeal, citing one of the grounds specified in § 960.18(b).

(c) Upon receipt of a request under paragraph (a) of this section, the Secretary shall review the request to certify that it meets the requirements of this subpart and chapter 7 of title 5 of the United States Code. If it does, the Secretary shall coordinate with the appellant to schedule a hearing before a hearing officer designated by the Secretary. If the Secretary does not certify the request, the Secretary shall notify the person in writing that no appeal is allowed, and this notification shall constitute a final agency action.

(d) The hearing shall be held in a timely manner. It shall provide the appellant and the Secretary an opportunity to present evidence and arguments.

(e) Hearings may be closed to the public, and other actions taken as the Secretary deems necessary, to prevent the disclosure of any information required by law to be protected from disclosure.

(f) At the close of the hearing, the hearing officer shall recommend a decision to the Secretary addressing all factual and legal arguments.

(g) Based on the record of the hearing and the recommendation of the hearing officer, and after consultation, as appropriate, with the Secretaries of Defense and State in decisions implicating national security and international obligations and policy, respectively, the Secretary shall make a decision adopting, rejecting, or modifying the recommendation of the hearing officer. This decision constitutes a final agency action, and is subject to judicial review under chapter 7 of title 5 of the United States Code.

Appendix A to Part 960—Application Information Required

To apply for a license to operate a remote sensing space system under 51 U.S.C. 60101, *et seq.* and this part, you must provide:

1. Material Facts: Fully accurate and responsive information to the following prompts under ''Description of Applicant (Operator)'' and ''Description of System.'' If a question is not applicable, write ''N/A'' and explain, if necessary.

2. Affirmation: Confirm by indicating below that there will be, at all times, measures in place to ensure positive control of any spacecraft in the system that have propulsion, if applicable to your system. Such measures include encryption of telemetry, command, and control communications or alternative measures consistent with industry best practice.

3. Your response to each prompt below constitutes a material fact. If any information you submit becomes inaccurate or incomplete before a license grant or denial, you must promptly contact the Secretary and submit correct and updated information as instructed by the Secretary.

Part A: Description of Applicant (Operator)

1. General Applicant Information

a. Name of Applicant (entity or individual):

b. Location and address of Applicant:

c. Applicant contact information (for example, general corporate or university contact information):

d. Contact information for a specific individual to serve as the point of contact with Commerce:

e. Contact information for a specific individual to serve as the point of contact with Commerce for limited-operations directives, if different than main point of contact, in the event that the applicant will receive a license in Tier 2 or Tier 3:

f. Place of incorporation and, if incorporated outside the United States, an acknowledgement that you will operate your system within the United States and are therefore subject to the Secretary's jurisdiction under this part:

2. Ownership interests in the Applicant:

a. If there is majority U.S. ownership: Report any domestic entity or individual with an ownership interest in the Applicant totaling at least 50 percent:

b. If there is not majority U.S. ownership: Report all foreign entities or individuals whose ownership interest in the Applicant is at least 10 percent:

c. Report any ownership interest in the Applicant by any foreign entity or individual on the Department of Commerce's Bureau of Industry and Security's Denied Persons List or Entity List or on the Department of the Treasury's Office of Foreign Asset Control's Specially Designated Nationals and Blocked Person List:

3. Identity of any subsidiaries and affiliates playing a role in the operation of the System, including a brief description of that role:

Part B: Description of System

1. General System Information

a. Name of system:

b. Brief mission description:

2. Remote Sensing Instrument(s) parameters

a. Sensor type (Electro Optical, Multi-Spectral (MSI), Hyperspectral (HSI), Synthetic Aperture Radar (SAR), Light Detection and Ranging (LIDAR), Thermal Infrared (TIR), etc.):

b. Imaging/frame rate in Hertz; pulse repetition frequency for SAR or LIDAR:

c. Spatial resolution in meters (show calculation for the anticipated finest ground spatial distance (GSD), impulse response (IPR), or other relevant appropriate unit of resolution):

d. Spectral range in nanometers:

e. Collection volume in area per unit time per spacecraft: Provide an estimate of the maximum number of square kilometers of which the system can provide data/imagery per hour or per minute. If this is a fast-framing system, consider each recorded frame as a separate image collected:

f. Ability of the remote sensing instrument to slew, point, or digitally look off-axis from the x, y, and z axes of travel:

3. If any entity or individual other than the Applicant will own, control, or manage any *remote sensing instrument* in the System:

a. Identity and contact information of that entity or individual:

b. Relationship to Applicant (*i.e.,* operating under Applicant's instructions under a contract):

4. Spacecraft Upon Which the Remote Sensing Instrument(s) is (are) Carried

a. Description:

b. Estimated launch date(s) in calendar quarter:

c. Number of spacecraft (system total and maximum in-orbit at one time):

d. For each spacecraft, provide the following (or if an entire constellation will have substantially the same orbital characteristics, provide these values for the entire constellation and note whether or not all spacecraft will be evenly spaced)

i. Altitude range in kilometers:

ii. Inclination range in degrees:

iii. Period (time of a single orbit):

iv. Longitude of the ascending node:

v. Eccentricity:

vi. Argument of perigee:

vii. Propulsion (yes/no). (If ''yes,'' you must complete the affirmation in the beginning of this application):

viii. Ability of the spacecraft to slew, point, or digitally look off-axis from the x, y, and z axes of travel:

5. If any entity or individual other than the Applicant will own, control, or manage any *spacecraft* in the System

a. Identity and contact information of that entity or individual:

b. Whether that entity or individual is a U.S. person:

c. Relationship to Applicant (*i.e.,* operating under Applicant's instructions under a contract):

6. Ground Components

a. Location of Mission Control Center(s) with the ability to operate the system, including where commands are generated:

b. Location of other Ground Station components of the system, meaning facilities that communicate commands to the instrument or receive unenhanced data from it, and facilities that conduct data preprocessing:

c. If any entity or individual other than the Applicant will own, control, or manage any *mission control center(s)* with the ability to operate the System

i. Identity and contact information of that entity or individual:

ii. Relationship to Applicant (*i.e.,* operating under Applicant's instructions under a contract):

7. Information Applicable to Multi-Spectral Imaging (MSI) and/or Hyper-Spectral Imaging (HSI). Applicants must complete this section only if the response in Part B section 2.a. is ''MSI'' and/or ''HSI.''

a. Number of spectral bands:

b. Individual spectral bandwidths (to include range of the upper and lower ends of each spectral band in nanometers):

8. Noise Equivalent Target (NET). Applicants must complete this section only if the response in Part B 2.c. is 5 meters or less, and the answer in Part B section 2.a. is neither ''SAR'' nor ''LIDAR.'' NET is the primary parameter used by the U.S. Government to describe an Electro Optical sensor's light sensitivity performance for a target at the same distance from the sensor as is specified as the minimum operating altitude in Part B section 4.d.i. If NET cannot be calculated, simply report the expected minimum detectable ground target radiance in watts:

9. Information Applicable to Light Detection and Ranging (LIDAR) if used for remote sensing. Responses should include the calculations used to derive the reported parameters. Applicants must complete this section only if the response in Part B section 2.a. is ''LIDAR.''

a. Type (linear scanning or flash LIDAR (Geiger)):

b. Laser wavelength and pulse frequency:

c. Laser pulse width:

d. Spectral linewidth:

e. Z/Elevation accuracy in meters:

10. Information Applicable to Synthetic Aperture Radar (SAR). Applicants must complete this section only if the response in Part B section 2.a. is ''SAR.''

a. Azimuth resolution (ground plane):

b. Range resolution (ground plane):

c. SAR Signal-To-Noise Ratio (SNR):

d. Polarization Capability (*i.e.* dual polarization, quad polarization):

e. Complex data: Preservation of phase history data in standard format? (yes/no):

f. Center frequency:

g. Squint and Graze angles (include maximum and minimum), or other parameters that determine the size and shape of the area of regard of the sensor collection footprint at the ground:

11. Information Applicable to Thermal Infrared (TIR). TIR is defined as collecting in the spectral range of 3.0–5.0 and/or 8.0–12.0-micrometers. Applicants must complete this section only if the response in Part B section 2.a. is ''TIR.''

a. Estimated relative thermometric accuracy in degrees Kelvin (+/− × degrees of actual):

b. Noise Equivalent Differential Temperature (NEDT), or if NEDT cannot be calculated, simply provide the expected temperature sensitivity in terms of minimum resolvable temperature difference in degrees [1]:

Part C: Requests for Standard License Condition Waivers or Adjustments

Standard license conditions are listed at §§ 960.8. 960.9, and 960.10 for Tier 1, Tier 2, and Tier 3 systems, respectively. If requesting that any of these be waived or adjusted, please identify the specific standard license condition and explain why one of the following circumstances applies:

1. The requirement is not applicable due to the nature of the Applicant or the proposed system;

2. The Applicant will achieve the goal in a different way; or

3. There is other good cause to waive or adjust the condition.

Optional: You may submit evidence of the availability of unenhanced data that is substantially the same as unenhanced data you propose to produce with your system. The Secretary will take any such evidence into account, in addition to other evidence of availability, when determining the appropriate tier for your system under § 960.6.

Appendix B to Part 960—Application Submission Instructions

A person may apply to operate a private remote sensing space system by submitting the information to the Secretary as described in appendix A of this part. This information can be submitted in any one of the following three ways:

1. Complete the fillable form at the Secretary's designated website, presently at *www.nesdis.noaa.gov/crsra.*

2. Respond to the prompts in appendix A of this part and email your responses to *crsra@noaa.gov.*

3. Respond to the prompts in appendix A of this part and mail your responses to: Commercial Remote Sensing Regulatory Affairs, 1335 East-West Highway SSMC–1/G–101, Silver Spring, MD 20910.

Appendix C to Part 960—License Template

Part A: Determination and License Grant

1. The Secretary determines that [licensee name], as described in Part C, will comply with the requirements of the Act, the regulations at this part, and the conditions in this license.

2. Accordingly, the Secretary hereby grants [licensee name] (hereinafter ''Licensee''), as described in Part C, this license to operate [system name] (hereinafter ''the System''), as described in Part D, subject to the terms and conditions of this license. This license is valid until its term ends in accordance with § 960.15. The Licensee must request and receive approval for a license modification before taking any action that would contradict a material fact listed in Part C or D of this license.

3. The Secretary makes this determination, and grants this license, under the Secretary's authority in 51 U.S.C. 60123 and regulations at this part. This license does not authorize the System's use of spectrum for radio communications or the conduct of any non-remote sensing operations that are proposed to be undertaken by the Licensee. This license is not alienable and creates no property right in the Licensee.

Part B: License Conditions

The Licensee (Operator) must, at all times:

[Depending upon the categorization of the application as Tier 1, 2, or 3, Commerce will insert the applicable standard license conditions, found at § 960.8, § 960.9, and/or § 960.10, and, for a Tier 3 license, any applicable temporary conditions resulting from the process in § 960.10, in this part of the license.]

Part C: Description of Licensee

Every term below constitutes a material fact. You must request and receive approval of a license modification before taking any action that would contradict a material fact.

1. General Licensee Information

a. Name of Licensee (entity or individual):

b. Location and address of Licensee:

c. Licensee contact information (for example, general corporate or university contact information):

d. Contact information for a specific individual to serve as the point of contact with Commerce:

e. If Tier 2 or Tier 3, contact information for a specific individual to serve as the point of contact with Commerce for limited-operations directives, if different than main point of contact:

f. Place of incorporation and, if incorporated outside the United States, confirmation that the Licensee acknowledged

[1] NEDT (noise equivalent differential temperature) is the key figure of merit which is used to qualify midwave (MWIR) and longwave (LWIR) infrared cameras. It is a signal-to-noise figure which represents *the temperature difference which would produce a signal equal to the camera's temporal noise.* It therefore represents approximately the minimum temperature difference which the camera can resolve. It is calculated by dividing the temporal noise by the response per degree (responsivity) and is usually expressed in units of milliKelvins. The value is a function of the camera's f/number, its integration time, and the temperature at which the measurement is made.

as part of the application that the Licensee will operate its system within the United States and is therefore subject to the Secretary's jurisdiction under this part:

2. Identity of any subsidiaries and affiliates playing a role in the operation of the System, including a brief description of that role:

Part D: Description of System

1. General System Information

a. Name of system:

b. Brief mission description:

2. Remote Sensing Instrument(s) parameters

a. Sensor type (Electro Optical, Multi-Spectral (MSI), Hyperspectral (HSI), Synthetic Aperture Radar (SAR), Light Detection and Ranging (LIDAR), Thermal Infrared (TIR), etc.):

b. Imaging/frame rate in Hertz; pulse repetition frequency for SAR; or number of looks for LIDAR:

c. Spatial resolution in meters:

d. Spectral range in nanometers:

e. Collection volume in area per unit time per spacecraft: An estimate of the maximum number of square kilometers of which the system can provide data/imagery per hour or per minute:

f. Ability of the remote sensing instrument to slew, point, or digitally look off-axis from the x, y, and z axes of travel:

3. If any entity or individual other than the Licensee will own, control, or manage any *remote sensing instrument* in the System:

a. Identity and contact information of that entity or individual:

b. Relationship to Licensee (*i.e.,* operating under Licensee's instructions under a contract):

4. Spacecraft Upon Which the Remote Sensing Instrument(s) is (are) Carried

a. Description:

b. Estimated launch date(s) in calendar quarter:

c. Number of spacecraft (system total and maximum in-orbit at one time):

d. For each spacecraft:

i. Altitude range in kilometers:

ii. Inclination range in degrees:

iii. Period (time of a single orbit):

iv. Longitude of the ascending node:

v. Eccentricity:

vi. Argument of perigee:

vii. Propulsion (yes/no):

viii. Ability of the spacecraft to slew, point, or digitally look off-axis from the x, y, and z axes of travel:

5. If any entity or individual other than the Licensee will own, control, or manage any *spacecraft* in the System

a. Identity and contact information of that entity or individual:

b. Whether that entity or individual is a U.S. person:

c. Relationship to Licensee (*i.e.,* operating under Licensee's instructions under a contract):

6. Ground Components

a. Location of Mission Control Center(s) with the ability to operate the system, including where commands are generated:

b. Location of other Ground Station components of the system, meaning facilities that communicate commands to the instrument or receive unenhanced data from it, and facilities that conduct data preprocessing:

c. If any entity or individual other than the Licensee will own, control, or manage any *mission control center(s)* with the ability to operate the System

i. Identity and contact information of that entity or individual:

ii. Relationship to Licensee (*i.e.,* operating under Licensee's instructions under a contract):

7. Information Applicable to Multi-Spectral Imaging (MSI) and/or Hyper-Spectral Imaging (HSI).

a. Number of spectral bands:

b. Individual spectral bandwidths (to include range of the upper and lower ends of each spectral band in nanometers):

Appendix D to Part 960—Memorandum of Understanding

Memorandum of Understanding Among the Departments of Commerce, State, Defense, and Interior, and the Office of the Director of National Intelligence, Concerning the Licensing and Operations of Private Remote Sensing Satellite Systems. April 25, 2017.

I. Authorities and Roles

This Memorandum of Understanding (MOU) is undertaken pursuant to the National and Commercial Space Programs Act, 51 U.S.C, 60101 *et seq.* (''the Act''), 15 CFR part 960, National Security Presidential Directive 27 (NSPD–27), and Presidential Policy Directive-4 PPD–4) (''applicable directives''), or to any renewal of, or successor to, the Act and the applicable directives.

The principal Parties to this MOU are the Department of Commerce (DOC), Department of State (DOS), Department of Defense (DOD), and Department of the Interior (DOI). The Office of the Director of National Intelligence (ODNI) and the Joint Chiefs of Staff (JCS) provide supporting advice pertaining to their areas of expertise. The Secretary of commerce is responsible for administering the licensing of private remote sensing satellite systems pursuant to the Act and applicable directives, and fulfills this responsibility through the National Oceanic and Atmospheric Administration (NOAA). For remote sensing issues, the Act also grants the authority to the Secretary of State to determine conditions necessary to meet international obligations and foreign policies, and to the Secretary of Defense to determine conditions necessary to meet the national security concerns raised by any remote sensing license application submitted pursuant to the Act and applicable directives, or to any amendment, renewal, or successor thereto. In addition, pursuant to this MOU, NOAA shall also consult with the Director of National Intelligence (DNI) for the views of the Intelligence Community (IC) and with the Chairman of the Joint Chiefs of Staff for the views of the DOD joint operational community.

II. Purpose

The purpose of this MOU is to establish the interagency consultation process for adjudicating remote sensing licensing actions, and the consultation process for the interruption of normal commercial operations pursuant to the Act and applicable directives.

III. Policy

In consultation with affected departments and agencies, including the DNI and JCS, the Secretary of Commerce will impose constraints on private remote sensing systems when necessary to meet the international obligations, foreign policy concerns, and/or national security concerns of the United States, and shall accord with the determinations of the Secretary of State and the Secretary of Defense, and with applicable laws and directives. Procedures for implementing this policy are established below, with each Party to this MOU separately establishing and documenting its internal timelines and decision authorities below the Cabinet level.

IV. Procedures for Department/Agency Review

A. Consultation During Review of Licensing Actions

Pursuant to the Act and applicable directives, or to any renewal thereof or successor thereto, the Secretary of Commerce shall review any application and make a determination within 120 days of receipt of such application. If final action has not occurred within such time, then the Secretary shall inform the applicant of any pending issues and of actions required to resolve them. The DOC will provide copies of requests for licensing actions to DOS, DOD, DOI, ODNl, and JCS within 3 working days. Each of these entities will inform DOC, through NOAA, of the office of primary responsibility, including primary and backup points of contact, for license action coordination.

(1) DOC will defer its decision on licensing requests until the other reviewing agencies have had a reasonable time to review them, as provided in this section. Within 10 working days of receipt, if DOS, DOD, DOI, ODNI, or JCS wants more information or time to review, then it shall notify, in writing, DOC/NOAA (a) of any additional information that it believes is necessary to properly evaluate the licensing action, or (b) of the additional time, not to exceed 10 working days, necessary to complete the review. This notification shall state the specific reasons why the additional information is sought, or why more time is needed.

(2) After receiving a complete license package, including any additional information that was requested as described above, DOS, DOD, DOI, ODNI and JCS will provide their final recommendations on the license package within 30 days, or otherwise may request from DOC/NOAA additional time necessary to provide a recommendation. If DOS determines that imposition of conditions on the actions being reviewed is necessary to meet the international obligations and foreign policies of the United States, or DOD determines that imposition of conditions are necessary to address the national security concerns of the United States, the MOU Party identifying the concern will promptly notify, in writing, DOC/NOAA and those departments and

agencies responsible for the management of operational land imaging space capabilities of the United States. Such notification shall: (a) Describe the specific national security interests, or the specific international obligations or foreign policies at risk, if the applicant's system is approved as proposed; (b) set forth the specific basis for the conclusion that operation of the applicant's system as proposed will not preserve the identified national security interests or the identified international obligations or foreign policies; and (c) either specify the additional conditions that will be necessary to preserve the relevant U.S. interests, or set forth in detail why denial is required to preserve such interests. All notifications under this paragraph must be in writing.

B. Interagency Dispute Resolution for Licensing Actions

(1) Committees. The following committees are established, described here from the lowest level to the highest, to adjudicate disagreements concerning proposed commercial remote sensing system licenses.

(a) Operating Committee on Private Remote Sensing Space Systems. An Operating Committee on Private Remote Sensing Space Systems (RSOC) is established. The Under Secretary of Commerce for Oceans and Atmosphere and NOAA Administrator shall appoint its Chair. Its other principal members shall be representatives of DOS, DOD, and DOI, or their subordinate agencies, who along with their subject matter experts, can speak on behalf of their department or agency. Representatives of the ODNI and the JCS shall participate as supporting members to provide independent advice pertaining to their areas of expertise. The RSOC may invite representatives of United States Government departments or agencies that are not normally represented in the RSOC to participate in the activities of that Committee when matters of interest to such departments or agencies are under consideration.

(b) Advisory Committee on Private Remote Sensing Space Systems. An Advisory Committee on Private Remote Sensing Space Systems (ACPRS) is established and shall have as its principal members the Assistant Secretary of Commerce for Environmental Observation and Prediction, who shall be Chair of the Committee, and Assistant Secretary representatives of DOS, DOD, and DOI. Appointed representatives of ODNI and JCS shall participate as supporting members to provide independent advice pertaining to their areas of expertise. Regardless of the department or agency representative's rank and position, such representative shall speak at the ACPRS on behalf of his/her department or agency. The ACPRS may invite Assistant Secretary level representation of United States Government departments or agencies that are not represented in the ACPRS to participate in the activities of that Committee when matters of interest to such departments or agencies are under consideration.

(c) Review Board for Private Remote Sensing Space Systems. The Board shall have, as its principal members, the Under Secretary of commerce for Oceans and Atmosphere, who shall be Chair of the Board, and Under Secretary or equivalent representatives of DOS, DOD, and DOI. The Director of National Intelligence and Chairman of the Joint Chiefs of Staff shall be represented at an appropriate level as supporting members to provide independent advice pertaining to their areas of expertise. The Board may invite the representatives of United States Government departments or agencies that are not represented on the Board, to participate in the activities of the Board when matters of interest to such departments or agencies are under consideration.

(2) Resolution Procedures.

(a) If, following the various intra-departmental review processes, the principal members of the RSOC do not agree on approving a license or on necessary conditions that would allow for its approval, then the RSOC shall meet to review the license application. The RSOC shall work to resolve differences in the recommendations with the goal of approving licenses with the least restrictive conditions needed to meet the international obligations, foreign policies, or national security concerns of the United States. If the issues cannot be resolved, then the Chair of the RSOC shall prepare a proposed license that reflects the Committee's views as closely as possible, and provide it to the principal members of the RSOC for approval. The proposed license prepared by the RSOC chair shall contain the conditions determined necessary by DOS or DOD. Principal members have 5 working days to object to the proposed license and seek a decision at a higher level. In the absence of a timely escalation, the license proposed by the RSOC Chair will be issued.

(b) If any of the principal Parties disagrees with the proposed license provided by the RSOC Chair, they may escalate the matter to the ACPRS for resolution, Principal Parties must escalate the matter within 5 working days of such a decision. Escalations must be in writing from the principal ACPRS member, and must cite the specific national security, foreign policy, or international obligation concern. Upon receipt of a request to escalate, DOC will suspend any further action on the license action until ACPRS resolution. The ACPRS shall meet to review all departments' information and recommendations, and shall work to resolve interagency disagreements. Following this meeting, the Chair of the ACPRS shall, within 11 working days from the date of receiving notice of escalation, provide the reviewing departments a proposed license that contains the conditions determined by DOS or DOD. Within 5 working days of receipt of the proposed license, an ACPRS principal member may object to the prepared license and seek to escalate the matter to the Review Board. In the absence of an escalation within 5 working days, the license prepared by the ACPRS Chair will be issued.

(c) If any of the principal Parties disagrees with the license prepared by the ACPRS Chair, it may escalate the matter to the Review Board for resolution. Principal Parties must escalate the matter within 5 working days of such a decision. Escalations must be in writing from the principal Review Board member, and must cite the specific national security, foreign policy, or international obligation concern. Upon receipt of a request to escalate, DOC will suspend any further action on the license action until Review Board resolution. The Review Board shall meet to review information and recommendations that are provided by the ACPRS, and such other private remote sensing matters as appropriate. The Chair of the Board shall provide reviewing departments and agencies a proposed license within 11 working days from the date of receiving notice of escalation. The proposed license prepared by the Review Board chair shall contain the conditions determined necessary by DOS or DOD. If no principal Parties object to the proposed license within 5 working days, it will be issued.

(d) If, within 5 working days of receipt of the draft license, a principal Party disagrees with any conditions imposed on the license, that Party's Secretary will promptly notify the Secretary of Commerce and the other principal Parties in writing of such disagreement and the reasons therefor, and a copy will be provided to the Assistant to the President for National Security Affairs and the Assistant to the President for Science and Technology.

(e) Upon notification of such a disagreement, DOC will suspend further action on the license that would be inconsistent with the Secretary of State or the Secretary of Defense determination. If the Secretary of Commerce believes the limits defined by another Secretary are inappropriate, then the Secretary of Commerce or Deputy Secretary shall consult with his or her counterpart in the relevant department within 10 working days regarding unresolved issues. If the relevant Secretaries are unable to resolve any issues, the Secretary of Commerce will notify the Assistant to the President for National Security Affairs, who, in coordination with the Assistant to the President for Science and Technology, will seek to achieve consensus among departments and agencies, or failing that, by referral to the President. All efforts will be taken to resolve the dispute within 3 weeks of its submission to the Assistant to the President for National Security Affairs and the Assistant to the President for Science and Technology.

C. Interagency Dispute Resolution Concerning Other Commercial Remote Sensing Matters

Nothing in this MOU precludes any Party to this MOU from addressing through other appropriate channels, consistent with the Act and applicable directives, any matter regarding commercial remote sensing unrelated to (1) adjudicating remote sensing licensing actions, or (2) the interruption of normal commercial operations. Such matters may be raised using standard coordination processes, including by referral to the Assistant to the President for National Security Affairs, who, in coordination with the Assistant to the President for Science and Technology, will seek to achieve consensus among the departments and agencies, or failing that, by referral to the President, when appropriate.

D. Consultation During Review of Interruption of Normal Commercial Operations

(1) This section establishes the process to limit the licensee's data collection and/or distribution where necessary to meet international obligations or foreign policy interests, as determined by the Secretary of State, or during periods of increased concern for national security, as determined by the Secretary of Defense in consultation with the Director of National Intelligence and the Chairman of the Joint Chiefs of Staff. DOC will provide DOS, DOD, ODNI, and JCS copies of licensee correspondence and documents that describe how the licensee will comply with such interruptions of its commercial operations.

(2) Conditions should be imposed for the smallest area and for the shortest period necessary to protect the international obligations and foreign policies or national security concerns at issue. Alternatives to prohibitions on collection and/or distribution shall be considered as ''modified operations,'' such as delaying or restricting the transmission or distribution of data, restricting disseminated data quality, restricting the field of view of the system, obfuscation, encryption of the data, or other means to control the use of the data, provided the licensee has provisions to implement such measures.

(3) Except where urgency precludes it, DOS, DOD, DOC, ODNI and JCS will consult to attempt to come to an agreement concerning appropriate conditions to be imposed on the licensee in accordance with determinations made by DOS or DOD. Consultations shall be managed so that, in the event an agreement cannot be reached at the staff level, sufficient time will remain to allow the Secretary of Commerce to consult personally with the Secretary of State, the Secretary of Defense, the Director of National Intelligence, or the Chairman of the Joint Chiefs of Staff as appropriate, prior to the issuance of a determination by the Secretary of State, or the Secretary of Defense, in accordance with (4) below. That function shall not be delegated below the Secretary or acting Secretary.

(4) After such consultations, or when the Secretary of State or the Secretary of Defense, specifically determines that urgency precludes consultation with the Secretary of Commerce, the Secretary of State shall determine the conditions necessary to meet international obligations and foreign policy concerns, and the Secretary of Defense shall determine the conditions necessary to meet national security concerns. This function shall not be delegated below the Secretary or acting Secretary.

(5) The Secretary of State or the Secretary of Defense will provide to the Secretary of Commerce a determination regarding the conditions required to be imposed on the licensees. The determination will describe the international obligations, specific foreign policy, or national security interest at risk. Upon receipt of the determination, DOC shall immediately notify the licensees of the imposition of limiting conditions on commercial operations. Copies of the determination and any implementing DOC action will be provided promptly to the Assistant to the President for National Security Affairs and the Assistant to the President for Science and Technology.

(6) If the Secretary of Commerce believes the conditions determined by another Secretary are inappropriate, he or she will, simultaneous with notification to, and imposition of such conditions on, the licensee, so notify the Secretary of State or the Secretary of Defense, the Assistant to the President for National Security Affairs, and the Assistant to the President for Science and Technology. The Assistant to the President for National Security Affairs, in coordination with the Assistant to the President for Science and Technology, may initiate as soon as possible a Principals-level consultative process to achieve a consensus or, failing that, refer the matter the President for decision. All efforts will be taken to resolve the disagreement within 7 working days of its submission to the Assistant to the President for National Security Affairs and the Assistant to the President for Science and Technology.

E. Coordination Before Release of Information Provided or Generated by Other United States Government Departments or Agencies

Before releasing any information provided or generated by another department or agency to a licensee or potential licensee, to the public, or to an administrative law judge, the agency proposing the release must consult with the agency that provided or generated the information. The purpose of such consultations will be to review the propriety of any proposed release of information that may be privileged or restricted because it is classified, pre-decisional, deliberative, proprietary, or protected for other reasons. No information shall be released without the approval of the department or agency that provided or generated it unless required by law.

F. No Legal Rights

No legal rights or remedies, or legally enforceable causes of action, are created or intended to be created by this MOU.

[FR Doc. 2020–10703 Filed 5–19–20; 8:45 am]

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Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Space Innovation	)	IB Docket No. 22-271
	)	
Mitigation of Orbital Debris in the New Space Age	)	IB Docket No. 18-313
	)	
	)	
	)	
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SECOND REPORT AND ORDER

Adopted: September 29, 2022 **Released: September 30, 2022**

By the Commission: Chairwoman Rosenworcel and Commissioners Starks and Simington issuing separate statements.

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I. INTRODUCTION

1. Today, the Federal Communications Commission takes a first step toward ushering in a new era for space safety and orbital debris policy. We do so by adopting a first-ever rule requiring non-geostationary satellite operators to deorbit their satellites after the end of their operations to minimize the risk of collisions that would create debris. Our action today formalizes a longstanding orbital debris guideline, updates it to better reflect the realities of today's space activities, and uniformly applies it to space stations in LEO.

2. It is widely recognized that the growing challenge of orbital debris poses a risk to the nation's space ambitions. Defunct satellites, discarded rocket cores, and other debris now fill the space environment creating challenges for future missions. Moreover, there are more than 4,800 satellites currently operating in orbit as of the end of last year, and the vast majority of those are commercial

satellites operating at altitudes below 2,000 km—the upper limit for LEO.[1] Many of these were launched in the past two years alone, and projections for future growth suggest that there are many more to come. As the number of objects in space increases, so too does the probability of collision.

3. At risk is more than the $279 billion-a-year satellite and launch industries and the jobs that depend on them.[2] Satellites connect the most remote locations in the world to high-speed broadband. They help us navigate unfamiliar roads, broadcast video to millions of viewers, connect us to financial services, and provide imagery that can help us monitor climate change and other environmental problems. When disaster strikes, satellites help organize first responders, the government, and humanitarian organizations and make it possible to coordinate effective relief efforts. Left unchecked, orbital debris could block all of these benefits and reduce opportunities across nearly every sector of our economy.

4. We believe strong compliance with post-mission disposal guidelines is an effective tool that can help stabilize the orbital debris environment. Currently, it is recommended that operators with objects in LEO ensure that their spacecraft are either removed from orbit immediately post-mission or left in an orbit that will decay and re-enter Earth's atmosphere within no more than 25 years to mitigate the creation of more orbital debris. However, we believe it is no longer sustainable to leave satellites in LEO to deorbit over decades. Accordingly, in this *Second Report and Order*, as part of our continued efforts to mitigate the generation of orbital debris, we shorten the 25-year benchmark for post-mission disposal of space stations[3] in LEO to five years. The regulations we adopt today are designed to ensure that the Commission's actions concerning radio communications, including licensing U.S. spacecraft and granting access to the U.S. market for non-U.S. spacecraft, promote the sustainable use of outer space without creating undue regulatory obstacles to new satellite ventures. This action by the Commission furthers the public interest in preserving viable options for future satellites and systems and the many services that those systems provide to the public.

II. BACKGROUND

5. There are multiple existing guidelines concerning orbital debris, none of which are legally binding. One of these is the longstanding guideline for deorbiting satellites within 25 years. The 25-year disposal guideline was first proposed by the National Aeronautics and Space Administration (NASA) in the 1990s in an effort to balance the mitigation of orbital debris while limiting propellant costs and complications imposed by performing a maneuver to a limited lifetime orbit.[4] Since then, it has been adopted by the space agencies of other nations, the Inter-Agency Space Debris Coordination Committee (IADC), and incorporated into a NASA Standard and the U.S. Government Orbital Debris Mitigation Standard Practices (ODMSP). Both the NASA Standard and ODMSP specify a maximum 25-year post-mission orbital lifetime, with the 2019 revised ODMSP stating that for spacecraft disposed of by

[1] *See* Satellite Industry Association, *Commercial Satellite Industry Growing as it Continues to Dominate Expanding Global Space Business – SIA Releases 25th Annual State of the Satellite Industry Report* (Jun. 29, 2022), https://sia.org/commercial-satellite-industry-growing-as-it-continues-to-dominate-expanding-global-space-business-sia-releases-25th-annual-state-of-the-satellite-industry-report/ (SIA State of the Industry Report).

[2] *See* SIA State of the Industry Report.

[3] Throughout this Order, we use the terms "space station," "satellite," and "spacecraft." "Space station" is defined in the Commission's rules as "[a] station located on an object which is beyond, is intended to go beyond, or has been beyond, the major portion of the Earth's atmosphere." 47 CFR §§ 2.1, 25.103. This is consistent with terminology used by the International Telecommunication Union (ITU). ITU Radio Regulations (R.R.) 1.64. The Commission's rules define "satellite" as "[a] body which revolves around another body of preponderant mass, and which has a motion primarily and permanently determined by the force of attraction of that other body." 47 CFR § 2.1. In this Order we refer only to artificial satellites. The Commission's rules define "spacecraft" as "[a] man-made vehicle which is intended to go beyond the major portion of the Earth's atmosphere." 47 CFR §§ 2.1, 25.103. These terms are used interchangeably in this Order, but we observe that "satellite" and "spacecraft" are more broadly defined than "space station."

[4] *See* NASA Comments at 7 (filed Apr. 4, 2019).

atmospheric reentry, the spacecraft shall be "left in an orbit in which, using conservative projections for solar activity, atmospheric drag will limit the lifetime to as short as practicable but no more than 25 years."[5]

6. The Commission adopted comprehensive rules on orbital debris in 2004, pursuant to its authority to determine whether the public interest would be served by the authorization of satellite communications systems.[6] The 2004 rules generally consisted of disclosure requirements that yielded information critical to the Commission's overall determination of whether the public interest would be served by approving the proposed operations. Applicants were required to include a statement that they have assessed and limited the amount of debris released in a planned manner during normal operations, and have assessed and limited the probability of the satellite becoming a source of debris by collisions with small debris.[7] Applicants also were required to state that they have assessed and limited the probability of accidental explosions during and after completion of mission operations.[8] The rules also required a statement that the satellite applicant has assessed and limited the probability of the satellite becoming a source of debris by collisions with large debris or other operational satellites.[9] Finally, applicants were required to include a statement detailing the post-mission disposal plans for the satellite as it enters its end-of-life stage, including the quantity of fuel—if any—that will be reserved for post-mission disposal maneuvers.[10]

7. Although not specifically codified in the Commission's 2004 rules, the Commission has consistently applied the 25-year benchmark in licensing decisions for NGSO systems. On November 15, 2018, recognizing that there had been a variety of technical and policy updates to orbital debris mitigation standards, policy, and guidance documents since 2004, the Commission adopted a *Notice of Proposed Rulemaking* seeking comment on a comprehensive update to its orbital debris rules to better reflect the significant increase in satellites and types of operations in orbit.[11] The Commission sought comment on issues ranging from minor updates codifying established metrics into existing rules to how to assess the risks posed by constellations of thousands of satellites, as well as topics such as economic incentives for operators that would align with orbital debris mitigation best practices. As part of that effort, the Commission also sought comment on the 25-year benchmark and whether it was still a relevant guideline or whether a shorter deorbit deadline was appropriate for new systems.

8. The Commission adopted a *Report and Order* (*Order*) comprehensively updating the 2004 rules on April 24, 2020.[12] At the same time, the Commission adopted a *Further Notice of Proposed*

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[5] ODMSP 4-1.b. The updated U.S. Government Orbital Debris Mitigation Standard Practices (ODMSP) is available for download at: https://orbitaldebris.jsc nasa.gov/library/usg_orbital_debris_mitigation_standard_practices_november_2019.pdf. In its National Orbital Debris Implementation Plan, the White House tasked NASA with studying whether space station operators should be required to dispose of defunct satellites earlier than the 25-year benchmark. *See* The Orbital Debris Interagency Working Group, Subcommittee on Space Weather, Security, and Hazards, of the National Science and Technology Council, *National Orbital Debris Implementation Plan* (2022), https://www.whitehouse.gov/wp-content/uploads/2022/07/07-2022-NATIONAL-ORBITAL-DEBRIS-IMPLEMENTATION-PLAN.pdf (NODIP).

[6] *See Mitigation of Orbital Debris*, IB Docket No. 02-54, Second Report and Order, 19 FCC Rcd 11567 (2004).

[7] 47 CFR § 25.114(d)(14)(i).

[8] 47 CFR § 25.114(d)(14)(ii).

[9] 47 CFR § 25.114(d)(14)(iii).

[10] 47 CFR § 25.114(d)(14)(iv).

[11] *Mitigation of Orbital Debris in the New Space Age,* IB Docket Nos. 18-313, 02-54, *Notice of Proposed Rulemaking*, 33 FCC Rcd 11352 (2018).

[12] *Orbital Debris in the New Space Age*, IB Docket No. 18-313, Report and Order and Further Notice of Proposed Rulemaking, 35 FCC Rcd 4156 (2020) (*Order* or *FNPRM).*

Rulemaking (FNPRM) seeking comment on the probability of accidental explosions, collision risk for multi-satellite systems, maneuverability requirements, casualty risk, indemnification, and performance bonds tied to post-mission disposal. In the *Order*, the Commission maintained its existing rule requiring a statement detailing post-mission disposal plans for the space station at end of life and adopted a new requirement that applicants planning disposal by atmospheric re-entry specify the planned time period for post-mission disposal as part of the description of disposal plans for the space station. In the *FNPRM*, the Commission sought further comment on whether the 25-year benchmark for completion of NGSO post-mission disposal by atmospheric re-entry remains a relevant benchmark as applied to commercial or other non-Federal systems.[13]

9. Specifically, in the *FNPRM,* the Commission noted broad support in the record for shortening the 25-year benchmark and sought comment on alternative post-mission disposal lifetimes. The Commission sought comment on how to apply the ODMSP guidance that the post-mission lifetime be "as short as practicable but no more than 25 years," noting that incorporating only the 25-year metric into its rules may not incentivize commercial and other non-Federal operators to limit the post-mission orbital lifetime to "as short as practicable."[14] The Commission further asked whether a maximum 25-year limit on post-mission orbital lifetime would provide any incentive to operators to shorten the post-mission time in orbit or whether there is another preferable approach, such as a requirement for spacecraft to utilize propulsion, and if there were any potential scenarios in which spacecraft with maneuverability would remain in orbit for significant amounts of time following the conclusion of the mission.[15] The Commission also asked for input on whether these scenarios would be sufficiently unlikely to warrant a case-by-case approach or if a bright-line rule would be more appropriate in these circumstances.[16] The Commission presented a number of potential frameworks, including a safe-harbor provision, wherein operators would be encouraged to dispose of their spacecraft "as soon as practicable" but no more than five years following the end of the mission, and allow applicants to provide additional demonstrations in support of longer post-mission lifetimes for the Commission to consider.[17] The Commission sought comment on this proposal and asked whether five years would be sufficient for such a safe harbor provision or if there were any alternative timeframes that should be considered.[18]

III. DISCUSSION

10. This *Second Report and Order* requires all space stations ending their mission in, or passing through, the LEO region, and planning disposal through uncontrolled atmospheric re-entry following the completion of the mission to complete disposal as soon as practicable, and no later than five years after the end of the mission. As explained below, we find that the additional costs imposed on the industry from this rule will be outweighed by the national benefits that come from reducing the probability of costly collisions and the commensurate reduction in service outages, as well as from reducing the frequency of collision avoidance maneuvers, among others.

A. Promoting Space Safety Through Post-Mission Disposal Requirements

11. The *Order* and *FNPRM* sought comment on updating the longstanding 25-year benchmark for deorbiting satellites at the end of their missions.[19] We recognize the merits of shortening

[13] *Order*, 35 FCC Rcd at 4198-99, 4235-36, paras. 90, 169.

[14] *FNPRM*, 35 FCC Rcd at 4234-35 para. 169, ODMSP 4-1.b.

[15] *FNPRM,* 35 FCC Rcd at 4235 paras. 169, 171.

[16] *Id.* at 4235 para. 171.

[17] *Id.*

[18] *Id.*

[19] This discussion addresses the Commission's analysis of the record and overall regulatory approach for reducing the 25-year benchmark. Other topics from the *FNPRM*, such as maneuverability, accidental explosion risk, and collision risks associated with large constellations, will be addressed at a later date.

the 25-year period and agree with commenters who argue that a shorter benchmark would promote a safer orbital debris environment. We observe that the current benchmark, which was developed before proposed deployments of large satellite constellations, is too long to adequately address the threat of long-term debris generation.

12. In response to the Commission's discussion in the *Order* and *FNPRM*,[20] we received additional support in the record for reducing the 25-year benchmark, with many commenters echoing prior concerns that the 25-year benchmark is outdated and may no longer serve the public interest.[21] Commenters have identified that while the 25-year benchmark may be an effective standard to limit the rate of debris growth in LEO, it fails to account for the growth of the commercial space industry and does not consider the disruption to satellite operations due to the increased need for collision avoidance maneuvers.[22] According to Space Exploration Technologies Corp. (SpaceX), rules that hasten demise will be crucial in removing inactive objects and promoting a safer orbital debris environment.[23] To this end, many commenters assert that shortening the 25-year benchmark would not only address the threat of long-term debris generation, but would also address issues like the mounting number of conjunctions,[24] collision avoidance maneuvers, fuel costs and other operational expenditures, time concerns, and other considerations faced by operators as LEO becomes more populated.[25] The Consortium for Execution of Rendezvous and Servicing Operations (CONFERS) also contends that the increased need for collision avoidance maneuvers due to the congestion in LEO impacts the general public as well because it increases the likelihood of service disruptions.[26]

13. Some commenters argue that the 25-year benchmark remains relevant to sufficiently mitigate orbital debris generation, asserting that many organizations have studied and confirmed the effectiveness of this standard in reducing the rate of orbital debris generation in LEO.[27] Most commenters who supported retaining that benchmark cite a report published by NASA's Orbital Debris Program Office, which stated that reducing the 25-year rule to a five-year rule would lead to a 10% debris

[20] *FNPRM*, 35 FCC Rcd at 4198, para. 88.

[21] *See, e.g.*, OneWeb Comments at 8-9; Astroscale Comments at 20; Consortium for Execution of Rendezvous and Servicing Operations (CONFERS) Comments at 5 (CONFERS Comments); Space Exploration Technologies Corp. Comments at 13 (SpaceX Comments) ("The current demise time of twenty-five years is significantly longer than necessary for most contemporary missions, given current technology."); Darren McKnight Comments at 4 (" . . . This reinforces the earlier assertion that the debris mitigation guidelines have not kept pace with space technology advancements.").

[22] Astroscale Comments at 20; Darren McKnight Comments at 2; OneWeb Comments at 9-10.

[23] SpaceX Comments at 14.

[24] The term "conjunction" refers to a prediction of a close approach between two space objects. Spacecraft operators typically assess conjunctions to determine whether additional actions are required, such as executing a collision avoidance maneuver.

[25] *See, e.g.*, Astroscale Reply Comments at 10; OneWeb at 8-9; CONFERS Comments at 5; Maxar Technologies Inc. Comments at 6 (Maxar Comments).

[26] CONFERS Comments at 5.

[27] *See, e.g.*, Lynk Global Inc. Comments at 5 (Lynk Comments) ("Other reasonable steps can and should be taken toward achieving the "as short as practicable" standard even if this benchmark does not change."); Commercial Smallsat Spectrum Management Association Comments at 13 (CSSMA Comments) ("supports the maximum 25-year post-mission orbital lifetime, as many organizations have studied and confirmed the effectiveness of this standard to reduce the rate of debris growth in LEO."); Eutelsat S.A. Comments at 7 (Eutelsat Comments) ("The 25-year post mission disposal standard for atmospheric re-entry remains relevant for small NGSO systems. . ."); Kepler Communications Inc. Reply Comments at 4 (Kepler Reply Comments) ("Kepler agrees with the comments of Lynk and Eutelsat that the 25-year post-mission disposal standard remains relevant.").

reduction over 200 years, which NASA described as "not a statistically significant benefit."[28] However, other commenters note that the NASA analysis does not fully account for the risks of leaving defunct satellites in lower orbits for periods up to 25 years. According to one commenter, "the 200-year simulation used in this assertion aggregates cataloged debris from all of LEO" and "ignores debris generated below []800 km because debris at these altitudes washes out in decades."[29] That commenter further asserts that events below 850 km are not considered in NASA's analysis because they do not accumulate over the 200-year period, but these events may still significantly increase lethal, non-trackable (LNT)[30] collision risk and collision avoidance burdens for commercially-relevant altitudes.[31] LNTs account for 97-98% of mission-terminating risk in LEO and cannot be mitigated by space traffic management (STM) or space situational awareness (SSA) alone,[32] even as SSA and STM capabilities continue to improve and these space objects become increasingly visible to operators.[33]

14. This commenter also argues that the 25-year benchmark encourages new satellites to be deployed below 650 km as such an altitude is "naturally compliant" with the 25-year benchmark and encourages massive, nonfunctioning hardware to be moved below 650 km from missions above 650 km, resting on the assumption that 25 years is not a long time.[34] However, for typical LEO satellites, 25 years represents five generations of spacecraft, performing 135,000 uncontrolled orbits, and transiting 800 active spacecraft and more as the population of LEO satellites grows.[35] As Astroscale has observed, operators formulating designs and plans to adhere to the maximum 25-year requirement has ultimately contributed to the increased congestion around and below the 600-650 km altitude range and the associated increase in conjunctions and risk in LEO operations.[36] Astroscale notes that allowing an unlimited number of post-mission spacecraft to slowly deorbit for decades will increase the need for collision avoidance maneuvers, and outside of being disruptive to normal NGSO operations, the incremental capital and operational expenditures needed to conduct an increasing number of collision avoidance maneuvers would increase the financial burden on most NGSO operators.[37]

15. We find these arguments persuasive and agree with commenters that the threat of long-term debris generation is not the only relevant risk factor to consider in weighing shortening the benchmark, and any analysis concerning post-mission disposal lifetimes should account for the effects on the orbital environment raised by the commenters, such as the collision risks posed by LNT generation

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[28] *See* J.C. Liou, M. Kieffer, A. Drew, and A. Sweet, "NASA Orbital Debris Program Office, Project Review: The 2019 U.S. Government Orbital Debris Mitigation Standard Practices," *Orbital Debris Quarterly News*, vol 20, no.1, p.5 (Feb. 2020), https://orbitaldebris.jsc nasa.gov/quarterly-news/pdfs/odqnv24i1.pdf (*2020 NASA Orbital Debris Report*).

[29] Darren McKnight Comments at 2.

[30] "Lethal non-trackable" objects, or LNTs, are space objects that are 10 cm or smaller that are too small to be cataloged but still possess enough kinetic energy to disable a satellite upon impact. LNTs in LEO are primarily caused by the several hundred explosions of satellites and spent launch vehicle upper stages, but a few collision events have contributed to the LNT population as well.

[31] *See* Darren McKnight Comments at 2.

[32] Darren McKnight Comments at 2. *See also* T. Maclay and D. McKnight, *Space environment management: Framing the objective and setting priorities for controlling orbital debris risk*, 8 J. Space Safety Engineering 93-97 (2021).

[33] *See* Astroscale Comments at 20.

[34] Darren McKnight Comments at 3.

[35] *Id.*

[36] Astroscale Comments at 21. *See also* OneWeb Comments at 10.

[37] Astroscale Comments at 21.

and increased collision avoidance burdens on operators. Accordingly, we conclude that shortening the 25-year benchmark for all missions is warranted and in the public interest.

16. The Commission initially proposed shortening the 25-year benchmark in the *FNPRM* to five years because commenters to the *Notice* had suggested that "post-mission orbital lifetimes on the order of five years may be appropriate in most cases."[38] Similarly, in addition to the general support we received for reducing the 25-year benchmark, the majority of commenters support reducing post-mission orbital lifetime to five years, as proposed in the *FNPRM*,[39] with some commenters recommending alternative benchmarks as short as one year.[40] We believe that a five-year post-mission orbital lifetime strikes an appropriate balance between meaningfully reducing risk while remaining flexible and responsive to a broader selection of mission profiles. We further believe that implementing a five-year post-mission disposal lifetime requirement is both practicable and feasible for LEO missions[41] and consistent with the ODMSP guidance, which advocates for limiting orbital lifetime to "as short as practicable."[42]

17. In the *FNPRM*, the Commission considered whether specifying a post-mission orbital lifetime requirement would be necessary in light of potentially adopting a maneuverability requirement for spacecraft operating above 400 km.[43] The Commission observed the practical reality that space stations capable of conducting collision avoidance maneuvers or operating below 400 km would likely meet the objectives of limiting post-mission orbital lifetime[44] and noted that the decision to incorporate a

[38] *FNPRM,* 35 FCC Rcd at 4235-36, para. 172.

[39] *See, e.g.,* SpaceX Comments at 14 ("SpaceX supports the Commission's proposal to adopt a requirement that satellites in the LEO region be removed from orbit as soon as practicable, but no more than five years following the end of the mission."); Maxar Comments at 5 ("The Commission should reduce the post-mission orbital lifetime to 5 years.); Commercial Space Flight Federation Comments at 4 (CSF Comments) ("CSF recommends that the Commission adopt a requirement that satellites in LEO be removed from orbit as soon as is reasonably practical, and may not exceed five years following the end of the mission."); Aerospace Industries Association Comments at 1 (AIA Comments) ("AIA supports the adoption of a post mission disposal lifetime of five years for satellites that employ atmospheric reentry for disposal using reasonable assumptions of orbit insertion."); Iridium Communications Inc. Comments at ii (Iridium Comments) ("Once a satellite has reached the end of its useful life, the operator should endeavor to minimize the post-mission time in orbit, and should aim for a post-mission lifetime of no more than 5 years for satellites operating at altitudes of 2,000 km and below."); The Boeing Company Comments at 15-16 (Boeing Comments) (" . . . Boeing would support the adoption of a five-year post-mission limit on orbital life absent a failure of the satellite."); Gerardo Inzunza Higuera Comments at 2; Letter from Tom Stroup, President, Satellite Industry Association (SIA) to Marlene H. Dortch, Secretary, FCC, IB Docket Nos. 22-271, 18-313, at 1 (filed Sept. 22, 2022).

[40] Myriota Pty Ltd. Comments at 9 (". . . the Commission should encourage operators to accelerate this disposal time to 15 years. . .); Alistair Funge Comments at 3 (advocating for a maximum post-mission orbital lifetime of one year for passive reentry and five years for spacecraft that are actively controlled); Letter from Darren McKnight, Senior Technical Fellow, LeoLabs, to Mr. Karl Kensinger, Satellite Division Chief, FCC, IB Docket No. 18-313, at 5-6 (filed Mar. 29, 2022) (Darren McKnight *Ex Parte*) ("It is suggested that the FCC replace the 25-yr rule with 90% reliability with a realized environmental burden (REB) based upon the 25-yr post mission disposal (PMD) threshold and the 90% reliability in an objective measurable criterion which if not adhered to (within a 90 days) launches will be halted.").

[41] *See e.g.,* Astroscale Comments at 20; Boeing Comments at 14-15; OneWeb Comments at 9.

[42] ODMSP 4-1(b).

[43] *Order,* 35 FCC Rcd at 4198, 4235, paras. 89, 170.

[44] *See Order*, 35 FCC Rcd at 4198, 4235, paras. 89, 170. The Commission noted that one of the main goals of limiting orbital lifetime was avoiding collisions with large objects. Space stations operating below 400 km or capable of conducting collision avoidance maneuvers might reasonably be expected to meet this objective either through use of propulsion for collision avoidance or through operating at a low altitude where both orbital lifetime of the spacecraft and density of debris objects are low, or a combination of both strategies.

separate provision into the Commission's rules regarding post-mission orbital lifetime would potentially depend on whether it ultimately adopted a maneuverability requirement, on which it sought comment in the *FNPRM*.[45] Although we do not adopt rules relating to maneuverability at this time, given the risks associated with the increasing congestion in the orbital environment and the strong support in the record for shortening permissible post-mission orbital lifetime, we believe it is appropriate to adopt a rule reducing the post-mission disposal orbital lifetime while the Commission continues to assess potential maneuverability requirements, additional measures with respect to large constellations, and other possible approaches to mitigation of debris risks.

18. Accordingly, we adopt a rule requiring space stations ending their mission in, or passing through, the LEO[46] region below 2000 km altitude and planning disposal through uncontrolled atmospheric re-entry to complete disposal as soon as practicable following end of mission, and no later than five years after the end of the mission. For purposes of administering this rule, we will define "end of mission" to be the time at which the individual spacecraft is no longer capable of conducting collision avoidance maneuvers. For spacecraft without collision avoidance capabilities, end of mission will be defined as the point in which the individual spacecraft has completed its primary mission, e.g. communications services, handling customer message traffic, remote-sensing, etc. Consistent with other requirements in part 25 of our rules, this requirement will also apply to entities seeking to access the U.S. market using a non-U.S.-licensed satellite or satellite system.[47] This requirement will also apply to small satellites licensed under the streamlined processes outlined in rule 25.122.[48] Additionally, the requirements adopted in this *Second Report and Order* will also apply to any entities applying for satellites licensed under part 5 of the Commission's rules,[49] as well as amateur satellites authorized under part 97.[50]

19. While the record indicates support for shortening the 25-year benchmark to five years in general, many commenters express that five years may still be too long for large constellations, given the greater risks for generating orbital debris that these systems may pose over extended periods of time.[51] Even among commenters that argued in favor of generally maintaining the 25-year benchmark, many expressed that a reduction for post-mission disposal for large constellations may be warranted.[52] The Commercial Smallsat Spectrum Management Association (CSSMA), for example, noted that NASA's considerations of large constellations in the debris environment have caused them to recommend that "immediate removal is the preferred [post-mission disposal] option."[53] Large constellations could impose

[45] *Order*, 35 FCC Rcd at 4198, para. 89.

[46] This would include space stations in an elliptical orbit with a perigee in LEO.

[47] *See* 47 CFR § 25.137.

[48] *See* 47 CFR § 25.122. Under the criteria for small satellite streamlined processing, applicants must certify that the planned total in-orbit lifetime for any individual space station must be six years or less. 47 CFR § 25.122(c)(2).

[49] *See* 47 CFR § 5.64 (special provisions for satellite systems).

[50] *See* 47 CFR § 97.207 (provisions relating to amateur space stations).

[51] Astroscale Holdings, Altius Space Machines, Inc., Nanoracks LLC, Orbitfab, Inc, Roccor, LLC, Spacebridge Logistics, Inc, Space Exploration Engineering, LLC, and Spacenav, LLC Comments at 16 (rec. Apr. 5, 2019) (Global NewSpace Operators Comments); Iridium Comments at 7 ("Larger satellite constellations should be held to even more rigorous standards for deorbit given the substantially greater risk that they pose to other operators over extended periods of time.").

[52] CSSMA Comments at 14; Eutelsat Comments at 7 ("The 25-year post mission disposal standard for atmospheric re-entry remains relevant for small NGSO systems . . . but could potentially be lowered in the context of large constellations with propulsion capabilities . . ."); Kepler Reply Comments at 4 ("Kepler therefore supports Eutelsat's recommendation that the orbital lifetime limit requirement be adapted to a satellite system's size and type of maneuvering capability.").

[53] CSSMA Comments at 14.

specific risks to the orbital environment that may be mitigated by a shorter post-mission orbital lifetime, among other factors; therefore we will continue to assess whether a shorter post-mission disposal requirement, such as one year, would be appropriate for large constellations in light of the potential risks to the orbital environment posed by those systems.[54] In the interim, we will continue evaluating large constellations consistent with the revised rules, including conditioning authorizations as appropriate to address collision risk and post-mission disposal matters on a case-by-case basis.[55]

20. Commenters also indicated that any updated rule should be performance-based as to how the requirements are met in order to maintain flexibility and better accommodate different technologies and mission profiles.[56] In this spirit, we decline to prescribe a specific method of post-mission disposal at this time. In adopting this five-year benchmark for LEO missions, we also acknowledge the possibility that satellite failures may give rise to non-compliance.[57] At this time, we decline to provide a blanket exception for satellite failures that was suggested by some commenters, as appropriate with the spirit of a performance-based objective.[58] However, in the event of a failure or anomaly giving rise to non-compliance, parties are permitted to seek waivers of such requirements for good cause shown under the Commission's existing rules.[59] In evaluating such a request for the waiver, the Commission will take into account all the facts and circumstances surrounding any potential satellite failure or anomaly that has

[54] In *ex parte* filings, some parties argue that we should not suggest that there are risks to the orbital environment associated with large constellations. We simply note, however, that this issue continues to be under consideration. *See*, *e.g.*, Letter from Jameson Dempsey, Principal, Satellite Policy, SpaceX to Marlene H. Dortch, Secretary, FCC (filed Sept. 16, 2022) (SpaceX *ex parte*); Letter from Hawkeye 360, Planet Labs PBC, Spire Global, Inc. to Marlene H. Dortch, Secretary, FCC, IB Docket Nos. 22-271, 18-313, at 2 (filed Sept. 22, 2022) (Hawkeye 360, Planet Labs, Spire *ex parte)*; Letter from Nicholas Spina, Director of Regulatory Affairs, Kepler Communications, Inc. to Marlene H. Dortch, Secretary, FCC, IB Docket Nos. 22-271, 18-313, at 3 (filed Sept. 22, 2022) (Kepler *ex parte*).

[55] Kuiper requests that we amend our application disclosure rule regarding satellite reliability to remove the requirement that for space station systems consisting of multiple space stations, the demonstration should include additional information regarding efforts to achieve a higher probability of success, with a goal, for large systems, of a probability of success for any individual space station of 0.99 or better. *See* Letter from Carrie Gage, Corporate Counsel, Kuiper Systems LLC to Marlene H. Dortch, Secretary, FCC (filed Sept. 16, 2022) (Kuiper *ex parte*). We note that the informational requirement Kuiper identifies is not yet in effect for part 25 operators, and a pending petition has sought reconsideration of that requirement. Petition for Reconsideration of the Boeing Company, Echostar Satellite Services, LLC, Hughes Networks Services, LLC, Planet Labs Inc., Spire Global, Inc., and Telesat Canada, FCC 20-54, IB Docket No. 13-818, at iv, 16-17 (dated Sept. 24, 2020). Accordingly, we decline to act on Kuiper's request at this time and will address it in connection with the petition for reconsideration and/or in connection with large constellation issues that we are expressly reserving judgment on in this Order.

[56] *See, e.g.,* CONFERS Comments at 5; Boeing Reply Comments at 11; Charles Lee Mudd Jr. Comments at 5 (Mudd Comments); Kepler Reply Comments at 1.

[57] In an *ex parte* filing, Kuiper suggests that the Commission apply a five-year demise time to an operator's "nominal" operations, with an exception for failure conditions that prevent executing the nominal deorbit and reentry maneuvers, and also suggests that we include a disposal reliability likelihood metric in our revised operational rule in section 25.283, 47 CFR § 25.283. *See* Kuiper *ex parte*. *See also* Hawkeye 360, Planet Labs, Spire *ex parte* at 2. We decline to incorporate these suggestions in the manner Kuiper suggests. The use of a probability for successful post-mission disposal is appropriate at the license application phase, where the focus is on design criteria. Section 25.283, on the other hand, provides an operational requirement that is either met or not met. In the context of such an operational requirement, the alternative approach, suggested by a number of commenters, of addressing disposal failures based on the facts and circumstances, and through waivers, if necessary, is preferrable to specifying a certain number of designed disposal failures that are considered routinely acceptable as an operational matter.

[58] Boeing Comments at 15-16; Astroscale Comments at 7-8; Kuiper Systems LLC Comments at 11.

[59] *See* Letter from WorldVu Satellites Limited, EchoStar Satellite Systems, LLC, Iridium Communications Inc., SES Americom, Inc. and O3b Limited to Marlene H. Dortch, Secretary, FCC, IB Docket Nos. 22-271, 18-313, at 1 (filed Sept. 22, 2022); Kepler *ex parte* at 2. *See also* 47 CFR § 1.3.

occurred, including the assessed cause of the failure or anomaly, matters beyond the operator's control, and any steps taken by the operator to avoid non-compliance.[60] We note that such waivers will not be liberally granted.

B. Grandfathering Existing Operations

21. We are aware that adopting a rule shortening the 25-year benchmark may impose a burden and increase costs for existing operators. In the past, if the Commission required licensees to modify their operations as a result of a change in the rules, the Commission has allowed those operators periods of time in order to minimize disruption to existing services, allow for amortization of the licensee's equipment costs, and facilitate a stable investment environment for operators.[61] In light of the potential financial and mission-planning impact of this new requirement, a transition period sufficient to permit operators to adjust their mission timelines and operations is in the public interest and supported by the record.[62] We find that the reduction in potential operator burden resulting from grandfathering certain satellites and authorizations from the five-year post-mission disposal requirement outweighs the risks of continued orbital congestion that could result from grandfathering as it would better facilitate compliance with the rule.

22. Accordingly, satellites already in orbit are exempt from the new requirement. For satellites already authorized by the Commission that have not yet been launched, we will provide a grandfathering period of two years, beginning on September 29, 2022, in order to allow operators to incorporate the five-year post-mission disposal requirement into their mission objectives. We believe a two-year period strikes a reasonable balance that will advance the goals of the reduced post-mission orbital lifetime while providing time for any necessary adjustments by operators in order to continue existing services and adjust planned operations. New licensees and existing applicants with authorized satellites to be launched after September 29, 2024, must comply with the five-year post-mission disposal requirement, though in individual cases the Commission will consider waivers requesting additional time for systems with existing authorizations that extend beyond the two-year period. For pending applications, we will continue to process them consistent with the current rules. For any applications granted involving space stations that would exceed the five-year limit, those space stations would need to be launched prior to September 30, 2024.

23. In some cases, already-authorized systems may require approval of a modification to update their license or grant to reflect alterations in system characteristics in order to achieve compliance.

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[60] *See* Kepler *ex parte* at 2 (requesting identification of parameters by which the Commission will evaluate waiver requests).

[61] *See, e.g., Amendment to the Commission's Rules Regarding a Plan for Sharing the Costs of Microwave Relocation*, First Report and Order and Further Notice of Proposed Rule Making, 11 FCC Rcd 8825 at para. 67 (1996) (establishing a ten-year sunset period in the transition of the 2 GHz band from existing fixed microwave services to broadband Personal Communications Services to allow incumbent fixed service licensees to amortize the full costs of their purchased equipment*); Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems et al*., Ninth Report and Order, 21 FCC Rcd 4473 at para. 44 (2006) (establishing a fifteen-year sunset period in the transition of spectrum bands from Broadband Radio Service and Fixed Microwave Service to Advanced Wireless Service and Mobile Satellite Service); *Redesignation of the 17.7-19.7 GHz Frequency Band, Blanket Licensing of Satellite Earth Stations in the 17.7-20.2 GHz and 27.5-30.0 GHz Frequency Bands, and the Allocation of Additional Spectrum in the 17.3-17.8 GHz and 24.75-25.25 GHz Frequency Bands for Broadcast Satellite-Service Use*, Report and Order, 15 FCC Rcd 13430 at para. 71 (2000) ("We believe that it is contrary to the public interest and not conducive to a stable investment environment to make terrestrial fixed operators, who currently serve the public, pay for relocation costs after . . . a short [three to five year] period of time.").

[62] Iridium Comments at 7 ("Improving on the 25-year standard undoubtedly imposes a cost on operators . . . the Commission should only apply such standards to future authorized systems to avoid imposing a substantial and unforeseen burden on existing operators."); Mudd Comments at 5; NASA Comments at 13.

Accordingly, any licensee or grantee with a license or market access grant requiring modification should file an application for a modification with respect to any satellites to be launched after September 29, 2024, including any replacement satellites, no later than March 29, 2024, to provide the Commission with sufficient time to process the modification requests before the conclusion of the two-year grandfathering period.[63]

C. Additional Flexibility for Academic and Research Missions

24. We observe that there may be circumstances that warrant a waiver of the five-year post-mission disposal requirement.[64] NASA, for example, expressed concern that a five-year limit would impact NASA Science Mission Directorate's (SMD's) CubeSat missions, which rely on natural decay of orbit to manage post-mission orbital lifetime and impose greater limits on acceptable launch opportunities.[65] NASA's comments do not address whether it expects changes in available launch opportunities if a five-year post-mission orbital lifetime requirement is adopted for commercial operators, and it appears that NASA will complete in the near future additional work to quantify the costs and benefits for its missions.[66] In any event, we acknowledge the public interest benefits of scientific research missions[67] and recognize the possibility that there may be specific scientific objectives that are not achievable at lower altitudes that would comply with the five-year post-mission disposal requirement. While we do not adopt a blanket waiver for these types of missions, we will consider such missions as a special category for purposes of analyzing waiver requests.

25. In determining whether research and scientific missions warrant a waiver of the five-year post-mission disposal requirement, some factors we may consider include the level of government

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[63] In *ex parte* filings, SpaceX suggests that the Commission does not need to require operators to request modifications to comply with the new rule and expresses concern about the effect requiring modifications could have on limited Commission resources. *See, e.g.*, SpaceX *ex parte. See also* Letter from Tom Stroup, President, Satellite Industry Association (SIA) to Marlene H. Dortch, Secretary, FCC, IB Docket Nos. 22-271, 18-313, at 1 (filed Sept. 22, 2022). We note that only a limited number of operators will need to file modification requests, and such requests will be limited to design and operational changes necessary to comply with our new rule. Since the changes would be material to the design and operations of the satellites, it is necessary for the Commission to authorize these changes by modification of the license or grant of market access. Therefore, we find that this requirement and the timeframes specified are reasonable. *See* Astroscale *Ex Parte* at 2-3 ("Relaxation to a notification standard for already-authorized systems would fail to uphold the intent for the shortened post-mission disposal to stabilize the orbital debris environment and provide economic benefits. . . . [C]oncerns regarding the workload to process any modifications are inflated – there is a presently-definable number of authorizations with satellites not yet launched that would be subject to the modification requirement. The IB Staff can determine and anticipate the workload that approval of modifications for already-authorized systems would present."); Hawkeye 360, Planet Labs, Spire *ex parte* at 2. For the avoidance of doubt, we clarify that any existing licensee or grantee with an approved orbital debris mitigation showing demonstrating post-mission disposal in no more than five years need not file a request for modification if no changes to the system are contemplated.

[64] Boeing Comments at 16 ("Satellite license applicants, particularly those requesting experimental authority, should also be permitted to secure longer reentry periods for good cause, such as to accommodate unique experimental payloads."); Mudd Comments at 4 (". . . should a particular license applicant require a longer EOL term, the FCC can require more significant demonstrations "in support of a longer post-mission lifetime" . . .); AIA Comments at 1 ("Exempt small experimental spacecraft in orbit between 400 to 600 kilometers should be permitted longer reentry periods with good cause.); Global NewSpace Operators Comments at 16.

[65] NASA Comments at 13.

[66] *See* NODIP 1.7.1. NASA is the lead agency tasked with "[r]eevaluat[ing] [the] ODMSP, including deorbit guidelines, by prioritizing a short-term study to better understand the impact of changing deorbit requirements for the USG, specifically the potential benefits and cost in reducing the deorbit timelines."

[67] *See, e.g.,* AIA Comments at 1, Boeing Comments at 14-16, Open Research Institute Comments at 4-5, NASA Comments at 13.

funding, coordination, and oversight of the mission, the need to conduct research at altitudes in which a five-year post-mission disposal requirement may be unduly burdensome, the predictability of mission trajectory and associated burdens on other operators, unique spacecraft characteristics, and whether the mission involves any unusual risks to the space environment.

26. Applicants requesting waiver of the five-year post-mission disposal requirement should consider submitting certain information to facilitate the Commission's analysis as to whether a waiver is warranted, including a statement describing the unique mission and research objectives that could not be achieved at a lower altitude, as well as a document of anticipated findings and a description of any plans for publishing or producing a report of such findings. Operators may provide a survey of outstanding research and missions indicating that the proposed operations would satisfy a unique area of research, including any findings and actions of other government agencies and educational institutions that support the importance of the mission. We note that a general statement that the mission is for the general education and practical experience of future space-oriented professionals, while laudable, is in itself unlikely to make a mission sufficiently unique to warrant a waiver.[68] In addition, there should be a direct nexus between the orbital altitude at which the research is to be conducted and the need for a waiver, unrelated to whether there is a particular "rideshare" launch available to the altitude range sought.

27. We are also sensitive to the needs of government-supported missions.[69] Operators seeking a waiver consistent with this guidance should also consider providing a statement identifying specific facts demonstrating that their proposed mission supports and serves a government purpose. Demonstrations should include, if applicable, participation in government research programs, the level of government oversight, how any government funds were used for the development and operation of the proposed mission,[70] as well as government support for launch operations, including ridesharing agreements through NASA. The Commission will consider statements demonstrating that the proposed mission is at least 50% funded by the U.S. government, excluding funding for launch operations, as government-supported, in order to facilitate equitable analysis of this demonstration.

D. Costs-Benefits

28. This rule may impose additional costs on the industry, including in some instances fuel and other costs for more rapid decommissioning needed to accommodate the shortened post-mission disposal timeframe, and opportunity costs associated with certain entities altering their mission plans to comply with the rule. However, as we discuss above, this is intended to incrementally slow the growth of orbital debris, particularly in LEO, with its increasing numbers of satellites.[71] Moreover, we find that this rule will slow the growth of collision avoidance maneuvers, saving fuel costs.[72] Faster deorbiting may also foster technological progress as firms are able to implement newer socially-valuable technologies

[68] If the only purpose of the mission is to provide students with hands-on participation in space activities, this may not justify consideration for a waiver of the post-mission disposal rule we adopt here. However, operators seeking a waiver of the five-year post-mission disposal rule may submit for the Commission's consideration a statement demonstrating that the educational purposes of the mission would not be served should students participate in a mission with a post-mission disposal lifetime of fewer than five years.

[69] *See* NASA Comments at 13.

[70] Operators can demonstrate government funding in a number of ways, including involvement with assorted NASA programs like the Educational Launch of Nanosatellites (ELaNa) initiative, the CubeSat Launch Initiative, and the Technology Educational Satellite (TechEdSat) series, National Science Foundation (NSF) grants, and various other government satellite programs.

[71] CSSMA Comments at 14; SpaceX Comments at 14; OneWeb Comments at 9-10.

[72] Astroscale Comments at 20. *See also* Letter from Daniel Oltrogge, Chief Scientist and Director of the Center for Space Standards and Innovation at COMPSPOC Corporation, and Darren McKnight, Senior Technical Fellow, LeoLabs, to Mr. Marlene H. Dortch, Secretary, FCC, IB Docket No. 18-313, at 5-6 (filed Sept. 21, 2022).

over a shortened time horizon that might not have been implemented under the 25-year guidelines.[73] Further, launch services will likely evolve to provide initial deployments compatible with the five-year post-mission disposal benchmark, thereby avoiding or reducing impacts on "rideshare" customers.

29. While it is difficult to quantify the economic value of the orbital debris mitigation measures adopted today, we find that the benefits of the rule in terms of reducing the probability of costly collisions and commensurate reduction in service outages, as well as reducing the frequency of collision avoidance maneuvers, outweigh any costs resulting from the rule. In the U.S. and globally, satellites provide voice, video, audio, and data services, filling coverage gaps and serving markets difficult to reach terrestrially, such as aviation and maritime. In the U.S. alone, satellite service revenue for 2021 comprised $45.2 billion.[74] This does not take into account the benefits that consumers derive from these services, nor benefits such as scientific progress that satellites effectuate. Collisions resulting from orbital debris harm the public by degrading the service quality that consumers receive and harm entities such as satellite-based service providers that are unable to carry out their mission or may face lost revenue and costs associated with outages and the need to launch new spacecraft.

IV. PROCEDURAL MATTERS

30. *Regulatory Flexibility Act.* The Regulatory Flexibility Act of 1980 (RFA), as amended, requires that an agency prepare a final regulatory flexibility analysis "whenever an agency promulgates a final rule under [5 U.S.C. § 553], after being required by that section or any other law to publish a general notice of proposed rulemaking."[75] An Initial Regulatory Flexibility Analysis (IRFA) was incorporated into the *FNPRM*.[76] The Commission sought written public comment on the possible significant economic impact on small entities regarding the proposals addressed in the *FNPRM*, including comments on the IRFA.[77] A Final Regulatory Flexibility Analysis is set forth in Appendix B. The Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, will send a copy of this Second Report and Order, including the FRFA, to the Chief Counsel for Advocacy of the Small Business Administration (SBA).[78]

31. *Paperwork Reduction Act*. This document does not contain [new or modified] information collection requirements subject to the Paperwork Reduction Act of 1995 (PRA), Public Law 104-13. In addition, therefore, it does not contain any new or modified information collection burden for small business concerns with fewer than 25 employees, pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, see 44 U.S.C. 3506(c)(4). This document may contain non-substantive modifications to approved information collection(s). Any such modifications will be submitted to OMB for review pursuant to OMB's non-substantive modification process.

32. *Congressional Review Act.* The Commission has determined, and the Administrator of the Office of Information and Regulatory Affairs, Office of Management and Budget concurs, that this rule is "non-major" under the Congressional Review Act, 5 U.S.C. § 804(2). The Commission will send a copy of this *Second Report and Order* to Congress and the Government Accountability Office pursuant to 5 U.S.C. §801(a)(1)(A).

33. *Additional Information.* For additional information on this proceeding, please contact Alexandra Horn, International Bureau, Satellite Division, alexandra.horn@fcc.gov.

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[73] OneWeb Comments at 10; s*ee also,* The European Space Agency, *Automating collision avoidance* (Oct. 22, 2019), https://www.esa.int/Space_Safety/Space_Debris/Automating_collision_avoidance.

[74] Satellite Industry Association Comments, GN Docket No. 22-203 (rec. July 1, 2022) at 20.

[75] 5 U.S.C. § 604(a).

[76] *FNPRM,* 35 FCC Rcd at 4282-4285, Appendix E.

[77] *Id.*

[78] *See* 5 U.S.C. § 603(a).

V. ORDERING CLAUSES

34. IT IS ORDERED, pursuant to sections 1, 4(i), 301, 303, 307, 308, 309, and 310 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 154(i), 301, 303, 307, 308, 309, and 310, that this Second Report and Order IS ADOPTED, the policies, rules, and requirements discussed herein ARE ADOPTED, and parts 5, 25, and 97 of the Commission's rules ARE AMENDED as set forth in Appendix A.

35. IT IS FURTHER ORDERED that the amendments of the Commission's rules to section 25.283(e), set forth in Appendix A, ARE ADOPTED, effective thirty days from the date of publication in the Federal Register, except that the amendments to section 25.114(d)(14)(vii)(D)(1), will not become effective until the Office of Management and Budget completes review of the information collection requirements in § 25.114(d), as revised at 85 FR 52450, August 25, 2020.

36. IT IS FURTHER ORDERED that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this Second Report and Order, including the Final Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

37. IT IS FURTHER ORDERED that the Commission SHALL SEND a copy of this Second Report and Order in a report to be sent to Congress and the Government Accountability Office pursuant to the Congressional Review Act, *see* 5 U.S.C. § 801(a)(1)(A).

Federal Communications Commission

Marlene H. Dortch
Secretary

APPENDIX A

Final Rules

The Federal Communications Commission amends 47 CFR, parts 5, 25, and 97, as follows:

PART 5 – EXPERIMENTAL RADIO SERVICE

1. The authority citation for Part 5 continues to read as follows:

Authority: 47 U.S.C. 154, 301, 302, 303, 307, 336.

2. Amend § 5.64, by revising paragraph (b)(7)(iv)(A) to read as follows:

§ 5.64 Special provisions for satellite systems.

* * * * *

(b) * * *

(7) * * *

(iv) * * *

(A) The statement must include a demonstration that the probability of success of the chosen disposal method will be 0.9 or greater for any individual space station. For space station systems consisting of multiple space stations, the demonstration should include additional information regarding efforts to achieve a higher probability of success, with a goal, for large systems, of a probability of success for any individual space station of 0.99 or better. For space stations under paragraph (b)(7)(ii) of this section that will be terminating operations in or passing through the low-Earth orbit region below 2000 km altitude, successful disposal is defined, for the purposes of this demonstration, as atmospheric re-entry of the spacecraft as soon as practicable, but no later than five years following completion of the mission. For space stations under paragraph (b)(7)(iii) of this section, successful disposal will be assessed on a case-by-case basis.

* * * * *

PART 25 – SATELLITE COMMUNICATIONS

3. The authority citation for Part 25 continues to read as follows:

Authority: 47 U.S.C. 154, 301, 302, 303, 307, 309, 310, 319, 332, 605, and 721, unless otherwise noted.

4. Amend § 25.114, by revising paragraph (d)(14)(vii)(D)(1) to read as follows:

§ 25.114 Applications for space station authorizations.

* * * * *

(d) * * *

(14) * * *

(vii) * * *

(D) * * *

(1) The statement must include a demonstration that the probability of success of the chosen disposal method will be 0.9 or greater for any individual space station. For space station systems consisting of multiple space stations, the demonstration should include additional information regarding efforts to achieve a higher probability of success, with a goal, for large systems, of a probability of success for any individual space station of 0.99 or better. For space stations under paragraph (d)(14)(vii)(B) of this section ending their mission in or passing through the low-Earth orbit region below 2000 km altitude, successful disposal is defined, for the purposes of this demonstration, as atmospheric re-entry of the spacecraft as soon as practicable, but no later than five years following completion of the mission. For all

other space stations under paragraph (d)(14)(vii)(B) and paragraph (d)(14)(vii)(C) of this section, successful disposal will be assessed on a case-by-case basis.

* * * * *

5. Amend § 25.283, to add headings to paragraphs (b) and (d), and add paragraph (e) as follows:

§ 25.283 End-of-life disposal.

* * * * *

(b) *Geostationary orbit space station end of life operations.* * * *

* * * * *

(d) *Applicability of minimum perigee for geostationary orbit space stations.* * * *

(e) *Low-Earth orbit space stations.* For space stations ending their mission in or passing through the low-Earth orbit region below 2000 km altitude and planning disposal through uncontrolled atmospheric re-entry, disposal must be completed as soon as practicable following end of mission, and no later than five years after the end of the mission. For purposes of this provision, "end of mission" will be defined as the time at which the individual spacecraft is no longer capable of conducting collision avoidance maneuvers. For spacecraft without collision avoidance capabilities, end of mission will be defined as the point in which the individual spacecraft has completed its primary mission.

* * * * *

PART 97 – AMATEUR RADIO SERVICE

6. The authority citation for Part 97 continues to read as follows:

Authority: 47 U.S.C. 151-155, 301-609, unless otherwise noted.

7. Amend § 97.207, by revising paragraph (g)(1)(vii)(D)(1) to read as follows:

§ 97.207 Space station.

* * * * *

(g) * * *

(1) * * *

(vii) * * *

(D) * * *

(1) The statement must include a demonstration that the probability of success of the chosen disposal method will be 0.9 or greater for any individual space station. For space station systems consisting of multiple space stations, the demonstration should include additional information regarding efforts to achieve a higher probability of success, with a goal, for large systems, of a probability of success for any individual space station of 0.99 or better. For space stations under paragraph (g)(1)(vii)(B) of this section that will be terminating operations in or passing through the low-Earth orbit region below 2000 km altitude, successful disposal, for the purposes of this demonstration, is defined as atmospheric re-entry of the spacecraft as soon as practicable, but no later than five years following completion of the mission. For space stations under paragraph (g)(1)(vii)(C) of this section, successful disposal will be assessed on a case-by-case basis.

* * * * *

APPENDIX B

Final Regulatory Flexibility Analysis

1. As required by the Regulatory Flexibility Act of 1980 (RFA), as amended,[1] an Initial Regulatory Flexibility Analysis (IRFA) was incorporated in the Further Notice of Proposed Rulemaking, *Mitigation of Orbital Debris in the New Space Age* (*FNPRM*), released in April 2020 in this proceeding.[2] The Commission sought written public comment on the proposals in the *FNPRM*, including comment on the IRFA. No comments were filed addressing the IRFA. This present Final Regulatory Flexibility Analysis (FRFA) conforms to the RFA.[3]

A. Need for, and Objectives of, the Order:

2. This Order adopts a rule requiring stations ending their mission in or passing through the low-Earth orbit region below 2000 km altitude and planning disposal through uncontrolled atmospheric re-entry following the completion of the mission, to complete as soon as practicable following end of mission, and no later than five years after the end of the mission. Adoption of this rule is a significant step in updating the Commission's rules on orbital debris mitigation. Updates to the Commission's rules on orbital debris mitigation are informed by the Commission's experience gained in the licensing process and address updates in mitigation guidelines and practices as well as market developments. Adoption of this rule will ensure that applicants for a Commission space station license or authorization, or grant of market access, will not contribute to orbital congestion longer than necessary. This action will help ensure that Commission decisions are consistent with the public interest in space remaining viable for future satellites and systems and the many services those systems provide to the public.

B. Summary of Significant Issues Raised by Public Comments in Response to the IRFA

3. No comments were filed that specifically addressed the IRFA.

C. Response to Comments by the Chief Counsel for Advocacy of the Small Business

4. Pursuant to the Small Business Jobs Act of 2010, which amended the RFA, the Commission is required to respond to any comments filed by the Chief Counsel for Advocacy of the Small Business Administration (SBA), and to provide a detailed statement of any change made to the proposed rules as a result of those comments.[4] The Chief Counsel did not file any comments in response to the proposed rules in this proceeding.

D. Description and Estimate of the Number of Small Entities to Which the Rules Will Apply

5. The RFA directs agencies to provide a description of, and, where feasible, an estimate of, the number of small entities that may be affected by the rules adopted herein.[5] The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."[6] In addition, the term "small business" has the

[1] *See* 5 U.S.C. § 603. The RFA, *see* 5 U.S.C. § 601-612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996, (SBREFA) Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

[2] *Orbital Debris in the New Space Age*, IB Docket No. 18-313, Second Report and Order and Further Notice of Proposed Rulemaking, 35 FCC Rcd 4156 (2020).

[3] *See* 5 U.S.C. § 604.

[4] 5 U.S.C. § 604(a)(3).

[5] *Id.*

[6] 5 U.S.C. § 601(6).

same meaning as the term "small business concern" under the Small Business Act.[7] A "small business concern" is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the Small Business Administration (SBA).[8] Below, we describe and estimate the number of small entities that may be affected by the adoption of the final rules.

6. **Satellite Telecommunications**. This industry comprises firms "primarily engaged in providing telecommunications services to other establishments in the telecommunications and broadcasting industries by forwarding and receiving communications signals via a system of satellites or reselling satellite telecommunications."[9] Satellite telecommunications service providers include satellite and earth station operators. The SBA small business size standard for this industry classifies a business with $38 million or less in annual receipts as small.[10] U.S. Census Bureau data for 2017 show that 275 firms in this industry operated for the entire year.[11] Of this number, 242 firms had revenue of less than $25 million.[12] Additionally, based on Commission data in the 2021 Universal Service Monitoring Report, as of December 31, 2020, there were 71 providers that reported they were engaged in the provision of satellite telecommunications services.[13] Of these providers, the Commission estimates that approximately 48 providers have 1,500 or fewer employees.[14] Consequently using the SBA's small business size standard, a little more than half of these providers can be considered small entities.

7. **All Other Telecommunications.** The "All Other Telecommunications" category is comprised of establishments primarily engaged in providing specialized telecommunications services, such as satellite tracking, communications telemetry, and radar station operation.[15] This industry also includes establishments primarily engaged in providing satellite terminal stations and associated facilities connected with one or more terrestrial systems and capable of transmitting telecommunications to, and receiving telecommunications from, satellite systems.[16] Establishments providing Internet services or voice over Internet protocol (VoIP) services via client-supplied telecommunications connections are also included in this industry.[17] The SBA has developed a small business size standard for "All Other

[7] 5 U.S.C. § 601(3) (incorporating by reference the definition of "small-business concern" in the Small Business Act, 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register."

[8] 15 U.S.C. § 632.

[9] *See* U.S. Census Bureau, 2017 NAICS Definition, "517410 Satellite Telecommunications," https://www.census.gov/naics/?input=517410&year=2017&details=517410.

[10] *See* 13 CFR § 121.201, NAICS Code 517410.

[11] *See* U.S. Census Bureau, 2017 Economic Census of the United States, Selected Sectors: Sales, Value of Shipments, or Revenue Size of Firms for the U.S.: 2017, Table ID: EC1700SIZEREVFIRM, NAICS Code 517410, https://data.census.gov/cedsci/table?y=2017&n=517410&tid=ECNSIZE2017.EC1700SIZEREVFIRM&hidePreview=false.

[12] *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard. We also note that according to the U.S. Census Bureau glossary, the terms receipts and revenues are used interchangeably, *see* https://www.census.gov/glossary/#term_ReceiptsRevenueServices.

[13] Federal-State Joint Board on Universal Service, Universal Service Monitoring Report at 26, Table 1.12 (2021), https://docs.fcc.gov/pubId.lic/attachments/DOC-379181A1.pdf.

[14] *Id.*

[15] *See* U.S. Census Bureau, 2017 NAICS Definition, "517919 All Other Telecommunications," https://www.census.gov/cgibin/sssd/naics/naicsrch?input=517919&search=2017+NAICS+Search&search=2017.

[16] *Id.*

[17] *Id.*

Telecommunications," which consists of all such firms with annual receipts of $35 million or less.[18] For this category, U.S. Census Bureau data for 2012 show that there were 1,442 firms that operated for the entire year.[19] Of those firms, a total of 1,400 had annual receipts of less than $25 million and 15 firms had annual receipts of $25 million to $49, 999,999.[20] Thus, the Commission estimates that the majority of "All Other Telecommunications" firms potentially affected by our action can be considered small.

E. Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements for Small Entities

8. The Order amended rules that are applicable to space station operators requesting a license or authorization from the Commission, or entities requesting that the Commission grant a request for U.S. market access. Specifically, the revised rules now require space stations ending their mission in or passing through the low-Earth orbit region below 2000 km altitude and planning disposal through uncontrolled atmospheric re-entry following the completion of the mission, to complete disposal as soon as practicable following end of mission, and no later than five years after the end of the mission.

9. Applicants requesting authorization from the Commission must already comply with existing operational requirements, including those related to orbital debris mitigation and post-mission disposal. Operators must prepare and provide a disclosure as part of their application detailing their orbital debris mitigation plan. There may be fuel and other costs for more rapid decommissioning needed to accommodate the shortened post-mission disposal timeframe and opportunity costs associated with certain entities altering their mission plans to comply with the rule. However, this rule will slow the growth of collision avoidance maneuvers, saving fuel costs. Faster deorbiting may also foster technological progress as firms are able to implement newer socially-valuable technologies over a shortened time horizon that might not have been implemented under the 25-year guidelines. Further, launch services will likely evolve to provide initial deployments compatible with the five-year post-mission disposal benchmark, thereby avoiding or reducing impacts on "rideshare" customers.

F. Steps Taken to Minimize the Significant Economic Impact on Small Entities, and Significant Alternatives Considered

10. The RFA requires an agency to describe any significant alternatives that it has considered in developing its approach, which may include the following four alternatives (among others): "(1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance and reporting requirements under the rule for such small entities; (3) the use of performance rather than design standards; and (4) an exemption from coverage of the rule, or any part thereof, for such small entities."[21]

11. The Order requires all space stations ending their mission in or passing through the low-Earth orbit region below 2000 km altitude and planning disposal through uncontrolled atmospheric re-entry following the completion of the mission, to complete disposal as soon as practicable following end of mission, and no later than five years after the end of the mission. The Commission has elected to provide a two-year grandfathering period to provide additional time for small entities to comply with this rule. This Order also codifies a post-mission disposal lifetime requirement of five years or less, thus providing a clear and objective benchmark for small entities to comply with. Additionally, the

[18] *See* 13 CFR § 121.201, NAICS Code 517919.

[19] *See* U.S. Census Bureau, 2012 Economic Census of the United States, Table ID: EC1251SSSZ4, Information: Subject Series - Estab and Firm Size: Receipts Size of Firms for the U.S.: 2012, NAICS Code 517919, https://data.census.gov/cedsci/table?text=EC1251SSSZ4&n=517919&tid=ECNSIZE2012.EC1251SSSZ4&hidePreview=false.

[20] *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard of annual receipts of $35 million or less.

[21] 5 U.S.C. § 603(c)(1)-(4).

Commission has opted to adopt this new requirement as a performance-based rule, instead of prescribing specific design standards or requirements.

G. Report to Congress

12. The Commission will send a copy of this Second Report and Order, including this FRFA, in a report to be sent to Congress pursuant to the Congressional Review Act.[22] In addition, the Commission will send a copy of the Report and Order, including this FRFA, to the Chief Counsel for Advocacy of the SBA. A copy of this Second Report and Order and FRFA (or summaries thereof) will also be published in the Federal Register.[23]

[22] 5 U.S.C. § 801(a)(1)(A).

[23] *See* 5 U.S.C. § 604(b).

APPENDIX C

List of Commenters Referenced in this Report and Order

Comments

Aerospace Industries Association (AIA)

Alistair Funge

Astroscale

Charles Lee Mudd Jr.

Commercial Smallsat Spectrum Management Association (CSSMA)

Commercial Space Flight Federation (CSF)

Consortium for Execution of Rendezvous and Servicing Operations (CONFERS)

Darren McKnight

Eutelsat S.A. (Eutalsat)

Gerardo Inzunza Higuera

Iridium Communications Inc. (Iridium)

Kuiper Systems LLC (Kuiper)

Lynk Global, Inc. (Lynk)

Maxar Technologies Inc.

Myriota Pty Ltd. (Myriota)

National Aeronautics and Space Administration (NASA)

Open Research Institute

Space Exploration Technologies Corp. (SpaceX)

The Boeing Company (Boeing)

WorldVu Satellites Limited (OneWeb)

Reply Comments

Astroscale

The Boeing Company (Boeing)

Kepler Communications Inc. (Kepler)

Ex Parte Filings

Astroscale

Darren McKnight, Daniel Oltrogge

HawkEye360, Planet Labs PBC, Spire Global Inc.

Kepler

Kuiper

OneWeb, EchoStar Satellite Systems, LLC, Iridium Communications Inc., SES Americom, Inc., and O3b Limited

Satellite Industry Association

SpaceX

STATEMENT OF
CHAIRWOMAN JESSICA ROSENWORCEL

Re: *Space Innovation*, IB Docket No. 22-271; *Mitigation of Orbital Debris in the New Space Age*, IB Docket No. 18-313

Today we take the next step in our Space Innovation agenda. We take action to care for our skies to promote strength and sustainability in the space economy.

Right now there are thousands of metric tons of orbital debris in the air above—and it is going to grow. We need to address it. Because if we don't, this space junk could constrain new opportunities.

To explain why, look all the way back to the first space age. For billions of years, space was not a landscape for human endeavors. Then the space race began and in 1958 NASA sent Vanguard 1 into our skies—and it still circles the planet today.

At the time it was launched, Vanguard 1 was a bold undertaking and a commitment to our connected future. But today it also represents something else—a reminder of the work we have to do to address orbital debris.

Since 1957 humanity has put about 10,000 satellites into the sky. More than half of those satellites are now defunct. Many of them were launched with the understanding that they were cheaper to just abandon than take out of orbit.

That means that like Vanguard 1 they stay in orbit for decades, careening around our increasingly crowded skies as space junk. That's bad because it raises the risk of collisions that harm satellites we count on, makes it harder to launch new objects into higher orbits, and even has environmental consequences back on Earth.

For years, it has been the recommended practice for satellite operators to deorbit their spacecraft within 25 years of completing their missions. But 25 years is a long time. There is no reason to wait that long anymore, especially in low-Earth orbit. Our space economy is moving fast. The second space age is here. For it to continue to grow, we need to do more to clean up after ourselves so space innovation can continue to respond.

That brings me to right now. With an eye to the future, today we adopt rules that shorten this period for satellites in low-Earth orbit from 25 years to five years. That's big. It will mean more accountability and less risk of collisions that increase orbital debris and the likelihood of space communication failures.

Thank you to my colleagues for joining me and taking this important step to adopt this first-of-its-kind adjustment to our rules. Thank you also to the expert staff who worked on this effort, including Alexandra Horn, Samuel Karty, Karl Kensinger, Sankar Persaud, Tom Sullivan, Troy Tanner, Merissa Velez, and Patrick Webre from the International Bureau; Linda Chang, Thomas Derenge, Georgios Leris, and Joshua Smith from the Wireless Telecommunications Bureau; Raphael Sznajder, and Ashley Tyson from the Enforcement Bureau; Damian Ariza, Nicholas Oros, and Thomas Struble from the Office of Engineering and Technology; Jerry Duvall, Kate Matraves, Emily Talaga, and Aleks Yankelevich from the Office of Economics and Analytics; Deborah Broderson, David Konczal, and Bill Richardson from the Office of General Counsel; and Maura McGowan and Joy Ragsdale from the Office of Communications Business Opportunities.

STATEMENT OF
COMMISSIONER GEOFFREY STARKS

Re: *Space Innovation*, IB Docket No. 22-271; *Mitigation of Orbital Debris in the New Space Age*, IB Docket No. 18-313

Here at the Commission, we've been hard at work promoting and adapting to a new space economy. To measure success, we've often marveled at new system deployments and celebrated the new capabilities they've brought to market. But as a space regulator, our role is about more than just making sure the next new mission achieves liftoff. We also need to plan ahead for the missions we know will follow—and that means making sure that a new era of space innovation ultimately doesn't collapse by the weight of its own success.

That's the motivation behind the order we adopt today. We know that orbital debris is already an issue. We also know that the amount of debris is largely a function of what we put up, net of what we bring down, plus the massive quantity of debris generated by collisions and other fragmentation events. If thousands of new satellites launch every year and are replenished every 5, 10, or 15 years, yet take 25 years to demise once the mission is done, the rate of debris accumulation will grow rapidly, and perhaps unsustainably. More objects remaining in crowded orbits for longer will potentially generate more collisions. Each one of those collisions would generate massive quantities of debris, continuing the cycle.

Thankfully, most new systems in LEO don't need 25 years for post-mission disposal, even above the lowest operational altitudes. And few operators would target 25 years if they shouldered the debris-related external costs of their systems. So with this order, we take the practical step of reducing demise times in LEO to no more than 5 years, a timeframe we know is readily achievable. Compliance with the new rule will bend the curve of debris proliferation. It also will reduce collisions and free up resources that would otherwise go toward trying to avoid them.

The five-year rule, along with our ongoing debris mitigation efforts, also will help us keep the promise of a new space economy marked by accessibility, entrepreneurship, and repeat breakthroughs in efficiency. Those winning characteristics will only persist if we manage the debris problem successfully. Without a safe operating environment, debris risk could escalate from a financial afterthought to a hazard that makes investors think twice, and could complicate operations in a way that slows or limits new space endeavors while driving up per-mission costs. Put simply, well before it makes LEO unusable, orbital debris could erect new barriers to entry in an industry that has innovated tirelessly to remove them. That makes orbital debris a competition problem, in addition to a safety and security problem. In the long run, it doesn't take a worst-case scenario to eliminate the favorable economics of new space.

Finally, as I've often said, our efforts at the FCC do not exist in a vacuum. Earlier this month, NASA funded several academic studies into the economic, social, and policy issues around space debris, and a bipartisan group of Senators also introduced legislation to jumpstart the development of debris removal technology in the United States. I continue to believe that the FCC must work collaboratively throughout government on these issues and that as a nation, we must leverage our collective expertise. But as a licensing authority with no shortage of applications before it, we are right to move forward.

I thank the International Bureau for its hard work on this item.

STATEMENT OF
COMMISSIONER NATHAN SIMINGTON

Re: *Space Innovation,* IB Docket No. 22-271; *Mitigation of Orbital Debris in the New Space Age,* IB Docket No. 18-313

Today the Commission adopts a rule requiring non-geostationary satellite operators to deorbit satellites within five years after the completion of their missions. We require both that domestic licensees, and foreign operators granted access to the United States market, responsibly dispose of satellites that have served their purpose. This Order marks what I hope is the dawn of a new regulatory approach to the space economy: rules that are tough, sensible, and performance-based. Rules that, I hope, will form the bedrock of a safe, sustainable, and innovative space economy.

Let me be clear. Orbital debris is a problem, but not a crisis. Not yet. Operators might be forgiven for wondering where the fire is. Indeed, we may, in the fullness of time, come to discover that active debris removal technologies are more than adequate to meet the challenge of debris generation. Or that close coordination among operators in the sharing of ephemeris data and mutual cooperation in conjunction management works just fine without our intervention. We may come to learn that, in other words, the Commission's rules are a largely unused backstop for best-in-class commercial practice. Our rules may soon be superannuated by innovative solutions from responsible operators who recognize that for any operator to succeed, each must operate with an eye toward safety and sustainability. That could happen.

In fact, I hope it does happen. But what we cannot do is bet on it. Hope is not a plan. And the operating environment of the past of a few, large, high-altitude satellites is fading from memory at a rate that feels like a step change from even five years ago. At the FCC we often talk of the spectrum pipeline—well, get a load of the satellite pipeline. Over the next decade, commercial operators plan to launch tens of thousands of new satellites into orbit. A veritable Cambrian explosion of commercial space operations is just over the horizon. We had better be ready when it arrives.

I will not reel off examples of various tragedies of the commons or other regulatory failures, except to observe that we've waited overlong before, and it has not gone well. Each of you may have a different one in mind, which is sure testimony of our sometimes inability to learn this lesson. That is: there is no worse time to draw up *ex ante* rules for peaceful and productive coexistence than in the throes of an *ex post* crisis. We must act.

We must seize this moment; the moment practically calls out for it. The United States represents something like fifty percent of the international space economy—we therefore have, through the option of extending our orbital debris rules to any who seek market access, a regulatory hook for creating a default rulebook for commercial operators globally. We can create a unitary set of clear and flexible rules for safe commercial space operation, and we can apply that standard to any who seek access to our market. And, as things stand, that is a powerful—even irresistible—incentive.

This is a lane for American leadership in what is arguably the most innovative commercial industry, but it can close if we do nothing. Our present leadership in the space economy is not promised forever. And strong rules can be winnowed through consensus-driven multistakeholder bodies constrained by heckler's vetoes. It is entirely possible to miss this opportunity.

The United States has the most innovative, and largest, space economy in the world. It has a readymade mechanism, in the Commission, to promulgate rules for the entire international commercial space market, and it has compelling natural incentives for compliance. There is bipartisan support to act to lead on an issue that has, it is fair to say, the world's attention. The ancient Greeks had a term called 'kairos,' which means the perfect opportunity—not just a 'now,' but a 'right now'. There is more that we can do, and right now is the right 'now'.

I cannot begin to thank enough those within the Commission who have worked diligently,

thoughtfully, and creatively on this item. My sincere thanks to the International Bureau and all staff who worked on this item. My thanks to my fellow Commissioners and their staffs who have worked hard to implement targeted changes to the language of the item. And my thanks, especially, to Chairwoman Rosenworcel and her staff. While the Chairwoman well knows that I view this Order as a first step into a new era, I cannot thank her enough for her leadership in getting us to this point. I look forward to working with her, and all of my colleagues within the agency and without, to craft sensible rules for a new space age.

Suffice it to say, the item has my support.

certification shall be obtained from the Administrator. Notice of certification or refusal to certify shall be provided not later than 60 days after the Secretary receives the application.

(2) The Secretary of Transportation shall condition the approval of an application on compliance with applicable air and water quality standards during construction and operation.

(d) COMPLIANCE WITH LAWS AND REGULATIONS.—The Secretary of Transportation may require a certification from a sponsor that the sponsor will comply with all applicable laws and regulations. The Secretary may rescind at any time acceptance of a certification from a sponsor under this subsection. This subsection does not affect any responsibility of the Secretary under another law, including—

(1) section 303 of title 49;

(2) title VI of the Civil Rights Act of 1964 (42 U.S.C. 2000d et seq.);

(3) title VIII of the Act of April 11, 1968 (42 U.S.C. 3601 et seq.);

(4) the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.); and

(5) the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (42 U.S.C. 4601 et seq.).

(Pub. L. 103–272, § 1(e), July 5, 1994, 108 Stat. 1344, § 70304 of title 49; renumbered § 70304 then § 51104 of title 51 and amended Pub. L. 111–314, § 4(d)(2), (4)(D), (6)(B), Dec. 18, 2010, 124 Stat. 3440, 3441, 3443.)

HISTORICAL AND REVISION NOTES

Revised Section	*Source (U.S. Code)*	*Source (Statutes at Large)*
70304	15:5804(e).	Nov. 4, 1992, Pub. L. 102–588, § 505(e), 106 Stat. 5126.

In subsection (a), the words ''policy of the United States'' are substituted for ''national policy'', and the words ''of the United States'' are substituted for ''of the Nation'', for consistency. The words ''included in a project grant application'' and ''full and'' are omitted as surplus.

In subsection (b), the words ''of objectives'' are omitted as surplus.

In subsection (c), the words ''chief executive officer'' are substituted for ''Governor'' for consistency in the revised title and because the word ''State'' includes the territories and possessions of the United States.

In subsection (d), before clause (1), the words ''in connection with any project'', ''imposed on such sponsor under this section in connection with such project'', and ''or discharge'' are omitted as surplus. The words ''laws and regulations'' are substituted for ''statutory and administrative requirements'' for consistency in the revised title.

REFERENCES IN TEXT

The Civil Rights Act of 1964, referred to in subsec. (d)(2), is Pub. L. 88–352, July 2, 1964, 78 Stat. 241. Title VI of the Act is classified to subchapter V (§ 2000d et seq.) of chapter 21 of Title 42, The Public Health and Welfare. For complete classification of this Act to the Code, see Short Title note set out under section 2000a of Title 42 and Tables.

Title VIII of the Act of April 11, 1968, referred to in subsec. (d)(3), is title VIII of Pub. L. 90–284, Apr. 11, 1968, 82 Stat. 81, known as the Fair Housing Act, which is classified principally to subchapter I (§ 3601 et seq.) of chapter 45 of Title 42, The Public Health and Welfare. For complete classification of this Act to the Code, see Short Title note set out under section 3601 of Title 42 and Tables.

The National Environmental Policy Act of 1969, referred to in subsec. (d)(4), is Pub. L. 91–190, Jan. 1, 1970, 83 Stat. 852, which is classified generally to chapter 55 (§ 4321 et seq.) of Title 42, The Public Health and Welfare. For complete classification of this Act to the Code, see Short Title note set out under section 4321 of Title 42 and Tables.

The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, referred to in subsec. (d)(5), is Pub. L. 91–646, Jan. 2, 1971, 84 Stat. 1894, which is classified principally to chapter 61 (§ 4601 et seq.) of Title 42, The Public Health and Welfare. For complete classification of this Act to the Code, see Short Title note set out under section 4601 of Title 42 and Tables.

AMENDMENTS

2010—Pub. L. 111–314, § 4(d)(2), (4)(D), successively renumbered section 70304 of title 49 and section 70304 of this title as this section.

Subsec. (d)(1). Pub. L. 111–314, § 4(d)(6)(B), substituted ''section 303 of title 49'' for ''section 303 of this title''.

§ 51105. Authorization of appropriations

Not more than $10,000,000 may be appropriated to the Secretary of Transportation to make grants under this chapter. Amounts appropriated under this section remain available until expended.

(Pub. L. 103–272, § 1(e), July 5, 1994, 108 Stat. 1345, § 70305 of title 49; renumbered § 70305 then § 51105 of title 51, Pub. L. 111–314, § 4(d)(2), (4)(E), Dec. 18, 2010, 124 Stat. 3440, 3441.)

HISTORICAL AND REVISION NOTES

Revised Section	*Source (U.S. Code)*	*Source (Statutes at Large)*
70305	15:5804(b) (2d, last sentences).	Nov. 4, 1992, Pub. L. 102–588, § 505(b) (2d, last sentences), 106 Stat. 5125.

AMENDMENTS

2010—Pub. L. 111–314 successively renumbered section 70305 of title 49 and section 70305 of this title as this section.

Subtitle VI—Earth Observations

CHAPTER 601—LAND REMOTE SENSING POLICY

SUBCHAPTER I—GENERAL

SUBCHAPTER II—LANDSAT

SUBCHAPTER III—LICENSING OF PRIVATE REMOTE SENSING SPACE SYSTEMS

SUBCHAPTER IV—RESEARCH, DEVELOPMENT, AND DEMONSTRATION

SUBCHAPTER I—GENERAL

§ 60101. Definitions

In this chapter:

(1) COST OF FULFILLING USER REQUESTS.—The term ''cost of fulfilling user requests'' means the incremental costs associated with providing product generation, reproduction, and distribution of unenhanced data in response to user requests and shall not include any acquisition, amortization, or depreciation of capital assets originally paid for by the United States Government or other costs not specifically attributable to fulfilling user requests.

(2) DATA CONTINUITY.—The term ''data continuity'' means the continued acquisition and availability of unenhanced data which are, from the point of view of the user—

(A) sufficiently consistent (in terms of acquisition geometry, coverage characteristics, and spectral characteristics) with previous Landsat data to allow comparisons for global and regional change detection and characterization; and

(B) compatible with such data and with methods used to receive and process such data.

(3) DATA PREPROCESSING.—The term ''data preprocessing''—

(A) may include—

(i) rectification of system and sensor distortions in land remote sensing data as it is received directly from the satellite in preparation for delivery to a user;

(ii) registration of such data with respect to features of the Earth; and

(iii) calibration of spectral response with respect to such data; but

(B) does not include conclusions, manipulations, or calculations derived from such data, or a combination of such data with other data.

(4) LAND REMOTE SENSING.—The term ''land remote sensing'' means the collection of data which can be processed into imagery of surface features of the Earth from an unclassified satellite or satellites, other than an operational United States Government weather satellite.

(5) LANDSAT PROGRAM MANAGEMENT.—The term ''Landsat Program Management'' means the integrated program management structure—

(A) established by, and responsible to, the Administrator and the Secretary of Defense pursuant to section 60111(a) of this title; and

(B) consisting of appropriate officers and employees of the Administration, the Department of Defense, and any other United States Government agencies the President designates as responsible for the Landsat program.

(6) LANDSAT SYSTEM.—The term ''Landsat system'' means Landsats 1, 2, 3, 4, 5, and 6, and any follow-on land remote sensing system operated and owned by the United States Government, along with any related ground equipment, systems, and facilities owned by the United States Government.

(7) LANDSAT 6 CONTRACTOR.—The term ''Landsat 6 contractor'' means the private sector entity which was awarded the contract for spacecraft construction, operations, and data marketing rights for the Landsat 6 spacecraft.

(8) LANDSAT 7.—The term ''Landsat 7'' means the follow-on satellite to Landsat 6.

(9) NATIONAL SATELLITE LAND REMOTE SENSING DATA ARCHIVE.—The term ''National Satellite Land Remote Sensing Data Archive'' means the archive established by the Secretary of the Interior pursuant to the archival responsibilities defined in section 60142 of this title.

(10) NONCOMMERCIAL PURPOSES.—The term ''noncommercial purposes'' means activities undertaken by individuals or entities on the condition, upon receipt of unenhanced data, that—

(A) such data shall not be used in connection with any bid for a commercial contract, development of a commercial product, or any other non-United States Government activity that is expected, or has the potential, to be profitmaking;

(B) the results of such activities are disclosed in a timely and complete fashion in the open technical literature or other method of public release, except when such disclosure by the United States Government or its contractors would adversely affect the national security or foreign policy of the United States or violate a provision of law or regulation; and

(C) such data shall not be distributed in competition with unenhanced data provided by the Landsat 6 contractor.

(11) SECRETARY.—The term ''Secretary'' means the Secretary of Commerce.

(12) UNENHANCED DATA.—The term ''unenhanced data'' means land remote sensing signals or imagery products that are unprocessed or subject only to data preprocessing.

(13) UNITED STATES GOVERNMENT AND ITS AFFILIATED USERS.—The term ''United States Government and its affiliated users'' means—

(A) United States Government agencies;

(B) researchers involved with the United States Global Change Research Program and its international counterpart programs; and

(C) other researchers and international entities that have signed with the United States Government a cooperative agreement involving the use of Landsat data for noncommercial purposes.

(Pub. L. 111–314, § 3, Dec. 18, 2010, 124 Stat. 3409.)

HISTORICAL AND REVISION NOTES

Revised Section	*Source (U.S. Code)*	*Source (Statutes at Large)*
60101	15 U.S.C. 5602.	Pub. L. 102–555, §3, Oct. 28, 1992, 106 Stat. 4164.

The definition of ''Administrator'' in section 3 of the Land Remote Sensing Policy Act of 1992 (Public Law 102–555, 106 Stat. 4164) is omitted as unnecessary because of the definition added by section 10101 of title 51.

FINDINGS

Pub. L. 102–555, §2, Oct. 28, 1992, 106 Stat. 4163, provided that: ''The Congress finds and declares the following:

''(1) The continuous collection and utilization of land remote sensing data from space are of major benefit in studying and understanding human impacts on the global environment, in managing the Earth's natural resources, in carrying out national security functions, and in planning and conducting many other activities of scientific, economic, and social importance.

''(2) The Federal Government's Landsat system established the United States as the world leader in land remote sensing technology.

''(3) The national interest of the United States lies in maintaining international leadership in satellite land remote sensing and in broadly promoting the beneficial use of remote sensing data.

''(4) The cost of Landsat data has impeded the use of such data for scientific purposes, such as for global environmental change research, as well as for other public sector applications.

''(5) Given the importance of the Landsat program to the United States, urgent actions, including expedited procurement procedures, are required to ensure data continuity.

''(6) Full commercialization of the Landsat program cannot be achieved within the foreseeable future, and thus should not serve as the near-term goal of national policy on land remote sensing; however, commercialization of land remote sensing should remain a long-term goal of United States policy.

''(7) Despite the success and importance of the Landsat system, funding and organizational uncertainties over the past several years have placed its future in doubt and have jeopardized United States leadership in land remote sensing.

''(8) Recognizing the importance of the Landsat program in helping to meet national and commercial objectives, the President approved, on February 11, 1992, a National Space Policy Directive which was developed by the National Space Council and commits the United States to ensuring the continuity of Landsat coverage into the 21st century.

''(9) Because Landsat data are particularly important for national security purposes and global environmental change research, management responsibilities for the program should be transferred from the Department of Commerce to an integrated program management involving the Department of Defense and the National Aeronautics and Space Administration.

''(10) Regardless of management responsibilities for the Landsat program, the Nation's broad civilian, national security, commercial, and foreign policy interests in remote sensing will best be served by ensuring that Landsat remains an unclassified program that operates according to the principles of open skies and nondiscriminatory access.

''(11) Technological advances aimed at reducing the size and weight of satellite systems hold the potential for dramatic reductions in the cost, and substantial improvements in the capabilities, of future land remote sensing systems, but such technological advances have not been demonstrated for land remote sensing and therefore cannot be relied upon as the sole means of achieving data continuity for the Landsat program.

''(12) A technology demonstration program involving advanced remote sensing technologies could serve a vital role in determining the design of a follow-on spacecraft to Landsat 7, while also helping to determine whether such a spacecraft should be funded by the United States Government, by the private sector, or by an international consortium.

''(13) To maximize the value of the Landsat program to the American public, unenhanced Landsat 4 through 6 data should be made available, at a minimum, to United States Government agencies, to global environmental change researchers, and to other researchers who are financially supported by the United States Government, at the cost of fulfilling user requests, and unenhanced Landsat 7 data should be made available to all users at the cost of fulfilling user requests.

''(14) To stimulate development of the commercial market for unenhanced data and value-added services, the United States Government should adopt a data policy for Landsat 7 which allows competition within the private sector for distribution of unenhanced data and value-added services.

''(15) Development of the remote sensing market and the provision of commercial value-added services based on remote sensing data should remain exclusively the function of the private sector.

''(16) It is in the best interest of the United States to maintain a permanent, comprehensive Government archive of global Landsat and other land remote sensing data for long-term monitoring and study of the changing global environment.''

[For definition of terms used in section 2 of Pub. L. 102–555, set out above, see section 3 of Pub. L. 102–555, Oct. 28, 1992, 106 Stat. 4164, which was classified to former section 5602 of Title 15, Commerce and Trade, and was repealed and reenacted as this section by Pub. L. 111–314, §§3, 6, Dec. 18, 2010, 124 Stat. 3328, 3444.]

SUBCHAPTER II—LANDSAT

§ 60111. Landsat Program Management

(a) ESTABLISHMENT.—The Administrator and the Secretary of Defense shall be responsible for management of the Landsat program. Such responsibility shall be carried out by establishing an integrated program management structure for the Landsat system.

(b) MANAGEMENT PLAN.—The Administrator, the Secretary of Defense, and any other United States Government official the President designates as responsible for part of the Landsat program shall establish, through a management plan, the roles, responsibilities, and funding expectations for the Landsat program of the appropriate United States Government agencies. The management plan shall—

(1) specify that the fundamental goal of the Landsat Program Management is the continuity of unenhanced Landsat data through the acquisition and operation of a Landsat 7 satellite as quickly as practicable which is, at a minimum, functionally equivalent to the Landsat 6 satellite, with the addition of a tracking and data relay satellite communications capability;

(2) include a baseline funding profile that—

(A) is mutually acceptable to the Administration and the Department of Defense for the period covering the development and operation of Landsat 7; and

(B) provides for total funding responsibility of the Administration and the Department of Defense, respectively, to be approximately equal to the funding responsibility of

the other as spread across the development and operational life of Landsat 7;

(3) specify that any improvements over the Landsat 6 functional equivalent capability for Landsat 7 will be funded by a specific sponsoring agency or agencies, in a manner agreed to by the Landsat Program Management, if the required funding exceeds the baseline funding profile required by paragraph (2), and that additional improvements will be sought only if the improvements will not jeopardize data continuity; and

(4) provide for a technology demonstration program whose objective shall be the demonstration of advanced land remote sensing technologies that may potentially yield a system which is less expensive to build and operate, and more responsive to data users, than is the current Landsat system.

(c) RESPONSIBILITIES.—The Landsat Program Management shall be responsible for—

(1) Landsat 7 procurement, launch, and operations;

(2) ensuring that the operation of the Landsat system is responsive to the broad interests of the civilian, national security, commercial, and foreign users of the Landsat system;

(3) ensuring that all unenhanced Landsat data remain unclassified and that, except as provided in subsections (a) and (b) of section 60146 of this title, no restrictions are placed on the availability of unenhanced data;

(4) ensuring that land remote sensing data of high priority locations will be acquired by the Landsat 7 system as required to meet the needs of the United States Global Change Research Program, as established in the Global Change Research Act of 1990 (15 U.S.C. 2921 et seq.), and to meet the needs of national security users;

(5) Landsat data responsibilities pursuant to this chapter;

(6) oversight of Landsat contracts entered into under sections 102[1] and 103[1] of the Land Remote Sensing Policy Act of 1992 (Public Law 102–555, 106 Stat. 4168);

(7) coordination of a technology demonstration program pursuant to section 60133 of this title; and

(8) ensuring that copies of data acquired by the Landsat system are provided to the National Satellite Land Remote Sensing Data Archive.

(d) AUTHORITY TO CONTRACT.—The Landsat Program Management may, subject to appropriations and only under the existing contract authority of the United States Government agencies that compose the Landsat Program Management, enter into contracts with the private sector for services such as satellite operations and data preprocessing.

(e) LANDSAT ADVISORY PROCESS.—

(1) ADVICE AND COMMENTS.—The Landsat Program Management shall seek impartial advice and comments regarding the status, effectiveness, and operation of the Landsat system, using existing advisory committees and other appropriate mechanisms. Such advice shall be sought from individuals who represent—

(A) a broad range of perspectives on basic and applied science and operational needs with respect to land remote sensing data;

(B) the full spectrum of users of Landsat data, including representatives from United States Government agencies, State and local government agencies, academic institutions, nonprofit organizations, value-added companies, the agricultural, mineral extraction, and other user industries, and the public; and

(C) a broad diversity of age groups, sexes, and races.

(2) REPORTS.—The Landsat Program Management shall prepare and submit biennially a report to Congress which—

(A) reports the public comments received pursuant to paragraph (1); and

(B) includes—

(i) a response to the public comments received pursuant to paragraph (1);

(ii) information on the volume of use, by category, of data from the Landsat system; and

(iii) any recommendations for policy or programmatic changes to improve the utility and operation of the Landsat system.

(Pub. L. 111–314, § 3, Dec. 18, 2010, 124 Stat. 3411.)

HISTORICAL AND REVISION NOTES

Revised Section	*Source (U.S. Code)*	*Source (Statutes at Large)*
60111	15 U.S.C. 5611.	Pub. L. 102–555, title I, § 101, Oct. 28, 1992, 106 Stat. 4166.

In subsection (b), in the matter before paragraph (1), after the words ''funding expectations for the Landsat'', the word ''program'' is set out without being capitalized to correct an error in the law.

In subsection (c)(6), the words ''sections 102 and 103 of the Land Remote Sensing Policy Act of 1992 (Public Law 102–555, 106 Stat. 4168)'' are substituted for ''sections 102 and 103'' to clarify the reference. The reference to sections 102 and 103 of the Land Remote Sensing Policy Act of 1992 is retained in text, notwithstanding the fact that sections 102 and 103 of the Act are repealed as obsolete, because oversight responsibilities may continue for contracts entered into under the now obsolete provisions.

In subsection (e)(2), in the matter before subparagraph (A), the word ''biennially'' is substituted for ''Within 1 year after the date of the enactment of this Act and biennially thereafter,'' to eliminate obsolete language.

REFERENCES IN TEXT

The Global Change Research Act of 1990, referred to in subsec. (c)(4), is Pub. L. 101–606, Nov. 16, 1990, 104 Stat. 3096, which is classified generally to chapter 56A (§ 2921 et seq.) of Title 15, Commerce and Trade. For complete classification of this Act to the Code, see Short Title note set out under section 2921 of Title 15 and Tables.

Sections 102 and 103 of the Land Remote Sensing Policy Act of 1992, referred to in subsec. (c)(6), which were classified to sections 5612 and 5613, respectively, of Title 15, Commerce and Trade, were repealed by Pub. L. 111–314, § 6, Dec. 18, 2010, 124 Stat. 5444, which Act enacted this title.

DEVELOPMENT, PROCUREMENT, AND SUPPORT

Pub. L. 102–484, div. A, title II, § 243, Oct. 23, 1992, 106 Stat. 2360, as amended by Pub. L. 103–35, title II,

[1] See References in Text note below.

§ 202(a)(3), May 31, 1993, 107 Stat. 101, provided that: ''The Secretary of Defense is authorized to contract for the development and procurement of, and support for operations of, the Landsat vehicle designated as Landsat 7.'' Similar provisions were contained in the following prior appropriation act:

Pub. L. 102–396, title IX, § 9082A, Oct. 6, 1992, 106 Stat. 1920.

§ 60112. Transfer of Landsat 6 program responsibilities

The responsibilities of the Secretary with respect to Landsat 6 shall be transferred to the Landsat Program Management, as agreed to between the Secretary and the Landsat Program Management, pursuant to section 60111 of this title.

(Pub. L. 111–314, § 3, Dec. 18, 2010, 124 Stat. 3413.)

HISTORICAL AND REVISION NOTES

Revised Section	*Source (U.S. Code)*	*Source (Statutes at Large)*
60112	15 U.S.C. 5614.	Pub. L. 102–555, title I, § 104, Oct. 28, 1992, 106 Stat. 4170.

§ 60113. Data policy for Landsat 7

(a) LANDSAT 7 DATA POLICY.—The Landsat Program Management, in consultation with other appropriate United States Government agencies, shall develop a data policy for Landsat 7 which should—

(1) ensure that unenhanced data are available to all users at the cost of fulfilling user requests;

(2) ensure timely and dependable delivery of unenhanced data to the full spectrum of civilian, national security, commercial, and foreign users and the National Satellite Land Remote Sensing Data Archive;

(3) ensure that the United States retains ownership of all unenhanced data generated by Landsat 7;

(4) support the development of the commercial market for remote sensing data;

(5) ensure that the provision of commercial value-added services based on remote sensing data remains exclusively the function of the private sector; and

(6) to the extent possible, ensure that the data distribution system for Landsat 7 is compatible with the Earth Observing System Data and Information System.

(b) ADDITIONAL DATA POLICY CONSIDERATIONS.—In addition, the data policy for Landsat 7 may provide for—

(1) United States private sector entities to operate ground receiving stations in the United States for Landsat 7 data;

(2) other means for direct access by private sector entities to unenhanced data from Landsat 7; and

(3) the United States Government to charge a per image fee, license fee, or other such fee to entities operating ground receiving stations or distributing Landsat 7 data.

(Pub. L. 111–314, § 3, Dec. 18, 2010, 124 Stat. 3413.)

HISTORICAL AND REVISION NOTES

Revised Section	*Source (U.S. Code)*	*Source (Statutes at Large)*
60113	15 U.S.C. 5615(a), (b).	Pub. L. 102–555, title I, § 105(a), (b), Oct. 28, 1992, 106 Stat. 4170.

SUBCHAPTER III—LICENSING OF PRIVATE REMOTE SENSING SPACE SYSTEMS

§ 60121. General licensing authority

(a) LICENSING AUTHORITY OF SECRETARY.—

(1) IN GENERAL.—In consultation with other appropriate United States Government agencies, the Secretary is authorized to license private sector parties to operate private remote sensing space systems for such period as the Secretary may specify and in accordance with the provisions of this subchapter.

(2) LIMITATION WITH RESPECT TO SYSTEM USED FOR OTHER PURPOSES.—In the case of a private space system that is used for remote sensing and other purposes, the authority of the Secretary under this subchapter shall be limited only to the remote sensing operations of such space system.

(b) COMPLIANCE WITH LAW, REGULATIONS, INTERNATIONAL OBLIGATIONS, AND NATIONAL SECURITY.—

(1) IN GENERAL.—No license shall be granted by the Secretary unless the Secretary determines in writing that the applicant will comply with the requirements of this chapter, any regulations issued pursuant to this chapter, and any applicable international obligations and national security concerns of the United States.

(2) LIST OF REQUIREMENTS FOR COMPLETE APPLICATION.—The Secretary shall publish in the Federal Register a complete and specific list of all information required to comprise a complete application for a license under this subchapter. An application shall be considered complete when the applicant has provided all information required by the list most recently published in the Federal Register before the date the application was first submitted. Unless the Secretary has, within 30 days after receipt of an application, notified the applicant of information necessary to complete an application, the Secretary may not deny the application on the basis of the absence of any such information.

(c) DEADLINE FOR ACTION ON APPLICATION.—The Secretary shall review any application and make a determination thereon within 120 days of the receipt of such application. If final action has not occurred within such time, the Secretary shall inform the applicant of any pending issues and of actions required to resolve them.

(d) IMPROPER BASIS FOR DENIAL.—The Secretary shall not deny such license in order to protect any existing licensee from competition.

(e) REQUIREMENT TO PROVIDE UNENHANCED DATA.—

(1) DESIGNATION OF DATA.—The Secretary, in consultation with other appropriate United States Government agencies and pursuant to paragraph (2), shall designate in a license issued pursuant to this subchapter any un-

enhanced data required to be provided by the licensee under section 60122(b)(3) of this title.

(2) PRELIMINARY DETERMINATION.—The Secretary shall make a designation under paragraph (1) after determining that—

(A) such data are generated by a system for which all or a substantial part of the development, fabrication, launch, or operations costs have been or will be directly funded by the United States Government; or

(B) it is in the interest of the United States to require such data to be provided by the licensee consistent with section 60122(b)(3) of this title, after considering the impact on the licensee and the importance of promoting widespread access to remote sensing data from United States and foreign systems.

(3) CONSISTENCY WITH CONTRACT OR OTHER ARRANGEMENT.—A designation made by the Secretary under paragraph (1) shall not be inconsistent with any contract or other arrangement entered into between a United States Government agency and the licensee.

(Pub. L. 111–314, § 3, Dec. 18, 2010, 124 Stat. 3413.)

HISTORICAL AND REVISION NOTES

Revised Section	*Source (U.S. Code)*	*Source (Statutes at Large)*
60121	15 U.S.C. 5621.	Pub. L. 102–555, title II, § 201, Oct. 28, 1992, 106 Stat. 4171; Pub. L. 105–303, title I, § 107(f)(1), Oct. 28, 1998, 112 Stat. 2854.

In subsection (b)(2), the words ''within 6 months after the date of the enactment of the Commercial Space Act of 1998'' are omitted as obsolete.

PROHIBITION ON COLLECTION AND RELEASE OF DETAILED SATELLITE IMAGERY RELATING TO ISRAEL

Pub. L. 104–201, div. A, title X, § 1064, Sept. 23, 1996, 110 Stat. 2653, provided that:

''(a) COLLECTION AND DISSEMINATION.—A department or agency of the United States may issue a license for the collection or dissemination by a non-Federal entity of satellite imagery with respect to Israel only if such imagery is no more detailed or precise than satellite imagery of Israel that is available from commercial sources.

''(b) DECLASSIFICATION AND RELEASE.—A department or agency of the United States may declassify or otherwise release satellite imagery with respect to Israel only if such imagery is no more detailed or precise than satellite imagery of Israel that is available from commercial sources.''

§ 60122. Conditions for operation

(a) LICENSE REQUIRED FOR OPERATION.—No person that is subject to the jurisdiction or control of the United States may, directly or through any subsidiary or affiliate, operate any private remote sensing space system without a license pursuant to section 60121 of this title.

(b) LICENSING REQUIREMENTS.—Any license issued pursuant to this subchapter shall specify that the licensee shall comply with all of the requirements of this chapter and shall—

(1) operate the system in such manner as to preserve the national security of the United States and to observe the international obligations of the United States in accordance with section 60146 of this title;

(2) make available to the government of any country (including the United States) unenhanced data collected by the system concerning the territory under the jurisdiction of such government as soon as such data are available and on reasonable terms and conditions;

(3) make unenhanced data designated by the Secretary in the license pursuant to section 60121(e) of this title available in accordance with section 60141 of this title;

(4) upon termination of operations under the license, make disposition of any satellites in space in a manner satisfactory to the President;

(5) furnish the Secretary with complete orbit and data collection characteristics of the system, and inform the Secretary immediately of any deviation; and

(6) notify the Secretary of any significant or substantial agreement the licensee intends to enter with a foreign nation, entity, or consortium involving foreign nations or entities.

(c) ADDITIONAL LICENSING REQUIREMENTS FOR LANDSAT 6 CONTRACTOR.—In addition to the requirements of subsection (b), any license issued pursuant to this subchapter to the Landsat 6 contractor shall specify that the Landsat 6 contractor shall—

(1) notify the Secretary of any value added activities (as defined by the Secretary by regulation) that will be conducted by the Landsat 6 contractor or by a subsidiary or affiliate; and

(2) if such activities are to be conducted, provide the Secretary with a plan for compliance with section 60141 of this title.

(Pub. L. 111–314, § 3, Dec. 18, 2010, 124 Stat. 3415.)

HISTORICAL AND REVISION NOTES

Revised Section	*Source (U.S. Code)*	*Source (Statutes at Large)*
60122	15 U.S.C. 5622.	Pub. L. 102–555, title II, § 202, Oct. 28, 1992, 106 Stat. 4172; Pub. L. 105–303, title I, § 107(f)(2), Oct. 28, 1998, 112 Stat. 2854.

In subsection (c), in the matter before paragraph (1), the words ''subsection (b)'' are substituted for ''paragraph (b)'' to correct an error in the law.

§ 60123. Administrative authority of Secretary

(a) FUNCTIONS.—In order to carry out the responsibilities specified in this subchapter, the Secretary may—

(1) grant, condition, or transfer licenses under this chapter;

(2) seek an order of injunction or similar judicial determination from a district court of the United States with personal jurisdiction over the licensee to terminate, modify, or suspend licenses under this subchapter and to terminate licensed operations on an immediate basis, if the Secretary determines that the licensee has substantially failed to comply with any provisions of this chapter, with any terms, conditions, or restrictions of such license, or with any international obligations or national security concerns of the United States;

(3) provide penalties for noncompliance with the requirements of licenses or regulations is-

sued under this subchapter, including civil penalties not to exceed $10,000 (each day of operation in violation of such licenses or regulations constituting a separate violation);

(4) compromise, modify, or remit any such civil penalty;

(5) issue subpoenas for any materials, documents, or records, or for the attendance and testimony of witnesses for the purpose of conducting a hearing under this section;

(6) seize any object, record, or report pursuant to a warrant from a magistrate based on a showing of probable cause to believe that such object, record, or report was used, is being used, or is likely to be used in violation of this chapter or the requirements of a license or regulation issued thereunder; and

(7) make investigations and inquiries and administer to or take from any person an oath, affirmation, or affidavit concerning any matter relating to the enforcement of this chapter.

(b) REVIEW OF AGENCY ACTION.—Any applicant or licensee that makes a timely request for review of an adverse action pursuant to paragraph (1), (3), (5), or (6) of subsection (a) shall be entitled to adjudication by the Secretary on the record after an opportunity for any agency hearing with respect to such adverse action. Any final action by the Secretary under this subsection shall be subject to judicial review under chapter 7 of title 5.

(Pub. L. 111–314, § 3, Dec. 18, 2010, 124 Stat. 3415.)

HISTORICAL AND REVISION NOTES

Revised Section	*Source (U.S. Code)*	*Source (Statutes at Large)*
60123	15 U.S.C. 5623.	Pub. L. 102–555, title II, § 203, Oct. 28, 1992, 106 Stat. 4172.

In subsection (a), at the end of paragraph (2), a semicolon is substituted for the period to correct an error in the law.

§ 60124. Regulatory authority of Secretary

The Secretary may issue regulations to carry out this subchapter. Such regulations shall be promulgated only after public notice and comment in accordance with the provisions of section 553 of title 5.

(Pub. L. 111–314, § 3, Dec. 18, 2010, 124 Stat. 3416.)

HISTORICAL AND REVISION NOTES

Revised Section	*Source (U.S. Code)*	*Source (Statutes at Large)*
60124	15 U.S.C. 5624.	Pub. L. 102–555, title II, § 204, Oct. 28, 1992, 106 Stat. 4173.

§ 60125. Agency activities

(a) LICENSE APPLICATION AND ISSUANCE.—A private sector party may apply for a license to operate a private remote sensing space system which utilizes, on a space-available basis, a civilian United States Government satellite or vehicle as a platform for such system. The Secretary, pursuant to this subchapter, may license such system if it meets all conditions of this subchapter and—

(1) the system operator agrees to reimburse the Government in a timely manner for all related costs incurred with respect to such utilization, including a reasonable and proportionate share of fixed, platform, data transmission, and launch costs; and

(2) such utilization would not interfere with or otherwise compromise intended civilian Government missions, as determined by the agency responsible for such civilian platform.

(b) ASSISTANCE.—The Secretary may offer assistance to private sector parties in finding appropriate opportunities for such utilization.

(c) AGREEMENTS.—To the extent provided in advance by appropriation Acts, any United States Government agency may enter into agreements for such utilization if such agreements are consistent with such agency's mission and statutory authority, and if such remote sensing space system is licensed by the Secretary before commencing operation.

(d) APPLICABILITY.—This section does not apply to activities carried out under subchapter IV.

(e) EFFECT ON FCC AUTHORITY.—Nothing in this subchapter shall affect the authority of the Federal Communications Commission pursuant to the Communications Act of 1934 (47 U.S.C. 151 et seq.).

(Pub. L. 111–314, § 3, Dec. 18, 2010, 124 Stat. 3416.)

HISTORICAL AND REVISION NOTES

Revised Section	*Source (U.S. Code)*	*Source (Statutes at Large)*
60125	15 U.S.C. 5625.	Pub. L. 102–555, title II, § 205, Oct. 28, 1992, 106 Stat. 4173.

REFERENCES IN TEXT

The Communications Act of 1934, referred to in subsec. (e), is act June 19, 1934, ch. 652, 48 Stat. 1064, which is classified principally to chapter 5 (§ 151 et seq.) of Title 47, Telegraphs, Telephones, and Radiotelegraphs. For complete classification of this Act to the Code, see section 609 of Title 47 and Tables.

SUBCHAPTER IV—RESEARCH, DEVELOPMENT, AND DEMONSTRATION

§ 60131. Continued Federal research and development

(a) ROLES OF ADMINISTRATION AND DEPARTMENT OF DEFENSE.—

(1) IN GENERAL.—The Administrator and the Secretary of Defense are directed to continue and to enhance programs of remote sensing research and development.

(2) ADMINISTRATION ACTIVITIES AUTHORIZED AND ENCOURAGED.—The Administrator is authorized and encouraged to—

(A) conduct experimental space remote sensing programs (including applications demonstration programs and basic research at universities);

(B) develop remote sensing technologies and techniques, including those needed for monitoring the Earth and its environment; and

(C) conduct such research and development in cooperation with other United States Government agencies and with public and private research entities (including private industry, universities, non-profit organiza-

tions, State and local governments, foreign governments, and international organizations) and to enter into arrangements (including joint ventures) which will foster such cooperation.

(b) ROLES OF DEPARTMENT OF AGRICULTURE AND DEPARTMENT OF THE INTERIOR.—

(1) IN GENERAL.—In order to enhance the ability of the United States to manage and utilize its renewable and nonrenewable resources, the Secretary of Agriculture and the Secretary of the Interior are authorized and encouraged to conduct programs of research and development in the applications of remote sensing using funds appropriated for such purposes.

(2) ACTIVITIES THAT MAY BE INCLUDED.—Such programs may include basic research at universities, demonstrations of applications, and cooperative activities involving other Government agencies, private sector parties, and foreign and international organizations.

(c) ROLE OF OTHER FEDERAL AGENCIES.—Other United States Government agencies are authorized and encouraged to conduct research and development on the use of remote sensing in the fulfillment of their authorized missions, using funds appropriated for such purposes.

(Pub. L. 111–314, § 3, Dec. 18, 2010, 124 Stat. 3417.)

HISTORICAL AND REVISION NOTES

Revised Section	*Source (U.S. Code)*	*Source (Statutes at Large)*
60131	15 U.S.C. 5631.	Pub. L. 102–555, title III, § 301, Oct. 28, 1992, 106 Stat. 4174.

§ 60132. Availability of federally gathered unenhanced data

(a) IN GENERAL.—All unenhanced land remote sensing data gathered and owned by the United States Government, including unenhanced data gathered under the technology demonstration program carried out pursuant to section 60133 of this title, shall be made available to users in a timely fashion.

(b) PROTECTION FOR COMMERCIAL DATA DISTRIBUTOR.—The President shall seek to ensure that unenhanced data gathered under the technology demonstration program carried out pursuant to section 60133 of this title shall, to the extent practicable, be made available on terms that would not adversely affect the commercial market for unenhanced data gathered by the Landsat 6 spacecraft.

(Pub. L. 111–314, § 3, Dec. 18, 2010, 124 Stat. 3417.)

HISTORICAL AND REVISION NOTES

Revised Section	*Source (U.S. Code)*	*Source (Statutes at Large)*
60132	15 U.S.C. 5632.	Pub. L. 102–555, title III, § 302, Oct. 28, 1992, 106 Stat. 4174.

In subsection (b), the word ''affect'' is substituted for ''effect'' to correct an error in the law.

§ 60133. Technology demonstration program

(a) ESTABLISHMENT.—As a fundamental component of a national land remote sensing strategy, the President shall establish, through appropriate United States Government agencies, a technology demonstration program. The goals of the program shall be to—

(1) seek to launch advanced land remote sensing system components within 5 years after October 28, 1992;

(2) demonstrate within such 5-year period advanced sensor capabilities suitable for use in the anticipated land remote sensing program; and

(3) demonstrate within such 5-year period an advanced land remote sensing system design that could be less expensive to procure and operate than the Landsat system projected to be in operation through the year 2000, and that therefore holds greater potential for private sector investment and control.

(b) EXECUTION OF PROGRAM.—In executing the technology demonstration program, the President shall seek to apply technologies associated with United States National Technical Means of intelligence gathering, to the extent that such technologies are appropriate for the technology demonstration and can be declassified for such purposes without causing adverse harm to United States national security interests.

(c) BROAD APPLICATION.—To the greatest extent practicable, the technology demonstration program established under subsection (a) shall be designed to be responsive to the broad civilian, national security, commercial, and foreign policy needs of the United States.

(d) PRIVATE SECTOR FUNDING.—The technology demonstration program under this section may be carried out in part with private sector funding.

(e) LANDSAT PROGRAM MANAGEMENT COORDINATION.—The Landsat Program Management shall have a coordinating role in the technology demonstration program carried out under this section.

(Pub. L. 111–314, § 3, Dec. 18, 2010, 124 Stat. 3418.)

HISTORICAL AND REVISION NOTES

Revised Section	*Source (U.S. Code)*	*Source (Statutes at Large)*
60133	15 U.S.C. 5633(a)–(e).	Pub. L. 102–555, title III, § 303(a)–(e), Oct. 28, 1992, 106 Stat. 4174.

In subsection (a)(1), the date ''October 28, 1992'' is substituted for ''the date of the enactment of this Act'' to reflect the date of enactment of the Land Remote Sensing Policy Act of 1992 (Public Law 102–555, 106 Stat. 4163). At the end of paragraph (1), a semicolon is substituted for the period to correct an error in the law.

§ 60134. Preference for private sector land remote sensing system

(a) IN GENERAL.—If a successor land remote sensing system to Landsat 7 can be funded and managed by the private sector while still achieving the goals stated in subsection (b) without jeopardizing the domestic, national security, and foreign policy interests of the United States, preference should be given to the development of such a system by the private sector without competition from the United States Government.

(b) GOALS.—The goals referred to in subsection (a) are—

(1) to encourage the development, launch, and operation of a land remote sensing system that adequately serves the civilian, national security, commercial, and foreign policy interests of the United States;

(2) to encourage the development, launch, and operation of a land remote sensing system that maintains data continuity with the Landsat system; and

(3) to incorporate system enhancements, including any such enhancements developed under the technology demonstration program under section 60133 of this title, which may potentially yield a system that is less expensive to build and operate, and more responsive to data users, than is the Landsat system otherwise projected to be in operation in the future.

(Pub. L. 111–314, § 3, Dec. 18, 2010, 124 Stat. 3418.)

HISTORICAL AND REVISION NOTES

Revised Section	*Source (U.S. Code)*	*Source (Statutes at Large)*
60134(a)	15 U.S.C. 5641(c).	Pub. L. 102–555, title IV, § 401(b), (c), Oct. 28, 1992, 106 Stat. 4176.
60134(b)	15 U.S.C. 5641(b).	

In subsection (b), in the matter before paragraph (1), the words ''In carrying out subsection (a), the Landsat Program Management shall consider the ability of each of the options to'' are omitted as obsolete. The omitted words refer to section 401(a) of the Land Remote Sensing Policy Act of 1992 (15 U.S.C. 5641(a)), which required, within 5 years after October 28, 1992, the Landsat Program Management, in consultation with representatives of appropriate United States Government agencies, to assess and report to Congress on options for a successor land remote sensing system to Landsat 7.

In subsection (b)(3), the words ''otherwise projected to be in operation in the future'' are substituted for ''projected to be in operation through the year 2000'' to eliminate obsolete language.

SUBCHAPTER V—GENERAL PROVISIONS

§ 60141. Nondiscriminatory data availability

(a) IN GENERAL.—Except as provided in subsection (b), any unenhanced data generated by the Landsat system or any other land remote sensing system funded and owned by the United States Government shall be made available to all users without preference, bias, or any other special arrangement (except on the basis of national security concerns pursuant to section 60146 of this title) regarding delivery, format, pricing, or technical considerations which would favor one customer or class of customers over another.

(b) EXCEPTIONS.—Unenhanced data generated by the Landsat system or any other land remote sensing system funded and owned by the United States Government may be made available to the United States Government and its affiliated users at reduced prices, in accordance with this chapter, on the condition that such unenhanced data are used solely for noncommercial purposes.

(Pub. L. 111–314, § 3, Dec. 18, 2010, 124 Stat. 3419.)

HISTORICAL AND REVISION NOTES

Revised Section	*Source (U.S. Code)*	*Source (Statutes at Large)*
60141	15 U.S.C. 5651.	Pub. L. 102–555, title V, § 501, Oct. 28, 1992, 106 Stat. 4176.

§ 60142. Archiving of data

(a) PUBLIC INTEREST.—It is in the public interest for the United States Government to—

(1) maintain an archive of land remote sensing data for historical, scientific, and technical purposes, including long-term global environmental monitoring;

(2) control the content and scope of the archive; and

(3) ensure the quality, integrity, and continuity of the archive.

(b) ARCHIVING PRACTICES.—The Secretary of the Interior, in consultation with the Landsat Program Management, shall provide for long-term storage, maintenance, and upgrading of a basic, global, land remote sensing data set (hereafter in this section referred to as the ''basic data set'') and shall follow reasonable archival practices to ensure proper storage and preservation of the basic data set and timely access for parties requesting data.

(c) DETERMINATION OF CONTENT OF BASIC DATA SET.—In determining the initial content of, or in upgrading, the basic data set, the Secretary of the Interior shall—

(1) use as a baseline the data archived on October 28, 1992;

(2) take into account future technical and scientific developments and needs, paying particular attention to the anticipated data requirements of global environmental change research;

(3) consult with and seek the advice of users and producers of remote sensing data and data products;

(4) consider the need for data which may be duplicative in terms of geographical coverage but which differ in terms of season, spectral bands, resolution, or other relevant factors;

(5) include, as the Secretary of the Interior considers appropriate, unenhanced data generated either by the Landsat system, pursuant to subchapter II, or by licensees under subchapter III;

(6) include, as the Secretary of the Interior considers appropriate, data collected by foreign ground stations or by foreign remote sensing space systems; and

(7) ensure that the content of the archive is developed in accordance with section 60146 of this title.

(d) PUBLIC DOMAIN.—After the expiration of any exclusive right to sell, or after relinquishment of such right, the data provided to the National Satellite Land Remote Sensing Data Archive shall be in the public domain and shall be made available to requesting parties by the Secretary of the Interior at the cost of fulfilling user requests.

(Pub. L. 111–314, § 3, Dec. 18, 2010, 124 Stat. 3419.)

HISTORICAL AND REVISION NOTES

Revised Section	*Source (U.S. Code)*	*Source (Statutes at Large)*
60142	15 U.S.C. 5652.	Pub. L. 102–555, title V, § 502, Oct. 28, 1992, 106 Stat. 4176.

In subsection (b), the words ''hereafter in this section'' are substituted for ''hereinafter'' for clarity.

In subsection (c), in the matter before paragraph (1), the words ''of the Interior'' are substituted for ''of Interior'' to correct an error in the law.

In subsection (c)(1), the date ''October 28, 1992'' is substituted for ''the date of enactment of this Act'' to reflect the date of enactment of the Land Remote Sensing Policy Act of 1992 (Public Law 102–555, 106 Stat. 4163).

§ 60143. Nonreproduction

Unenhanced data distributed by any licensee under subchapter III may be sold on the condition that such data will not be reproduced or disseminated by the purchaser for commercial purposes.

(Pub. L. 111–314, § 3, Dec. 18, 2010, 124 Stat. 3420.)

HISTORICAL AND REVISION NOTES

Revised Section	*Source (U.S. Code)*	*Source (Statutes at Large)*
60143	15 U.S.C. 5653.	Pub. L. 102–555, title V, § 503, Oct. 28, 1992, 106 Stat. 4177.

§ 60144. Reimbursement for assistance

The Administrator, the Secretary of Defense, and the heads of other United States Government agencies may provide assistance to land remote sensing system operators under the provisions of this chapter. Substantial assistance shall be reimbursed by the operator, except as otherwise provided by law.

(Pub. L. 111–314, § 3, Dec. 18, 2010, 124 Stat. 3420.)

HISTORICAL AND REVISION NOTES

Revised Section	*Source (U.S. Code)*	*Source (Statutes at Large)*
60144	15 U.S.C. 5654.	Pub. L. 102–555, title V, § 504, Oct. 28, 1992, 106 Stat. 4177.

§ 60145. Acquisition of equipment

The Landsat Program Management may, by means of a competitive process, allow a licensee under subchapter III or any other private party to buy, lease, or otherwise acquire the use of equipment from the Landsat system, when such equipment is no longer needed for the operation of such system or for the sale of data from such system. Officials of other United States Government civilian agencies are authorized and encouraged to cooperate with the Secretary in carrying out this section.

(Pub. L. 111–314, § 3, Dec. 18, 2010, 124 Stat. 3420.)

HISTORICAL AND REVISION NOTES

Revised Section	*Source (U.S. Code)*	*Source (Statutes at Large)*
60145	15 U.S.C. 5655.	Pub. L. 102–555, title V, § 505, Oct. 28, 1992, 106 Stat. 4177.

§ 60146. Radio frequency allocation

(a) APPLICATION TO FEDERAL COMMUNICATIONS COMMISSION.—To the extent required by the Communications Act of 1934 (47 U.S.C. 151 et seq.), an application shall be filed with the Federal Communications Commission for any radio facilities involved with commercial remote sensing space systems licensed under subchapter III.

(b) DEADLINE FOR FCC ACTION.—It is the intent of Congress that the Federal Communications Commission complete the radio licensing process under the Communications Act of 1934 (47 U.S.C. 151 et seq.), upon the application of any private sector party or consortium operator of any commercial land remote sensing space system subject to this chapter, within 120 days of the receipt of an application for such licensing. If final action has not occurred within 120 days of the receipt of such an application, the Federal Communications Commission shall inform the applicant of any pending issues and of actions required to resolve them.

(c) DEVELOPMENT AND CONSTRUCTION OF UNITED STATES SYSTEMS.—Authority shall not be required from the Federal Communications Commission for the development and construction of any United States land remote sensing space system (or component thereof), other than radio transmitting facilities or components, while any licensing determination is being made.

(d) CONSISTENCY WITH INTERNATIONAL OBLIGATIONS AND PUBLIC INTEREST.—Frequency allocations made pursuant to this section by the Federal Communications Commission shall be consistent with international obligations and with the public interest.

(Pub. L. 111–314, § 3, Dec. 18, 2010, 124 Stat. 3420.)

HISTORICAL AND REVISION NOTES

Revised Section	*Source (U.S. Code)*	*Source (Statutes at Large)*
60146	15 U.S.C. 5656.	Pub. L. 102–555, title V, § 506, Oct. 28, 1992, 106 Stat. 4177.

REFERENCES IN TEXT

The Communications Act of 1934, referred to in subsecs. (a) and (b), is act June 19, 1934, ch. 652, 48 Stat. 1064, which is classified principally to chapter 5 (§ 151 et seq.) of Title 47, Telegraphs, Telephones, and Radiotelegraphs. For complete classification of this Act to the Code, see section 609 of Title 47 and Tables.

§ 60147. Consultation

(a) CONSULTATION WITH SECRETARY OF DEFENSE.—The Secretary and the Landsat Program Management shall consult with the Secretary of Defense on all matters under this chapter affecting national security. The Secretary of Defense shall be responsible for determining those conditions, consistent with this chapter, necessary to meet national security concerns of the United States and for notifying the Secretary and the Landsat Program Management promptly of such conditions.

(b) CONSULTATION WITH SECRETARY OF STATE.—

(1) IN GENERAL.—The Secretary and the Landsat Program Management shall consult with the Secretary of State on all matters under this chapter affecting international obligations. The Secretary of State shall be responsible for determining those conditions, consistent with this chapter, necessary to meet international obligations and policies of the United States and for notifying promptly

the Secretary and the Landsat Program Management of such conditions.

(2) INTERNATIONAL AID.—Appropriate United States Government agencies are authorized and encouraged to provide remote sensing data, technology, and training to developing nations as a component of programs of international aid.

(3) REPORTING DISCRIMINATORY DISTRIBUTION.—The Secretary of State shall promptly report to the Secretary and Landsat Program Management any instances outside the United States of discriminatory distribution of Landsat data.

(c) STATUS REPORT.—The Landsat Program Management shall, as often as necessary, provide to Congress complete and updated information about the status of ongoing operations of the Landsat system, including timely notification of decisions made with respect to the Landsat system in order to meet national security concerns and international obligations and policies of the United States Government.

(d) REIMBURSEMENTS.—If, as a result of technical modifications imposed on a licensee under subchapter III on the basis of national security concerns, the Secretary, in consultation with the Secretary of Defense or with other Federal agencies, determines that additional costs will be incurred by the licensee, or that past development costs (including the cost of capital) will not be recovered by the licensee, the Secretary may require the agency or agencies requesting such technical modifications to reimburse the licensee for such additional or development costs, but not for anticipated profits. Reimbursements may cover costs associated with required changes in system performance, but not costs ordinarily associated with doing business abroad.

(Pub. L. 111–314, § 3, Dec. 18, 2010, 124 Stat. 3421.)

HISTORICAL AND REVISION NOTES

Revised Section	*Source (U.S. Code)*	*Source (Statutes at Large)*
60147	15 U.S.C. 5657.	Pub. L. 102–555, title V, § 507, Oct. 28, 1992, 106 Stat. 4178.

§ 60148. Enforcement

(a) IN GENERAL.—In order to ensure that unenhanced data from the Landsat system received solely for noncommercial purposes are not used for any commercial purpose, the Secretary (in collaboration with private sector entities responsible for the marketing and distribution of unenhanced data generated by the Landsat system) shall develop and implement a system for enforcing this prohibition, in the event that unenhanced data from the Landsat system are made available for noncommercial purposes at a different price than such data are made available for other purposes.

(b) AUTHORITY OF SECRETARY.—Subject to subsection (d), the Secretary may impose any of the enforcement mechanisms described in subsection (c) against a person that—

(1) receives unenhanced data from the Landsat system under this chapter solely for noncommercial purposes (and at a different price than the price at which such data are made available for other purposes); and

(2) uses such data for other than noncommercial purposes.

(c) ENFORCEMENT MECHANISMS.—Enforcement mechanisms referred to in subsection (b) may include civil penalties of not more than $10,000 (per day per violation), denial of further unenhanced data purchasing privileges, and any other penalties or restrictions the Secretary considers necessary to ensure, to the greatest extent practicable, that unenhanced data provided for noncommercial purposes are not used to unfairly compete in the commercial market against private sector entities not eligible for data at the cost of fulfilling user requests.

(d) PROCEDURES AND REGULATIONS.—The Secretary shall issue any regulations necessary to carry out this section and shall establish standards and procedures governing the imposition of enforcement mechanisms under subsection (b). The standards and procedures shall include a procedure for potentially aggrieved parties to file formal protests with the Secretary alleging instances where such unenhanced data have been, or are being, used for commercial purposes in violation of the terms of receipt of such data. The Secretary shall promptly act to investigate any such protest, and shall report annually to Congress on instances of such violations.

(Pub. L. 111–314, § 3, Dec. 18, 2010, 124 Stat. 3421.)

HISTORICAL AND REVISION NOTES

Revised Section	*Source (U.S. Code)*	*Source (Statutes at Large)*
60148	15 U.S.C. 5658.	Pub. L. 102–555, title V, § 508, Oct. 28, 1992, 106 Stat. 4179.

In subsection (d), in the second sentence, the words ''have been, or are being'' are substituted for ''has been, or is being'' to correct an error in the law.

SUBCHAPTER VI—PROHIBITION OF COMMERCIALIZATION OF WEATHER SATELLITES

§ 60161. Prohibition

Neither the President nor any other official of the Government shall make any effort to lease, sell, or transfer to the private sector, or commercialize, any portion of the weather satellite systems operated by the Department of Commerce or any successor agency.

(Pub. L. 111–314, § 3, Dec. 18, 2010, 124 Stat. 3422.)

HISTORICAL AND REVISION NOTES

Revised Section	*Source (U.S. Code)*	*Source (Statutes at Large)*
60161	15 U.S.C. 5671.	Pub. L. 102–555, title VI, § 601, Oct. 28, 1992, 106 Stat. 4179.

§ 60162. Future considerations

Regardless of any change in circumstances subsequent to October 28, 1992, even if such change makes it appear to be in the national interest to commercialize weather satellites, neither the President nor any official shall take any action prohibited by section 60161 of this title unless this subchapter has first been repealed.

(Pub. L. 111–314, § 3, Dec. 18, 2010, 124 Stat. 3422.)

Exhibit 10.1

[REDACTED] LAUNCH SERVICES FOR BLUEWALKER 3 - TERMS AND CONDITIONS

A. **Agreement**. Your [**REDACTED**] Launch Services Agreement (Agreement) with us is effective as of the latest signature date below (Effective Date). The Agreement consists of, expressly incorporates by reference, and is subject to the following documents in this order of precedence:

1. FAA Cross-Waiver (as required by 14 CFR § 440.17);

2. SpaceX Policies comprising SpaceX's Risk Management Policy (where your and our respective rights and obligations regarding liability, indemnity and insurance are contained) and Disclaimer of Warranties, are found in the SpaceX Policies attached hereto;

3. These Terms and Conditions; and

4. Statement of Work (SOW) and [**REDACTED**] Payload User's Guide further defining our [**REDACTED**] Launch Services, your required inputs and obligations, and capitalized terms used in this Agreement.

B. **Launch Services.** You, the Customer, shall purchase, and we, SpaceX, shall furnish you, the [**REDACTED**] Launch Services for the Payload provided by you as defined in the SOW. Additional services may be provided as detailed and priced in the SOW, subject to the terms of this Agreement.

C. **Price, Payment and Taxes.** The price for the Launch Services shall be [**REDACTED**] U.S. dollars (Price), paid in the following installment payments to the SpaceX Account: [**REDACTED**]. Any mass beyond that allowed in the SOW that is requested by Customer or measured after L-9 shall be priced at [**REDACTED**] per [**REDACTED**]. Customer shall pay for any mass beyond that allowed in the SOW based upon the final as-measured mass, with payment due prior to arrival of the spacecraft at the Launch Site (if no fueling will occur at the Launch Site) or within 5 days after fueling at the Launch Site. For any late payments, the payor will pay late fees of 10% per year applied on a daily basis until receipt in full. You shall pay all taxes on your Payload, and we shall pay all taxes on the Launch Services.

D. **Schedule.** The Launch Date shall occur between March 1, 2022 and April 30, 2022 (Launch Period) and shall be determined as defined in the [**REDACTED**] Payload User's Guide. If your Payload will not be ready to launch on the first day of the Launch Period, we shall have the right to launch any Co-Payload(s) as scheduled without your Payload. If your Payload will not be ready to launch by the Launch Date, and no Re-booked Mission is mutually agreed upon, SpaceX shall retain the entire Price plus any payments made or owed for non-standard or mission unique services and hardware already provided to you (Additional Payments), with no further obligation or liability to you.

E. **Re-Booking**. You may submit a request in writing to SpaceX to be re-booked on a subsequent SpaceX mission (Re-booked Mission) using the Form of Rebooking Agreement in Appendix B. SpaceX shall use reasonable efforts to accept your request, and any Launch Period for the Re-booked Mission shall be determined by SpaceX. You are limited to one re-booking per Payload. SpaceX's re-booking program is outlined in Appendix A.

F. **Termination, Suspension.** Either of us may terminate this Agreement for a Material Breach by the other, so long as notice and time to cure of 15 days for nonpayment, or 90 days for other breaches, are provided and have lapsed. Additionally, if you fail to make a payment on time and to cure within 15 days of notice, SpaceX may suspend work until payment is received or terminate this contract for your Material Breach. If you terminate for our Material Breach, we shall return to you all payments you made under this Agreement, without interest. If we terminate for your Material Breach, we retain all payments made and owed by you as of the date of termination. You may terminate this agreement at your convenience at any time, in which case SpaceX will retain the amounts paid and due at the time of termination. You may also terminate this Agreement if we have delayed, including our Excusable Delay, for more than 365 calendar days, starting from the last date of the Launch Slot as defined in this Agreement, and we shall refund you all payments made under this Agreement without interest. Any amounts returned to you or retained by SpaceX under this paragraph are returned or retained without further obligation or liability to you. You may not terminate this Agreement if any payments are due and payable to us under this Agreement. The late fees, delay fees, readiness failure fees, and termination fees in this Agreement are liquidated damages based upon good faith estimates of damages to be incurred by late payment, delay or termination, and do not serve as a penalty.

G. **Compliance with Laws; Governing Law and Venue.** We both shall comply with all national, federal, state and local licensing requirements, laws and regulations, including ITAR, EAR, and all other U.S. Customs and U.S. export/import laws, as applicable to our respective businesses and the Launch Services. For purposes of the Registration Convention, you are responsible for registering the Payload, and we are responsible for registering the launch vehicle. We shall obtain all Licenses required to carry out the Launch Services, and you shall obtain all Licenses required to ship and operate the Payload. The laws of the State of New York, U.S.A shall govern this Agreement and both of our respective performances hereunder, without regard to provisions on the conflicts of laws. All actions or proceedings arising out of or related to this Agreement shall be litigated exclusively in the Federal courts located in the Southern and/or Eastern District of New York. We both hereby irrevocably waive any and all right to trial by jury in any legal proceeding arising out of or related to this Agreement. The provisions of the UN Convention on Contracts for the International Sale of Goods shall not apply.

[CERTAIN IDENTIFIED INFORMATION HAS BEEN EXCLUDED FROM THE EXHIBIT BECAUSE IT BOTH (I) IS NOT MATERIAL AND (II) WOULD BE COMPETITIVELY HARMFUL IF PUBLICLY DISCLOSED]

H. **Notices.** All notices under this Agreement shall be in writing and shall be sent via electronic, express and/or certified mail to the contacts identified in the SOW.

I. **Publicity.** Neither of us shall make any public announcement, release, or other disclosure of information relating to this Agreement and/or Launch Service, including the existence of this Agreement, without the agreement of the other, such agreement not to be unreasonably withheld, conditioned or delayed. To the extent any information relating to this Agreement and/or Launch Services must be disclosed pursuant to law or regulation, including good faith compliance with the rules and regulations of the Securities and Exchange Commission and any securities exchange on which the securities of the Disclosing Party or its affiliates is trading, the Disclosing Party shall, (1) to the extent legally permissible, give prompt notice to the other Party regarding the applicable law or regulation and the information to be disclosed; and (2) seek confidential treatment for the price and any other relevant portions of any such information as reasonably determined by SpaceX. The terms of the NDA executed on January 3, 2018 between AST & Science, LLC and SpaceX apply to this Agreement and its subject matter. The obligations set forth in this Section I shall not apply to information that is publicly available from any governmental agency or that is or otherwise becomes publicly available without breach of this Agreement.

J. **Assignment.** This Agreement creates no joint venture, partnership or agency between us and may not be assigned except to the successor in a sale, acquisition or merger of the assignor, provided that we can lawfully perform the launch services for the successor. This Agreement is created solely for the benefit of SpaceX and you, and confers no right or remedies on any third parties.

K. **Survivability.** If any portion of this Agreement is held invalid, it shall not affect the validity of the remaining Agreement, unless applying such remaining portions would frustrate the purpose of this Agreement.

Both of us agree that we have read, understood, and agree to, the terms of the Form of FAA Cross-Waiver, the SpaceX Policies, these Terms and Conditions, the SOW, and the [**REDACTED**] Payload User's Guide. The duly authorized officers named below have executed this Agreement, which supersedes all prior relevant communications, as of the Effective Date.

Space Exploration Technologies Corp. (SpaceX)		**AST & Science, LLC (Customer)**	
Address:	**1 Rocket Road, Hawthorne, CA 90250**	**Address:**	**2901 Enterprise Lane Midland, TX 79706**
By:	***/s/ Tom Ochinero***	**By:**	***/s/ Abel Avellan***
Name/Title:	**Tom Ochinero, VP of Commercial Sales**	**Name/Title:**	**Abel Avellan, CEO**
Date:	**July 23, 2021**	**Date:**	**July 23, 2021**

APPENDIX A: RE-BOOKING PROGRAM

You may submit a request in writing to SpaceX to be re-manifested on a Re-booked Mission using the form of Re-booking Agreement in Appendix B. Based on the date of SpaceX's approval of this request. which shall not be unreasonably withheld, the payments made toward your original Agreement shall be applied per the terms outlined in the table below.

Date if Re-booking Request Approval	Re-booking cost
Before L-90	[**REDACTED**] of the Price
After L-90	No Re-booking

The Re-booking costs outlined above are due at the time of Re-booking and may be paid through a reduction in the credit to be applied to the Re-booked Mission. Remaining payments shall be made according to the payment schedule in Section C with the dates adjusted to reflect the Launch Period of the Re-booked Mission. Any Additional Payments shall be retained by SpaceX and not credited toward the Rebooked Mission. All credits toward the Re-booked Mission shall be applied only to future SpaceX launch payments and not otherwise refunded to you. Solely in the event that SpaceX cannot reasonably provide you a re-booking opportunity within 12 months of the last day of the Launch Period, You may terminate the Agreement and SpaceX shall retain only 50% of the amounts paid and owed at the time of the request plus any Additional Payments as compensation for work completed and shall refund 50% of the amounts paid and owed at the time of the request to you without interest. Any amounts retained by SpaceX under this paragraph are retained without further obligation or liability to you.

APPENDIX B: FORM OF RE-BOOKING AGREEMENT

AST & Science, LLC submits this request to re-book the BlueWalker 3 Payload on a subsequent SpaceX mission, as outlined in the [**REDACTED**] Launch Services Agreement dated _____ (Agreement). By submitting this request, you understand and agree that your Payload will not be included on the originally scheduled mission and all payments made toward the original Agreement will be applied per the Rebooking Policy outlined in the Appendix A of the Agreement.

Requested Re-booked Mission (To Be Completed by Customer):

Launch Period:

_____ to _____

Orbital Parameters:

Perigee (km): _____
Apogee (km): _____
Inclination (deg) _____
Crossing Time _____ LTAN or LTDN (select one)

Payload Modifications Requested: Yes or No (select one)

If yes please specify: _____

Price and Payment Schedule (To Be Completed By SpaceX):

Price (USD):

Rebooking Fee:	
Launch:	
TOTAL:	

Payment Schedule:

Payments Already Received:	
Signature + 5 days:	
L-12:	
L-9:	
L-3:	
TOTAL:	

By signing below, the Parties agree that this document will amend both the applicable payment dates and prices in section C of the Agreement and the Launch Period in Section D of the Agreement, to reflect the above changes, and delete section E from the Agreement. All other terms in the Agreement shall remain the same.

Customer Signature:		**SpaceX Acceptance:**	
By:		**By:**	
Name/Title:		**Name/Title:**	
Date:		**Date:**	

Subject to the terms and conditions of the Launch Services Agreement ("LSA") to which this SOW is attached, this SOW, and the accompanying [**REDACTED**] Payload User's Guide, define the services and deliverables to be provided by both Space Exploration Technologies Corp. ("SpaceX") and the [**REDACTED**] Payload Customer ("Customer") to launch the [**REDACTED**] Payload. The Launch Services shall be considered complete upon Launch and the completion of post-Launch activities detailed in this SOW, but not complete in the event of a Terminated Ignition.

1 PAYLOAD AND MISSION INFORMATION

1.1	Payload Maximum Mass	[**REDACTED**]
1.2	Payload Mechanical Interface	[**REDACTED**]
1.3	Payload Orbit Parameters	[**REDACTED**]
1.4	Mission design by SpaceX shall meet the requirements of the LSA and SOW. SpaceX may:	Recover Launch Vehicle hardware Manifest one or more Co-Payloads Deploy Co-Payload(s) into the Payload orbit Deploy Co-Payload(s) before/after Payload
1.5	Mission Requirements	Documented in the Payload to Launch Vehicle Interface Control Document ("ICD")
1.6	Applicable Documents (requirements shall be complied with)	ICD - supersedes this SOW once signed AFSPCMAN 91-710 [**REDACTED**] Payload User's Guide
1.7	Reference Documents (contextual or ancillary information)	SMC-016 CCAFS/VAFB SpaceX Facility User's Guide

2 CUSTOMER REQUIREMENTS, SERVICES, AND DELIVERABLES

Any material failure by Customer to meet its responsibilities, including any non-compliance with the ICD, may result in a Customer delay requiring rebooking with applicable fees. Customer shall:

2.1 Upon request, provide environmental test plans for Payload qualification, acceptance, and analysis.
2.2 Certify Payload is compatible with the Launch Vehicle maximum predicted environments ("MPE").
2.3 Provide support and information to enable SpaceX to satisfy the requirements of all applicable regulatory/licensing agencies and associated statutes.
2.4 Provide to SpaceX the deliverables listed in Table 1.
2.5 Verify compatibility of loads, environments, and deflections between Payload Constituents, if applicable.
2.6 Provide evidence that Payload Constituents will not perform premature deployments.
2.7 Allow SpaceX to perform physical inspection of the Payload during integration, if required.
2.8 Serve as a single point of contact for SpaceX to solicit Launch Range safety inputs for the Payload.
2.9 Complete all stand-alone Launch preparations within seven (7) days of arriving at the Launch Site.
2.10 Limit Launch Site processing team to no more than five (5) persons at any one time.
2.11 Provide SpaceX approved separation system(s) for integrating and deploying spacecraft within the Payload.
2.12 If required, design and build all electrical harnessing between the Payload interface and the Standard Offering Bulkhead as defined by SpaceX in the ICD and Wire Harness Build Guides.
2.13 Be able to charge Payload batteries while connected to the Launch Vehicle or guarantee that batteries will remain charged and Launch ready for up to forty-five (45) days without an umbilical connection after fairing encapsulation.
2.14 If required, design and build all electrical harnessing necessary to connect the Payload EGSE to the umbilical junction box, or equivalent interface, as defined by SpaceX in the ICD and Wire Harness Build Guides.
2.15 If required, support interface compatibility testing between separation device and Launch Vehicle hardware, providing any necessary test equipment, including test harnessing, as determined by SpaceX.
2.16 Complete Appendix H in the [**REDACTED**] Payload User's Guide defining Payload Constituents no later than 2 weeks after Effective Date of LSA.

3 SPACEX REQUIREMENTS, SERVICES, AND DELIVERABLES

Any delay by SpaceX may result in changes in the scheduling of the Launch Period, Launch Slot, Launch Interval or Launch Date, such changes not subject to any Customer rebooking fees. SpaceX shall:

3.1 Provide Launch Services for the Mission utilizing a SpaceX Launch Vehicle.
3.2 Verify that the Launch Vehicle meets the requirements of the ICD.
3.3 Provide one redundant deployment command channel and one breakwire channel per Standard Offering Bulkhead.
3.4 Provide a Mechanical Interface Ring for each mechanical interface.
3.5 Provide the electrical harnesses up to the Standard Offering Bulkhead for each mechanical interface.
3.6 If required, design and build all electrical harnessing between the Payload interface and the Standard Offering Bulkhead as defined by SpaceX in the ICD.
3.7 If required, provide the Payload-side and Launch Vehicle-side bulkhead connectors for the Customer electrical harnessing interface at the Standard Offering Bulkhead as defined by SpaceX in the ICD.
3.8 If required, provide Payload EGSE-side and SpaceX ground-side bulkhead connector for Customer's EGSE harnessing as defined by SpaceX in the ICD.
3.9 Provide the Launch Site facilities, equipment, documentation, and procedures to receive Customer's hardware, validate interfaces to Customer's hardware, integrate the Payload with the Launch Vehicle, and perform a Launch of the Payload.
3.10 Provide overall management and technical direction to perform the tasks delineated in this SOW, including program planning, quality management, and schedule management.

4 PAYLOAD LICENSING AND REGISTRATION

Prior to the arrival of the Payload at the Launch Site, Customer shall:

4.1 Provide evidence of insurance for the Payload Customer property, equipment and personnel (with express waivers of subrogation as to SpaceX and its Related Third Parties).

4.2 Provide evidence that the cross-waivers have been extended to (i) its Payload manufacturer(s); (ii) Related Third Parties with any ownership interest in the Payload; (iii) Customer's direct customers for the Payload; and (iv) any other Related Third Parties, respective contractors, subcontractors and insurers, as requested by SpaceX.

4.3 Provide a letter certifying that Customer has obtained all required Licenses and that all Payload information provided to SpaceX and/or any licensing agencies is complete and accurate in addition to copies of all required on-orbit licenses.

5 NOTICES

All notices under the Agreement shall be in writing and shall be hand-delivered or sent via electronic, express and/or certified mail to the contacts specified below All notices, documents, deliverables and other communications between SpaceX and Customer, including by their respective employees and Related Third Parties shall be in English.
For correspondence sent to SpaceX, to each of:

SpaceX
1 Rocket Road
Hawthorne, CA 90250
Attn: [**REDACTED**]
[**REDACTED**]

SpaceX
1 Rocket Road
Hawthorne, CA 90250
Attn: [**REDACTED**]
[**REDACTED**]

For correspondence sent to Customer, to each of:

AST & Science, LLC
2901 Enterprise Lane
Midland, TX 79706
Attn: [**REDACTED**]
[**REDACTED**]

TABLE 1: PROGRAM MILESTONES, REVIEWS AND DELIVERABLES

Schedule[1]	Title	Purpose	SpaceX Deliverables	Customer Deliverables
N/A	Agreement Signature	Provides authority to proceed with work	● Signed Agreement ● TAA questionnaire or Export Compliance Agreement ● Payload questionnaire	● Signed Agreement ● Point of contact
Signature + 2weeks	Mission Integration Kickoff (not a review)	Provides the initial project schedule, an introduction to the Range, and analysis templates for Customers to provide inputs to SpaceX.	● ICD template ● Launch Range introduction and Payload Range Safety requirements ● Range Safety document templates ● Payload qualification and acceptance approach templates ● Payload electrical interface pinout worksheet ● Payload mass properties and deployment characteristics template ● customer built wire harness build guides	● Completed TAA questionnaire or Export Compliance Agreement ● Completed Payload questionnaire ● Payload CAD model ● Payload constituents
Signature + 2weeks	Mission Integration Analysis Inputs (not a review)	Payload analysis inputs are provided to SpaceX to begin the Mission Integration Analyses.		● Payload inputs to ICD ● Updated Payload CAD model (if applicable) ● Payload dynamic model ● Payload electrical interface pinout ● Payload mass properties and deployment characteristics ● Completed Payload environmental test matrix

L-6 months	Interface Definitions (not a review)	Payload mechanical and electrical interface definitions defined in the ICD and using supporting documentation from SpaceX and Customer.	● Payload-to-LV electrical interface ● Payload-to-LV mechanical interface ● ICD Draft	
L-6 months	Range Safety Submissions and Mission planning (not a review)	Initial Launch campaign planning including SpaceX delivery of badging, schedule, insurance, and licensing information. Initial Range Safety deliverables from Customer.	● Launch Campaign planning package	● [**REDACTED**] Range Safety Checklist ● Program Introduction ● Inputs to Launch Site activity planning ● Payload updates to ICD ● Separation verification
L-4 months	Mission Integration Analyses (not a review)	Mission integration analysis results are delivered to the Customer and the initial ICD is prepared for signature after milestone completion.	● Predicted orbit injection report ● Coupled loads analysis results (if required) ● Payload venting analysis results (if required) ● Payload separation analysis results (if required) ● Payload clearance analysis results (if required) ● Launch integration schedule (preliminary) ● Launch Campaign Plan (preliminary) ● ICD Draft (update)	
L-4 months	Range Safety Submission (not a review)			● Ground Operating Pan (GOP) ● AFSPCMAN 91-710 tailoring (if required) ● Missile System PreLaunch Safety Package (MSPSP) ● (if required) ● Certification Data for Hazardous Systems (if required)

Schedule[1]	**Title**	**Purpose**	**SpaceX Deliverables**	**Customer Deliverables**
L-3 months	Final Mission Integration Analysis Inputs (not a review)			● Payload mass properties and deployment characteristics (update) ● Payload VerificationTest/Analysis Reports
L-2 months	Range Safety Submission (not a review)			● AFSPCMAN91-710Compliance Letter ● GOP Hazardous Procedures
L-2 months	Mission Integration Analyses Final (not a review)	Final mission integration analysis results are delivered to the Customer.	● Trajectory analysis results, including collision avoidance and Monte Carlos ● Mission analysis updates (if applicable)	

L-2 months	Launch Campaign Readiness Review Held at SpaceX Headquarters or via teleconference	Verifies that all people, parts, and paper are ready for the shipment of the Payload to the Launch Site and are ready to begin Launch Site activities	● Launch integration schedule (update) ● Launch Campaign Plan (update) ● Launch Range readiness information ● ICD revision for signature ● Verification of Compliance to ICD requirements	● Verification of Payload Compliance to ICD requirements ● Hourly Schedule of daily Launch Site operations ● Plan for Payload and GSE arrival at the Launch Site ● Propellant/Pressurant arrival information (if ● applicable) ● Badging Paperwork for All Customers ● Licensing inputs for Mission ● Payload insurance and cross-waivers ● Launch and In- orbit Insurer Subrogation Waiver (if applicable) ● Payload mass properties - measured (if not fueling at Launch site)
Payload Shipment	Payload Shipment (not a review)	Verifies Payload licensing is in place prior to shipment to the Launch Site.		● Payload Licensing Certification ● Copies of all required on-orbit Payload licenses
Payload Arrival	Payload Arrival Held at Launch Site	Provides important information for working at the Launch Site.	● Launch Campaign arrival briefing	● Launch site awareness training complete
Payload Arrival to Launch	Launch Campaign		● Hazardous operations planning meetings (if required) ● Electrical checkout results ● Daily environmental reports ● DaiIy Launch Campaign schedule	● Payload mass properties - measured (if fueling at launch site)
L-1day	Launch Readiness (not a review)	An exchange of Readiness notifications for Launch	● Launch Vehicle readiness certificate	● Payload Launch readiness certificate
Separation + TBD[2] min	Orbit Injection report (not a review)	Deliver best-estimate state vector, altitude, and attitude rate based on initial data	● Orbit Injection Report (via electronic delivery)	
Launch + 2 Weeks	Payload Status (not a review)	Customer delivers status of Payload after separation.		● Payload operations status

Notes:

1. Assumes the first day of the Launch Period as defined in the LSA until the Launch Date is further defined.
2. Depends on the trajectory, ground station locations, and other factors that may remain unknown as of Agreement Signature.

SPACEX POLICIES

THE FOLLOWING TERMS ARE IN ADDITION TO, AND INCORPORATED INTO, SPACEX'S LAUNCH SERVICES AGREEMENT. CAPITALIZED TERMS NOT DEFINED HEREIN ARE DEFINED IN A CUSTOMER'S STATEMENT OF WORK

FOR THAT PARTICULAR LAUNCH.

SPACEX DISCLAIMER OF WARRANTIES

SpaceX has not made, nor does it make, any representation or warranty, whether written or oral, express or implied, including, but not limited to, any warranty of design, operation, quality, workmanship, suitability, result, merchantability, or fitness for a particular purpose with respect to the Launch Vehicle, the Launch Services, or any associated equipment or services. Any implied warranties, including warranties of merchantability and fitness for a particular purpose, are hereby expressly disclaimed.

SPACEX RISK MANAGEMENT POLICY

1. **Liability for Damages**. In no event shall either SpaceX or Customer be liable for any indirect, special, incidental, exemplary, punitive or consequential damages, for specific performance, for the cost of procurement of substitute products or services, for lost revenues or profits, arising out of or related to the Agreement, howsoever caused and regardless of the theory of liability, whether based in contract, tort, equity or otherwise, including negligence, product liability, strict liability, or any other theory of liability.

   To the fullest extent permitted by law, SpaceX's total and cumulative liability arising out of or related to a Launch Services Agreement howsoever caused and regardless of the theory of liability, whether based in contract, tort, equity or otherwise, including negligence, product liability, strict liability, or any other theory of liability, shall in no event exceed the amounts received by SpaceX from Customer for the applicable Launch Services. To the fullest extent permitted by law, Customer's total and cumulative liability arising out of or related to a Launch Services Agreement howsoever caused and regardless of the theory of liability, whether based in contract, tort, equity or otherwise, including negligence, product liability, strict liability, or any other theory of liability, shall in no event exceed an amount equal to the sum of all amounts received by and due and owing to SpaceX from Customer for the Launch Services. Customer shall be exclusively liable for any damage to the Payload and Payload-related equipment including, but not limited to, damage from static fires of the Launch Vehicle, other pre-Launch activities, Launch, and on-orbit operations. Except as expressly set forth below, Customer shall be responsible for procuring all insurances related to the Payload (with express waivers of subrogation as to SpaceX and its related third parties).

   The limitations set forth in this Section shall not apply to (i) the Parties' indemnification obligations, including such obligations in Section 5(c) below, and (ii) breaches of the Parties confidentiality obligations set forth in the NDA.

2. **Insurance.** SpaceX shall satisfy (at its own expense) third-party launch liability insurance requirements in the amounts required by and consistent with applicable United States federal regulations and statutes governing commercial space launches. Such insurance shall cover death, bodily injury, property loss and damage to third parties for such launch activities as are prescribed by the Commercial Space Launch Act ("CSLA") and the terms of the launch license issued to SpaceX pursuant thereto ("Launch Activities"). Third-party launch liability insurance does not cover any loss or damage to the Payload or any Customer property, equipment, or personnel (or the property, equipment, or personnel of Customer's Related Third Parties). Insurance coverage for the Payload, Customer property, equipment, and personnel (and the property, equipment, or personnel of Customer's Related Third Parties), shall be purchased by Customer (or one of its Related Third Parties) prior to the arrival of the Payload at the Launch Site, and shall contain an express waiver of subrogation as to SpaceX and its Related Third Parties. Customer shall provide certificates of insurance and relevant excerpts from such policies to SpaceX once such insurance is procured.

3. **Excess Third-Party Liability for Launch Activities.** To the extent not covered by third-party launch liability insurance or eligible for coverage by the United States Government pursuant to the CSLA, SpaceX shall be exclusively liable to third parties for any death, injury, loss or damage arising out of or related to the Launch Activities caused by SpaceX or its equipment (including the Launch Vehicle or parts or components thereof), and Customer shall be exclusively liable to third parties for any death, injury, loss or damage arising out of or related to the Launch Activities caused by Customer or its equipment (including the Payload or parts or components thereof).

4. **Insurance Support.** Subject to compliance with applicable law, the Parties shall cooperate with each other's efforts to obtain and maintain, and to file and settle any insurance claims arising out of or related to activities relating to the performance of the Agreement. Such cooperation may include preparing a launch industry-standard insurance briefing package, responding to insurers' questions, delivering requested information regarding the Launch Vehicle and the Launch Range, conducting insurance briefings and facilitating site inspections as required to obtain and maintain such insurance.

5. Cross-Waivers; Indemnification.

a. Waivers. Customer and SpaceX agree not to sue or otherwise bring a claim against the other Party, such Party's Related Third Parties, any Primary or Secondary Payload Customers, the Related Third Parties of any Primary or Secondary Payload Customer, or the U.S. Government or its contractors or subcontractors for any injury, death, property loss or damage (including, loss of or damage to the Payload, the Primary and Secondary Payload(s), the Launch Vehicle, or other financial loss), sustained by it or its employees, officers, directors or agents, arising out of or related to activities relating to the performance of the Agreement, regardless of fault. Such waiver shall not apply to claims for payments of the Launch Price, delay fees, late fees or termination fees, or charges for additional services under the Agreement.

b. Extension of Waivers. Customer and SpaceX hereby agree to extend the waiver of claims and release of liability herein to their Related Third Parties, respective contractors, subcontractors and insurers, requiring them to waive (in writing) the right to sue or otherwise bring a claim against the other Party or that Party's Related Third Parties, any Primary or Secondary Payload Customers or their Related Third Parties, or the U.S. Government or its contractors or subcontractors for any injury, death, property loss or damage (including loss of or damage to the Payload, the Primary and Secondary Payload(s), the Launch Vehicle, or other financial loss) sustained by them or any of their employees, officers, directors or agents, arising out of or related to activities relating to the performance of the Agreement.

c. Indemnification. Customer and SpaceX hereby agree to indemnify and hold harmless the other Party from and against any liability or expense, including attorneys' fees, resulting from (i) any suit or claim by the indemnifying Party's Related Third Parties for any injury, death, property loss or damage (including loss of or damage to the Payload, the Launch Vehicle, or other loss) sustained by it or any of its employees, officers, directors or agents, arising out of or related to activities relating to the performance of the applicable Launch Services Agreement; and (ii) any suit or claim by a third party arising out of or related to an allegation that: (a) a Party's performance under a Launch Services Agreement; or (b) the design, manufacture or operation of the Launch Vehicle (by SpaceX and its Related Third Parties) or Payload (by Customer and its Related Third Parties), or any corresponding support equipment, infringes any third party's intellectual property rights.

d. Indemnification Process. All indemnification obligations in this Agreement are subject to the indemnified Party (i) promptly notifying the indemnifying Party in writing of the claim; (ii) allowing the indemnifying Party control of the claim; (iii) not making any admission in relation to the claim or agreeing to any settlement without the prior written consent of the indemnifying Party; and (iv) cooperating with the indemnifying Party in the defense and any related settlement negotiations.

e. Applicability. The obligation to waive claims shall apply to the Parties' contractors, subcontractors and insurers (at every tier) that are involved in activities relating to the performance of the applicable Launch Services Agreement. The waivers shall apply regardless of the theory of liability, whether based in contract, tort, equity or otherwise, including negligence, product liability, strict liability, or any other theory of liability. Each Party agrees to obtain insurance to the extent it deems such insurance necessary, or no insurance if not deemed necessary, to cover death, injury, loss or damage for which it has waived the right to sue or bring a claim against the other Party, and each Party agrees to obtain a waiver of subrogation rights from any insurer providing such insurance coverage. Nothing in this Section 5(e) shall preclude either Party from suing or otherwise bringing a claim against its own Related Third Parties. The Parties agree to memorialize certain of the rights and obligations described in this Section 5(e) in an agreement advised or required by the appropriate U.S. regulatory authorities, to include execution of the form of cross-waivers found at this site:

Please see the current form United States FAA Cross-Waiver at the following hyperlink:

http://www.ecfr.gov/cgi-bin/text-idx?SID=ca4bbb8cb08816a834838a65427aa135&node=pt14.4.440&rgn=div5

In the event this link is ever inactive, the Form of Cross Waiver shall be the most recent Form of Cross-Waiver published in the United States Code of Federal Regulations.

EX-10.38 4 gsat-20191231xexx1038.htm EXHIBIT 10.38

Execution Version

WHITE & CASE

Originally dated 5 June 2009
as amended and restated on 22 August 2013, 7 August 2015 and 30 June 2017
and as further amended and restated on 26 November 2019

BPIFAE Facility Agreement

between

Globalstar, Inc.

as Borrower

BNP Paribas
Société Générale
Natixis
Crédit Agricole Corporate and Investment Bank
Crédit Industriel Et Commercial
as Mandated Lead Arrangers

BNP Paribas

as the Security Agent
and the BPIFAE Agent

and

The Banks and Financial Institutions
listed in Schedule 1 as the Original Lenders

White & Case LLP
5 Old Broad Street
London EC2N 1DW

Table of Contents

This Agreement (the "**Agreement**") is dated 5 June 2009 (as amended and restated on 22 August 2013 by the First Global Deed of Amendment and Restatement, amended and restated on 7 August 2015 by the Second Global Amendment and Restatement Agreement and on 30 June 2017 by the Third Global Amendment and Restatement Agreement and further amended and restated on 26 November 2019 by the Fourth Amendment and Restatement Agreement and made

Between:

(1) **Globalstar, Inc.**, a corporation duly organised and validly existing under the laws of the State of Delaware, with its principal office located at 1351 Holiday Square Boulevard, Covington, LA 70433, United States of America (the "**Borrower**");

(2) **BNP Paribas**, a société anonyme with a share capital of €2,499,597,122 organised and existing under the laws of the Republic of France, whose registered office is at 16 boulevard des Italiens, 75009 Paris, France registered under number 662 042 449 at the Commercial Registry of Paris, acting in its capacity as facility agent and *Chef de File* for and on behalf of the Finance Parties (the "**BPIFAE Agent**" (previously referred to as the "*COFACE Agent*"));

(3) **BNP Paribas, Société Générale, Natixis, Crédit Agricole Corporate and Investment Bank (formerly known as Calyon)** and **Crédit Industriel et Commercial** each acting in its capacity as a mandated lead arranger (the "**Mandated Lead Arrangers**");

(4) **BNP Paribas**, a société anonyme with a share capital of €2,499,597,122 organised and existing under the laws of the Republic of France, whose registered office is at 16 boulevard des Italiens, 75009 Paris, France registered under number 662 042 449 at the Commercial Registry of Paris, acting in its capacity as the security agent (the "**Security Agent**"); and

(5) **The Financial Institutions** listed in Schedule 1 (*Lenders and Commitments*) as lenders (the "**Original Lenders**").

1. Definitions and Interpretation

1.1 Definitions

In this Agreement:

"**5% Notes**" means the 5% convertible senior unsecured notes issued by the Borrower pursuant to the Original Indenture as supplemented by the third supplemental indenture dated as of 14 June 2011.

"**5.75% Notes Term Sheet**" means the term sheet attached as schedule 1 to the Restructuring, Support and Consent Agreement in respect of the restructuring of the 5.75% notes which were exchanged or redeemed in full by the Borrower on or prior to 26 June 2013.

"**8% New Notes**" means the 8% convertible senior notes issued by the Borrower pursuant to the Original Indenture as supplemented by the Fourth Supplemental Indenture.

"**8% Old Notes**" means the 8% convertible senior unsecured notes issued by the Borrower pursuant to the Original Indenture as supplemented by a second supplemental indenture dated 19 June 2011.

"**2013 Closing Commitment**" means the equity commitment made by Thermo in respect of the Borrower on or prior to the First Effective Date pursuant to the Restructuring Support and Consent Agreement in an aggregate amount of cash equal to US$20,000,000 less the aggregate amount of cash actually received by the Borrower in connection with the Initial Minimum Cash Commitment (as such amount may be reduced by the amount of any proceeds received by the Borrower from any financing pursuant to third party Equity Issuances (*but excluding* any Equity Issuance involving Terrapin)).

"**2013 Year-End Commitment**" means the equity commitment made or to be made by Thermo or any other member of the Thermo Group in respect of the Borrower pursuant to the First Global Deed of Amendment and Restatement or the First Thermo Group Undertaking Letter (as the case may be) to be funded on or prior to 26 December 2013 as a condition precedent to the entry into Guarantee Obligations by the Subsidiary Guarantors under Clause 22.1 (*Limitations on Financial Indebtedness*), in an aggregate amount of cash equal to US$20,000,000 (as such amount may be reduced by the amount of any proceeds received by the Borrower from any financing pursuant to third party Equity Issuances (*but excluding* any Equity Issuance involving Terrapin)).

"**2014 Equity Financing**" means the equity commitment made or to be made by Thermo or any other member of the Thermo Group in respect of the Borrower pursuant to the First Global Deed of Amendment and Restatement or the First Thermo Group Undertaking Letter (as the case may be) to be funded on or prior to 31 December 2014 in an aggregate amount of cash equal to US$20,000,000 less the amount by which the amount of cash actually received by the Borrower in connection with the Initial Minimum Cash Commitment, the 2013 Closing Commitment and the 2013 Year-End Commitment exceeds US$40,000,000 (as such amount may be reduced by the amount of any proceeds received by the Borrower from any financing pursuant to third party Equity Issuances (*but excluding* any Equity Issuance involving Terrapin)).

"**2019 Bridge Facility Agreement**" means the US$62,000,000 unsecured bridge facility agreement dated 2 July 2019 (with an effective date of 28 June 2019) and made between Thermo, [*], [*], [*] and the Borrower.

"**2019 Bridge Loan Subordination Deed**" means the subordination deed dated 2 July 2019 and made between Thermo, [*], [*], [*], the Borrower, the Security Agent and the BPIFAE Agent.

"**2021 Equity Issuance**" has the meaning given to such term in Clause 23.28 (*2021 Equity Issuance*).

"**2021 Equity Issuance Amount**" means US$45,000,000.

"**Acceptable Bank**" means:

(a) a bank or financial institution which has a rating for its long-term unsecured and non credit-enhanced debt obligations of AA- or higher by S&P or Fitch Ratings Ltd or Aa2 or higher by Moody's or a comparable rating from an internationally recognised credit rating agency;

(b) Union Bank, *provided that*, it has a rating for its long-term unsecured and non credit-enhanced debt obligations of A or higher by S&P or A+ by Fitch Ratings Ltd or a comparable rating from an internationally recognised credit rating agency; or

(c) any other bank or financial institution approved by the BPIFAE Agent.

"**Acceptable Intercreditor Agreement**" means an intercreditor agreement in form and substance satisfactory to the BPIFAE Agent to be entered into by the Borrower or any Subsidiary (as the case may be), the BPIFAE Agent (unless the BPIFAE Agent agrees otherwise) and the relevant provider of Subordinated Indebtedness. Such Acceptable Intercreditor Agreement excludes the Second Lien Intercreditor Agreement but shall include, without limitation, the following provisions, whereby the relevant Subordinated Indebtedness provider shall agree not to:

(a) seek direct or indirect recovery, payment or repayment of, nor permit direct or indirect payment or repayment of any of the Subordinated Indebtedness or other amounts payable by the Borrower or any Subsidiary (as the case may be) in respect thereof or of any other Subordinated Indebtedness of the Borrower or any Subsidiary (as the case may be);

(b) demand, sue for or accept from the Borrower or any Subsidiary (as the case may be) any payment in respect of the Subordinated Indebtedness or take any other action to enforce its rights or to exercise any remedies in respect of any Subordinated Indebtedness (whether upon the occurrence or during the occurrence of an event of default (howsoever described) or otherwise) unless requested to do so by the BPIFAE Agent;

(c) file or join in any petition to commence any winding-up proceedings or an order seeking reorganisation or liquidation of the Borrower or any Subsidiary (as the case may be), or take any other action for the winding-up, dissolution or administration of the Borrower or any Subsidiary (as the case may be) or take, or agree to, any other action which could or might lead to the bankruptcy, insolvency or similar process of the Borrower or any Subsidiary (as the case may be) unless requested to do so by the BPIFAE Agent; and/or

(d) claim, rank or prove as a creditor of the Borrower or any Subsidiary (as the case may be) in competition with any Finance Party.

"**Account Control Agreement**" has the meaning given to such term in Schedule 33 (*Security Documents*).

"**Accounts Agreement**" means the accounts agreement originally dated 5 June 2009 (as amended and restated on 31 July 2013 pursuant to the First Global Deed of Amendment and Restatement, on the Third Effective Date pursuant to the Third Global Amendment and Restatement Agreement) and made between the Borrower, the BPIFAE Agent, the Offshore Account Bank and the Security Agent.

"**Acquisition Document**" means the share purchase agreement dated on or around the Third Effective Date relating to the Permitted Peruvian Acquisition and made between the Borrower and the Sellers.

"**Adjusted Consolidated EBITDA**" means, for any period, Consolidated EBITDA for such period *provided that*, for the purpose of calculating the Consolidated Net Income component of Consolidated EBITDA, any cash revenue received in that period but not recognised under GAAP shall be included, *plus* (in the case of paragraphs (a), (b) and (c) below only, to the extent deducted in the calculation of Consolidated EBITDA (without double-counting)):

(a) non-cash stock compensation expenses;

(b) non-cash asset impairment charges; and

(c) one time non-cash non-recurring expenses,

but excluding the proceeds of any Spectrum Cash Flow (save for, to the extent agreed in writing by the BPIFAE Agent (acting on the instructions of the Majority Lenders), any such proceeds which replace revenue that had otherwise been projected in the then current Agreed Business Plan but which has not been earned due to a change in the strategy of the Group).

"**Adjusted Consolidated EBITDA Reconciliation**" means, for any period, a reconciliation statement prepared by the Borrower in a form reasonably acceptable to the BPIFAE Agent showing a reconciliation of:

(a) cash revenue received in that period but not recognised under GAAP, as determined in accordance with the definition of Adjusted Consolidated EBITDA; *to*

(b) revenues recognised for such period, as determined in accordance with GAAP.

"**Advance Payment**" means an advance payment:

(a) in the case of the Launch Services Contract, of five *per cent*. (5%) of the total Contract Price payable by the Borrower pursuant to the Launch Services Contract; and

(b) in the case of the Satellite Construction Contract, of fifteen *per cent*. (15%) of the total Contract Price payable by the Borrower pursuant to the Satellite Construction Contract.

"**Affiliate**" means, in relation to any person, a Subsidiary of that person or a Holding Company of that person or any other Subsidiary of that Holding Company.

"**Agreed Business Plan**" means the business plan:

(a) delivered to the BPIFAE Agent on or prior to the First Effective Date pursuant to paragraph 13 of schedule 3 (*Conditions Precedent to the Effective Date*) of the First Global Deed of Amendment and Restatement; or

(b) as updated on an annual basis in accordance with Clause 19.3 (*Annual Business Plan and Financial Projections*).

"**ANFR**" means the Agence Nationale des Fréquences.

"**Applicable Law**" means all applicable provisions of constitutions, laws, statutes, ordinances, rules, treaties, regulations, permits, licences, approvals, interpretation and orders of courts or Governmental Authorities and all orders and decrees of all courts and arbitrators.

"**Applicable Margin**" means in respect of each Facility for any Interest Period commencing:

(a) any time prior to the First Effective Date, two point two five *per cent.* (2.25%) per annum;

(b) from the First Effective Date and prior to (but excluding) 1 July 2017, two point seven five *per cent*. (2.75%) per annum;

(c) on (and including) 1 July 2017 and ending on 30 June 2018, three point two five *per cent.* (3.25%) per annum;

(d) on (and including) 1 July 2018 and ending on 30 June 2019, three point seven five *per cent.* (3.75%) per annum;

(e) on (and including) 1 July 2019 and ending on 30 June 2020, four point two five *per cent*. (4.25%) per annum;

(f) on (and including) 1 July 2020 and ending on 30 June 2021, four point seven five *per cent*. (4.75%) per annum;

(g) on (and including) 1 July 2021 and ending on 30 June 2022, five point two five *per cent*. (5.25%) per annum; and

(h) on (and including) 1 July 2022 and thereafter, five point seven five *per cent*. (5.75%) per annum.

"**Applicable Negative Excess Cash Flow**" means:

(a) for all Payment Periods (except the Second Half 2017 Payment Period), the absolute value of such negative Excess Cash Flow for such Payment Period *provided that* if such absolute value is greater than US$10,000,000 the Applicable Negative Excess Cash Flow shall be deemed to be US$10,000,000; or

(b) for the Second Half 2017 Payment Period, the absolute value of such negative Excess Cash Flow for such Payment Period *provided that* if such absolute value is greater than US$25,000,000 the Applicable Negative Excess Cash Flow shall be deemed to be US$25,000,000.

"**Article 55 BRRD**" means Article 55 of Directive 2014/59/EU establishing a framework for the recovery and resolution of credit institutions and investment firms.

"**Asset Disposition**" means the disposition of any or all assets (including the Capital Stock of a Subsidiary or any ownership interest in a joint venture) of any Obligor or any Subsidiary thereof whether by sale, lease, transfer or otherwise. The term "*Asset Disposition*" shall not include any Equity Issuance or any Debt Issuance.

"**Assignment Agreement**" means an agreement substantially in the form set out in Part B (*Form of Assignment Agreement*) of Schedule 5 (*Form of Transfer Certificate and Assignment Agreement*) or any other form agreed between the relevant assignor and assignee.

"**Attributable Indebtedness**" means, on any date:

(a) in respect of any Finance Lease of any person, the capitalised amount thereof that would appear on a balance sheet of such person prepared as of such date in accordance with GAAP; and

(b) in respect of any Synthetic Lease, the capitalised amount or principal amount of the remaining lease payments under the relevant lease that would appear on a balance sheet of such person prepared as of such date in accordance with GAAP if such lease were accounted for as a Finance Lease.

"**Authorisation**" means an authorisation, consent, approval, resolution, licence, exemption, filing, notarisation or registration (including all Governmental Approvals).

"**Authorised Signatory**" means, with respect to the Supplier and the Launch Services Provider, a person authorised to sign any document on its behalf to be delivered pursuant to this Agreement.

"**Availability Period**" means, subject to clause 7 (*Other Provisions*) of the First Global Deed of Amendment and Restatement, the period from and including the date of this Agreement to and including 31 December 2012.

"**Available Cash**" means the sum of:

(a) the Borrower's consolidated unrestricted cash balance at the beginning of the relevant Payment Period *less* the minimum Liquidity threshold set out in Clause 20.2 (*Minimum Liquidity*);

(b) any Spectrum Cash Flow for the relevant Payment Period; and

(c) any Excess Cash Flow for the relevant Payment Period.

"**Available Commitment**" means, in relation to a Facility, a Lender's Commitment under that Facility *minus*:

(a) the amount of its participation in any outstanding Loans under that Facility; and

(b) in relation to any proposed Utilisation, the amount of its participation in any Loans that are due to be made under that Facility on or before the proposed Utilisation Date.

"**Available Facility**" means, in relation to a Facility, the aggregate for the time being of each Lender's Available Commitment in respect of that Facility.

"**Bail-In Action**" means the exercise of any Write-down and Conversion Powers.

"**Bail-In Legislation**" means:

(a) in relation to an EEA Member Country which has implemented, or which at any time implements, Article 55 BRRD, the relevant implementing law or regulation as described in the EU Bail-In Legislation Schedule from time to time; and

(b) in relation to any state other than such an EEA Member Country or (to the extent that the United Kingdom is not such an EEA Member Country) the United Kingdom, any analogous law or regulation from time to time which requires contractual recognition of any Write-down and Conversion Powers contained in that law or regulation.

"**Borrower Additional Pledge of Bank Accounts**" has the meaning given to such term in Schedule 33 (*Security Documents*).

"**Borrower Pledge of Bank Accounts**" has the meaning given to such term in Schedule 33 (*Security Documents*).

"**BPIFAE**" means Bpifrance Assurance Export S.A.S acting for and on behalf of the French state as successor in title to COFACE as referred to in clause 1.5 (*References to COFACE and BPIFAE*) of the Third Global Amendment and Restatement Agreement.

"**BPIFAE 2013 Deferred Fee Premium**" means the premium due to BPIFAE and payable by the Borrower to the BPIFAE Agent (for the account of BPIFAE) in accordance with Clause 12.1(c) (*BPIFAE Insurance Premia and BPIFAE 2013 Deferred Fee Premium*) in an aggregate amount of US$20,000,000, the final instalment of which is in an amount equal to US$12,000,000.

"**BPIFAE Insurance Policy**" means each credit insurance policy (as amended from time to time) in respect of this Agreement originally issued by COFACE (and now managed by BPIFAE acting for and on behalf of the French state as successor in title to COFACE as referred to in clause 1.5 (*References to COFACE and BPIFAE*) of the Third Global Amendment and Restatement Agreement) for the benefit of the Lenders in respect of each Facility and as approved by the BPIFAE Agent (on behalf of the Lenders) pursuant to article L.432-2 of the French *Code des Assurances* and signed by the BPIFAE Agent and the Original Lenders.

"**BPIFAE Insurance Premia**" means the premia due to BPIFAE and payable by the Borrower to the BPIFAE Agent (for the account of BPIFAE) on each Facility in accordance with Clause 12.1(b) (*BPIFAE Insurance Premia and BPIFAE 2013 Deferred Fee Premium*).

"**Break Costs**" means the amount (if any) by which:

(a) the interest which a Lender should have received for the period from the date of receipt of all or any part of its participation in a Loan or Unpaid Sum to the last day of the current Interest Period in respect of that Loan or Unpaid Sum, had the principal amount or Unpaid Sum received been paid on the last day of that Interest Period;

exceeds:

(b) the amount which that Lender would be able to obtain by placing an amount equal to the principal amount or Unpaid Sum received by it on deposit with a leading bank in the London interbank market for a period starting on the Business Day following receipt or recovery and ending on the last day of the current Interest Period.

"**Business Day**" means a day (other than a Saturday or Sunday) on which banks are open for general business in London, Paris and New York City.

"**Canadian Dollars**" means the lawful currency for the time being of Canada.

"**Capital Assets**" means, with respect to the Borrower and its Subsidiaries, any asset that should, in accordance with GAAP, be classified and accounted for as a capital asset on a Consolidated balance sheet of the Borrower and its Subsidiaries *but excluding* any capitalised interest.

"**Capital Expenditures**" means with respect to the Borrower and its Subsidiaries for any period, the aggregate cost of all Capital Assets acquired by the Borrower and its Subsidiaries during such period, as determined in accordance with GAAP.

"**Capital Stock**" means:

(a) in the case of a corporation, capital stock;

(b) in the case of an association or business entity, any and all shares, interests, participations, rights or other equivalents (however designated) of capital stock;

(c) in the case of a partnership, partnership interests (whether general or limited);

(d) in the case of a limited liability company, membership interests; and

(e) any other interest or participation that confers on a person the right to receive a share of the profits and losses of, or distributions of assets of, the issuing person.

"**Cash**" means, at any time, cash denominated in Dollars and the Dollar equivalent of Euros and Canadian Dollars, in hand or at bank and (in the latter case) credited to an account in the name of an Obligor with an Acceptable Bank and to which an Obligor is alone (or together with other Obligors) beneficially entitled and for so long as:

(a) that cash is repayable on demand;

(b) repayment of that cash is not contingent on the prior discharge of any other indebtedness of any member of the Group or of any other person whatsoever or on the satisfaction of any other condition;

(c) there is no Lien over that cash except for Liens created pursuant to the Security Documents or any Permitted Lien constituted by a netting or set-off arrangement entered into by members of the Group in the ordinary course of their banking arrangements; and

(d) the cash is freely and immediately available to be applied in repayment or prepayment of the Facilities.

"**Cash Equivalent Instruments**" means at any time:

(a) certificates of deposit maturing within one (1) year after the relevant date of calculation and issued by an Acceptable Bank;

(b) any investment in marketable debt obligations issued or guaranteed by the government of the United States of America, the United Kingdom, any member state of the European Economic Area or any Participating Member State or by an instrumentality or agency of any of them having an equivalent credit rating, maturing within one (1) year after the relevant date of calculation and not convertible or exchangeable to any other security;

(c) commercial paper not convertible or exchangeable to any other security:

(i) for which a recognised trading market exists;

(ii) issued by an issuer incorporated in the United States of America, the United Kingdom, any member state of the European Economic Area or any Participating Member State;

(iii) which matures within one (1) year after the relevant date of calculation; and

(iv) which has a credit rating of either A-1 or higher by S&P or F1 or higher by Fitch Ratings Ltd or P-1 or higher by Moody's, or, if no rating is available in respect of the commercial paper, the issuer of which has, in respect of its long-term unsecured and non-credit enhanced debt obligations, an equivalent rating;

(d) any investment in money market funds which:

(i) have a credit rating of either A-1 or higher by S&P or F1 or higher by Fitch Ratings Ltd or P-1 or higher by Moody's;

(ii) invest substantially all their assets in securities of the types described in paragraphs (a) to (c) above; and

(iii) can be turned into cash on not more than thirty (30) days' notice; or

(e) any other debt or marketable security approved by the Majority Lenders,

in each case, denominated in Dollars and the Dollar equivalent of Euros and Canadian Dollars, and to which any Obligor is alone (or together with other Obligors) beneficially entitled at that time and which is not issued or guaranteed by any member of the Group or subject to any Lien (other than a Lien arising under the Security Documents).

"**Cash Movement Summary Report**" means a report summarising the cash movements of the Group, in the form agreed between the Borrower and the BPIFAE Agent pursuant to paragraph 6 (*Cash Movement Summary Report*) of Schedule 5 (*Conditions Subsequent*) of the Fourth Global Amendment and Restatement Agreement.

"**Change of Control**" has the meaning given to such term in Clause 7.2 (*Mandatory Prepayment – Exit*).

"**Code**" means the US Internal Revenue Code of 1986, and the rules and regulations thereunder, each as amended or modified from time to time.

"**COFACE**" means *La Compagnie Française d'Assurance pour le Commerce Extérieur* a French *société anonyme* whose activities were transferred to the French state as referred to in clause 1.5 (*References to COFACE and BPIFAE*) of the Third Global Amendment and Restatement Agreement.

"**Collateral**" means the collateral security for the Obligations pledged or granted pursuant to the Security Documents.

"**Collateral Agreement**" has the meaning given to such term in Schedule 33 (*Security Documents*).

"**Collection Account**" has the meaning given to such term in the Accounts Agreement.

"**Commercial Contracts**" means:

(a) the Launch Services Contract; and

(b) the Satellite Construction Contract.

"**Commitment**" means a Facility A Commitment and/or a Facility B Commitment.

"**Communications Licences**" means the licences, permits, authorisations or certificates to construct, own, operate or promote the telecommunications business of the Borrower and its Subsidiaries (including, without limitation, the launch and operation of Satellites) as granted, or to be granted, by the FCC or the ANFR (and any other Governmental Authority), and all extensions, additions and renewals thereto or thereof.

"**Compliance Certificate**" means a certificate substantially in the form set out in Schedule 8 (*Form of Compliance Certificate*).

"**Confidential Information**" means all information relating to the Borrower, any other Obligor, the Group, the Finance Documents or a Facility of which a Finance Party becomes aware in its capacity as, or for the purpose of becoming, a Finance Party or which is received by a Finance Party in relation to, or for the purpose of becoming a Finance Party under, the Finance Documents or a Facility from either:

(a) any member of the Group or any of its advisers; or

(b) another Finance Party, if the information was obtained by that Finance Party directly or indirectly from any member of the Group or any of its advisers,

in whatever form, and includes information given orally and any document, electronic file or any other way of representing or recording information which contains or is derived or copied from such information but excludes information that:

(i) is or becomes public information other than as a direct or indirect result of any breach by that Finance Party of Clause 41 (*Confidentiality*);

(ii) is identified in writing at the time of delivery as non-confidential by any member of the Group or any of its advisers;

(iii) is known by that Finance Party before the date the information is disclosed to it in accordance with paragraphs (a) or (b) above or is lawfully obtained by that Finance Party after that date, from a source which is, as far as that Finance Party is aware, unconnected with the Group and which, in either case, as far as that Finance Party is aware, has not been obtained in breach of, and is not otherwise subject to, any obligation of confidentiality; or

(iv) any Funding Rate or Reference Bank Quotation.

"**Confidentiality Undertaking**" means a confidentiality undertaking substantially in the form set out in Schedule 10 (*Form of Confidentiality Undertaking*) or in any other form agreed between the Borrower and the BPIFAE Agent.

"**Consolidated**" means, when used with reference to financial statements or financial statement items of any person, such statements or items on a consolidated basis in accordance with applicable principles of consolidation under GAAP.

"**Consolidated EBITDA**" means, for any period, the sum of the following determined on a Consolidated basis, without duplication, for the Borrower and its Subsidiaries in accordance with GAAP:

(a) Consolidated Net Income for such period; *plus*

(b) the sum of the following to the extent deducted in determining Consolidated Net Income:

  (i) income and franchise taxes;

  (ii) Consolidated Interest Expense;

  (iii) amortisation, depreciation, PIK Interest and other non-cash charges (except to the extent that such non-cash charges are reserved for cash charges to be taken in the future);

  (iv) extraordinary losses (other than from discontinued operations) and any losses on foreign currency transaction; and

  (v) any Transaction Costs (*provided that*, in no event shall the aggregate amount of Transaction Costs relating to the negotiation of any Permitted Acquisitions or Permitted Joint Venture Investments which are not consummated added back to net income during any four (4) consecutive fiscal quarter period exceed US$1,000,000), *less*

(c) interest income and any extraordinary gains and any gains on foreign currency transactions.

"**Consolidated Interest Expense**" means, with respect to the Borrower and its Subsidiaries for any period, the gross interest expense (including, interest expense attributable to Finance Leases, all net payment obligations pursuant to Hedging Agreements and cash interest in respect of indebtedness (including vendor indebtedness) but excluding any non-cash interest) of the Borrower and its Subsidiaries, all determined for such period on a Consolidated basis, without duplication, in accordance with GAAP.

"**Consolidated Net Income**" means, with respect to the Borrower and its Subsidiaries, for any period of determination, the net income (or loss) of the Borrower and its Subsidiaries for such period, determined on a Consolidated basis in accordance with GAAP, *provided that* there shall be excluded (without double counting) from the calculation of income:

(a) the net income (or loss) of any person (other than a Subsidiary which shall be subject to paragraph (c) below), in which the Borrower or any of its Subsidiaries has a joint interest with a third party, except to the extent such net income is actually paid in cash

to the Borrower or any of its Subsidiaries by dividend or other distribution during such period;

(b) the net income (or loss) of any person accrued prior to the date it becomes a Subsidiary of such person or is merged into or consolidated with such person or any of its Subsidiaries or that person's assets are acquired by such person or any of its Subsidiaries except to the extent included pursuant to the foregoing paragraph (a);

(c) the net income (if positive) of any Subsidiary to the extent that the declaration or payment of dividends or similar distributions by such Subsidiary to the Borrower or any of its Subsidiaries of such net income is not at the time permitted by operation of the terms of its charter or any agreement, instrument, judgment, decree, order, statute rule or governmental regulation applicable to such Subsidiary; and

(d) the proceeds of any Equity Issuances and/or Subordinated Indebtedness.

"**Consultation Period**" has the meaning given to such term in Clause 19.3(c) (*Annual Business Plan and Financial Projections*).

"**Contract Price**" means the aggregate price to be paid by the Borrower to:

(a) the Supplier under and in relation to the Satellite Construction Contract being an amount (in aggregate) equal to €298,919,905 *plus* US$218,483,217.82; and

(b) the Launch Services Provider under and in relation to the Launch Services Contract being US$216,000,000.

"**Convertible Notes**" means:

(a) the 5% Notes;

(b) the 8% New Notes;

(c) the 8% Old Notes; and

(d) any other convertible notes issued by the Borrower (or its Subsidiaries) after the First Effective Date in compliance with the terms of this Agreement.

"**Covenant Capital Expenditure**" means any Capital Expenditure, including (but not limited to), for the avoidance of doubt, any Capital Expenditure funded with the Net Cash Proceeds received in connection with:

(a) any Insurance and Condemnation Event;

(b) any Asset Disposition; and

(c) any Equity Issuance or funded by the issuance of Capital Stock of the Borrower to the seller (or an affiliate thereof) of the related Capital Asset,

but excluding, any Capital Expenditure funded with the Net Cash Proceeds received in connection with an Insurance and Condemnation Event or an Asset Disposition *provided that* such Net Cash Proceeds are reinvested in "*like-for-like*" replacement assets in accordance with Clause 7.5

(*Mandatory Prepayment – Insurance and Condemnation Events*) or Clause 7.6 (*Mandatory Prepayment – Asset Dispositions*) (as the case may be).

"**Current Assets**" has the meaning given to such term under GAAP but *deducting* Cash and Cash Equivalent Instruments (*excluding* any Cash and Cash Equivalent Instruments subject to any Lien, including Liens created pursuant to the Security Documents).

"**Current Liabilities**" has the meaning given to such term under GAAP but *excluding* the current portion of any long-term Financial Indebtedness outstanding on the date of calculation.

"**Debt Issuance**" means any issuance of any Financial Indebtedness for borrowed money by the Borrower or any of its Subsidiaries. The term "*Debt Issuance*" shall not include any Equity Issuance or any Asset Disposition.

"**Debt Service**" means the aggregate Dollar amount of principal, interest, and, if any, fees and other sums required to be paid by the Borrower pursuant to the Finance Documents and pursuant to all the Borrower's Financial Indebtedness incurred from time to time, including all amounts which have become due and payable as at the date of calculation but which have not been paid on such date for the Relevant Period, *provided that*, for the avoidance of doubt, when calculating the "*Debt Service Coverage Ratio*" the term "*Debt Service*" shall include, for the Relevant Period, all amounts required to be applied in prepayment of the Loans pursuant to Clause 7.4 (*Mandatory Prepayment – Excess Cash Flow*) during that Relevant Period.

"**Debt Service Account**" has the meaning given to such term in the Accounts Agreement.

"**Debt Service Coverage Ratio**" means, on any date, the ratio of:

(a) Adjusted Consolidated EBITDA (without double-counting),

(i) *plus*, any Liquidity (in an amount exceeding US$4,000,000) at the beginning of any relevant period of calculation (which, for the purposes of this paragraph (a)(i), shall exclude any amounts held in the Debt Service Reserve Account and the Insurance Proceeds Account) *plus* the cash proceeds of any Equity Issuance or Subordinated Indebtedness raised during the relevant period not committed, or required to be applied, for any other purpose under the Finance Documents but including monies standing to the credit of the Collection Account which are not required to be applied for any other purpose;

(ii) *less* the sum of the following (without double-counting);

(A) any Covenant Capital Expenditure;

(B) any changes in Working Capital; and

(C) any cash taxes,

to

(b) Debt Service,

in each case, during the relevant period of calculation.

"**Debt Service Reserve Account**" has the meaning given to such term in the Accounts Agreement.

"**Default**" means an Event of Default or any event or circumstance specified in Clause 23 (*Events of Default*) which would (with the expiry of a grace period, the giving of notice, the making of any determination under the Finance Documents or any combination of any of the foregoing) be an Event of Default.

"**Delegation Agreement**" has the meaning given to such term in Schedule 33 (*Security Documents*).

"**Disruption Event**" means either or both of:

(a) a material disruption to those payment or communications systems or to those financial markets which are, in each case, required to operate in order for payments to be made in connection with a Facility (or otherwise in order for the transactions contemplated by the Finance Documents to be carried out) which disruption is not caused by, and is beyond the control of, any of the Parties; or

(b) the occurrence of any other event which results in a disruption (of a technical or systems-related nature) to the treasury or payments operations of a Party preventing that, or any other Party:

(i) from performing its payment obligations under the Finance Documents; or

(ii) from communicating with other Parties in accordance with the terms of the Finance Documents,

and which (in either such case) is not caused by, and is beyond the control of, the Party whose operations are disrupted.

"**Dollar**" and "**US$**" means the lawful currency for the time being of the United States of America.

"**Domestic Subsidiary**" means any Subsidiary organised under the laws of any state of the United States or the District of Colombia, other than GCL Licensee LLC.

"**DSRA Required Balance**" means, at any time:

(a) prior to 30 October 2017, an amount equal to US$37,913,900;

(b) on and from 30 October 2017, an amount in aggregate equal to all principal, interest, premia, fees, costs and expenses and any other sums due and payable by the Borrower under the Finance Documents on the next Payment Date;

(c) on and from the signing date of the Fourth Global Amendment and Restatement Agreement to the Second Lien Facility Prepayment Date, an amount equal to US$58,830,256; and

(d) after the Second Lien Facility Prepayment Date, an amount equal to at least US$50,900,000.

"**Earth Station**" means any earth station (gateway) licenced for operation by the FCC or by a Governmental Authority outside the United States that is owned and operated by the Borrower or any of its Subsidiaries.

"**EEA Member Country**" means any member state of the European Union, Iceland, Liechtenstein and Norway.

"**Eligible Amount**" means:

(a) in the case of Facility A, an amount which is equivalent of eighty five *per cent.* (85%) of the total cost of the Eligible Goods and Services which is at any time due and payable under and in accordance with the Satellite Construction Contract; and

(b) in the case of Facility B, one hundred *per cent.* (100%) of the amount of US$21,600,000, representing goods made in France and/or services performed in France under the Launch Services Contract.

"**Eligible Goods and Services**" means:

(a) goods made in France and/or services performed in France; and

(b) goods and services (including transport and insurance of any nature) originating from countries other than France and the United States, incorporated in the items delivered by the Supplier and/or the Launch Services Provider and which have been sub-contracted by the Supplier and/or the Launch Services Provider and therefore remaining under its responsibility, and recognised as being eligible by the French Authorities to be financed by this Agreement,

which are included in the aggregate Contract Price within an amount of eligibility of:

(i) an amount equal to (in aggregate) €298,919,905 *plus* US$218,483,217.82 under the Satellite Construction Contract; and

(ii) US$21,600,000 under the Launch Services Contract.

"**Employee Benefit Plan**" means any employee benefit plan within the meaning of Section 3(3) of ERISA which:

(a) is maintained or contributed to by any Obligor or any ERISA Affiliate, or to which any Obligor or ERISA Affiliate has an obligation to contribute; or

(b) has at any time within the preceding six (6) years been maintained or contributed to by any Obligor or any current or former ERISA Affiliate, or with respect to which any Obligor or any such ERISA Affiliate has had an obligation to contribute (or is deemed under Section 4069 of ERISA to have maintained or contributed, or to have had an obligation to contribute, or otherwise to have liability).

"**Environmental Claims**" means any and all administrative, regulatory or judicial actions, suits, demands, demand letters, claims, judgments, liens, accusations, allegations, notices of non-compliance or violation, investigations (other than internal reports prepared by any person in the ordinary course of trading and not in response to any third party action or request of any kind) or proceedings relating in any way to any actual or alleged violation of or liability under

any Environmental Law or relating to any Environmental Permit issued, or any approval given, under any such Environmental Law, including any and all claims by Governmental Authorities for enforcement, clean-up, removal, response, remedial or other actions or damages, contribution, indemnification cost recovery, penalties, fines, compensation or injunctive relief resulting from Hazardous Materials or arising from alleged injury or threat of injury to human health or the environment.

"**Environmental Laws**" means any and all federal, foreign state, state, regional, provincial and local laws, statutes, ordinances, codes, rules, standards and regulations, common law, permits, licences, approvals, interpretations and orders of courts or Governmental Authorities, and amendments thereto, relating to the protection of human health or the environment, including, but not limited to, requirements pertaining to the manufacture, processing, distribution, use, treatment, storage, disposal, transportation, handling, reporting, licensing, permitting, emission, release or threatened release, investigation or remediation of Hazardous Materials. For the purposes of this definition, the term "*Environmental Laws*" shall include but not be limited to:

(a) the US Comprehensive Environmental Response, Compensation and Liability Act, as amended (42 U.S.C. Section 9601, *et seq.*); and

(b) the US Resource Conservation and Recovery Act, as amended (42 U.S.C. Section 6901, *et seq.*).

"**Environmental Permits**" means any permit and other Authorisation and the filing of any notification, report or assessment under any Environmental Law for the operation of the business of any member of the Group conducted on or from the properties owned or used by any member of the Group.

"**Equity Commitments**" means:

(a) the Initial Minimum Cash Commitment;

(b) the First Effective Date Commitment;

(c) the 2013 Closing Commitment;

(d) the 2013 Year-End Commitment;

(e) the 2014 Equity Financing;

(f) the Second Effective Date Commitment;

(g) the Third Effective Date Commitment; and

(h) the Thermo Commitment.

"**Equity Cure Contribution**" means cash funds contributed to the Borrower from the issuance of shares in the Borrower's Capital Stock and/or Subordinated Indebtedness (*but excluding* the Initial Equity) in the amounts as set out in Clause 23.2(c) (*Financial Covenants*).

"**Equity Issuance**" means any issuance by the Borrower or any Subsidiary to any person of:

(a) shares of its Capital Stock;

(b) any shares of its Capital Stock pursuant to the exercise of options or warrants; or

(c) any shares of its Capital Stock pursuant to the conversion of any debt securities to equity.

The term "*Equity Issuance*" shall not include any Asset Disposition, any Debt Issuance, the conversion of any of the Convertible Notes or the issuance of any other Capital Stock pursuant to the Fourth Supplemental Indenture in circumstances where the Borrower (or any Subsidiary) does not receive any cash proceeds.

"**Equity Linked Securities**" has the meaning given to such term in the First Global Deed of Amendment and Restatement.

"**Equity Proceeds Account**" has the meaning given to such term in the Accounts Agreement.

"**Ericsson**" means Ericsson Federal Inc. a Delaware corporation with a place of business at 1595 Spring Hill Road, Vienna, VA 22182, United States.

"**ERISA**" means the US Employee Retirement Income Security Act of 1974, and the rules and regulations thereunder, each as amended or modified from time to time.

"**ERISA Affiliate**" means any person who together with any Obligor is treated as a single employer within the meaning of Section 414(b), (c), (m) or (o) of the Code or Section 4001(b) of ERISA.

"**ERISA Termination Event**" means:

(a) a "*Reportable Event*" described in Section 4043 of ERISA with respect to a Pension Plan for which the notice requirement has not been waived by the PBGC; or

(b) the withdrawal of any Obligor or any ERISA Affiliate from a Pension Plan during a plan year in which it was a "*substantial employer*" as defined in Section 4001(a)(2) of ERISA; or

(c) the termination of a Pension Plan, the filing of a notice of intent to terminate a Pension Plan or the treatment of a Pension Plan amendment as a termination, under Section 4041 of ERISA, if such termination would require material additional contributions in order to be considered a standard termination within the meaning of Section 4041(b) of ERISA, or the filing under Section 4041(a)(2) of ERISA of a notice of intent to terminate any Pension Plan or the termination of any Pension Plan under Section 4041(c) of ERISA; or

(d) the institution of proceedings to terminate, or the appointment of a trustee with respect to, any Pension Plan by the PBGC; or

(e) any other event or condition which would reasonably be expected to constitute grounds under Section 4042(a) of ERISA for the termination of, or the appointment of a trustee to administer, any Pension Plan; or

(f) the failure to make a required contribution to any Pension Plan that would reasonably be expected to result in the imposition of a Lien or the provision of security under Section 430 of the Code or Section 303 or 4068 of ERISA, or the arising of such a Lien; the failure to satisfy the minimum funding standard under section 412 of the Code or

section 302 of ERISA, whether or not waived; or the filing of any request for or receipt of a minimum funding waiver under Section 412 of the Code or Section 302 of ERISA with respect to any Pension Plan, or that such filing may be made; or a determination that any Pension Plan is, or is expected to be, considered an at-risk plan within the meaning of Section 430 of the Code or Section 303 of ERISA; or

(g) the partial or complete withdrawal of any Obligor of any ERISA Affiliate from a Multiemployer Plan if withdrawal liability is asserted by such plan; or

(h) any event or condition which results, or is reasonably expected to result, in the reorganisation or insolvency of a Multiemployer Plan under Sections 4241 or 4245 of ERISA; or

(i) any event or condition which results, or is reasonably expected to result, in the termination of a Multiemployer Plan under Section 4041A of ERISA or the institution by PBGC of proceedings to terminate a Multiemployer Plan under Section 4042 of ERISA; or

(j) the receipt by any Obligor or any ERISA Affiliate of any notice, or the receipt by any Multiemployer Plan from any Obligor or any ERISA Affiliate of any notice, that a Multiemployer Plan is in endangered or critical status under Section 432 of the Code or Section 305 of ERISA.

"**EU Bail-In Legislation Schedule**" means the document described as such and published by the Loan Market Association (or any successor person) from time to time.

"**Euro**" or "**€**" means the single currency of the Participating Member States.

"**Event of Default**" means any event or circumstance specified as such in Clause 23 (*Events of Default*).

"**Exceptional Items**" means any material items of an unusual or non-recurring nature which represent gains or losses including those arising on:

(a) the restructuring of the activities of an entity and reversals of any provisions for the cost of restructuring;

(b) disposals, revaluations, write downs or impairment of non-current assets or any reversal of any write down or impairment;

(c) disposals of assets associated with discontinued operations; or

(d) other exceptional terms reasonably determined by the BPIFAE Agent in good faith.

"**Excess Cash Flow**" means, for any period of determination, the sum of the following determined on a Consolidated basis, without duplication, for the Borrower and its Subsidiaries in accordance with GAAP:

(a) Adjusted Consolidated EBITDA for such period;

minus

(b) (to the extent not already deducted in the calculation of Adjusted Consolidated EBITDA):

(i) cash taxes and Consolidated Interest Expense paid in cash for such period;

(ii) all scheduled principal payments made in respect of Financial Indebtedness during such period;

(iii) the lesser of:

(A) all Covenant Capital Expenditures made during the relevant period; and

(B) in respect of the calendar years:

(1) 2013 through to 2016 (inclusive), the amount set out in column 2 (*Maximum Covenant Capex for Excess Cash Flow Calculation*) of the table in Part B (*Maximum Covenant Capital Expenditures for Excess Cash Flow Calculation*) of Schedule 4 (*Maximum Covenant Capital Expenditures*); or

(2) 2017 and onwards, US$2,500,000 per relevant period,

(except in each case to the extent funded directly through the incurrence of Financial Indebtedness or equity contributions or investments);

(iv) any increase in Working Capital during such period;

(v) any amount applied to fund any scheduled cash reserve required under the Finance Documents, including the DSA Required Balance and the DSRA Required Balance in such period;

(vi) voluntary, mandatory and other non-scheduled principal payments with respect to any Loans or other Financial Indebtedness in such period (except for any mandatory payments made pursuant to Clauses 7.3 (*Mandatory Prepayment – Cash Sweep of Spectrum Cash Flow*), 7.4 (*Mandatory Prepayment – Excess Cash Flow*), 7.8 (*Mandatory Prepayment – Cash Sweep following Spectrum Sale*) and 7.9 (*Mandatory Prepayment – Cash Sweep following Equity Issuance and Debt Issuance*) and any payments that constitute or with the passage of time or giving of notice or both would constitute a Default or an Event of Default);

(vii) to the extent included in Adjusted Consolidated EBITDA, Spectrum Cash Flow and any other monetization of the Group's Spectrum rights;

(viii) any cash payments in respect of the Restructuring Fee, and the BPIFAE 2013 Deferred Fee Premium;

(ix) any cash payments during such period in respect of any Exceptional Items;

(x) Transaction Costs during such period (solely to the extent added back to net income in the calculation of Adjusted Consolidated EBITDA);

(xi) any non-cash income recognized during such period;

(xii) any cash utilized during such period in respect of amounts expensed in a prior period;

(xiii) any non-cash extraordinary losses and any losses on foreign currency transactions; and

(xiv) the portion of the purchase price and other reasonable acquisition related costs paid during such period to make Permitted Acquisitions and investments, except to the extent financed with proceeds of Financial Indebtedness, Equity Issuances or insurance or casualty payments,

plus

(c) (to the extent not already added in the calculation of Adjusted Consolidated EBITDA and without double counting):

(i) any decrease in Working Capital during such period;

(ii) any amount received as a result of decreasing cash reserves required under the Finance Documents, including the DSA Required Balance and the DSRA Required Balance in such period;

(iii) any cash receipts in respect of Exceptional Items;

(iv) any cash income whereby cash is received but the recognition of GAAP income is deferred during such period to another period;

(v) any expense recognized during such period in respect of amounts paid in a prior period; and

(vi) any cash received during such period in respect of extraordinary gains and any gains on foreign currency transactions.

"**Exchange Act**" has the meaning given to such term in paragraph (i) of the definition of "*Borrower Change of Control*" in Clause 7.2(a) (*Mandatory Prepayment – Exit*).

"**Excluded Purchase Agreement Amount**" means US$19,500,000 in cash equity raised from the sale of Common Stock pursuant to the First Terrapin Purchase Agreement.

"**Existing Canadian Note**" means the three (3) Month libor plus three point fifty *per cent.* (3.50%) notes issued by Globalstar Canada Satellite Co. in favour of the Borrower.

"**Facilities**" means:

(a) Facility A; and

(b) Facility B.

"**Facility A**" has the meaning given to such term in Clause 2.1(a) (*Facility A and Facility B*).

"**Facility A Commitment**" means:

(a) in relation to an Original Lender, the amount in Dollars set opposite its name under the heading "*Facility A Commitments US$*" in Part 1 (*Facility A*) of Schedule 1 (*Lenders*

and Commitments) and the amount of any other Facility A Commitment transferred to it under this Agreement; and

(b) in relation to any other Lender, the amount of any other Facility A Commitment transferred to it under this Agreement,

to the extent not cancelled, reduced or transferred by it under this Agreement.

"**Facility A Loan**" means a loan made or to be made under Facility A or the principal amount outstanding for the time being of that loan.

"**Facility B**" has the meaning given to such term in Clause 2.1(b) (*Facility A and Facility B*).

"**Facility B Commitment**" means:

(a) in relation to an Original Lender, the amount in Dollars set opposite its name under the heading "*Facility B Commitments US$*" in Part 2 (*Facility B*) of Schedule 1 (*Lenders and Commitments*) and the amount of any other Facility B Commitment transferred to it under this Agreement; and

(b) in relation to any other Lender, the amount of any other Facility B Commitment transferred to it under this Agreement,

to the extent not cancelled, reduced or transferred by it under this Agreement.

"**Facility B Loan**" means a loan made or to be made under Facility B or the principal amount outstanding for the time being of that loan.

"**Facility Office**" means the office or offices notified by a Lender to the BPIFAE Agent in writing on or before the date it becomes a Lender (or, following that date, by not less than five (5) Business Days' written notice) as the office or offices through which it will perform its obligations under this Agreement.

"**FATCA**" means:

(a) sections 1471 to 1474 of the Code or any associated regulations or other official guidance;

(b) any treaty, law, regulation or other official guidance enacted in any other jurisdiction, or relating to an intergovernmental agreement between the US and any other jurisdiction, which (in either case) facilitates the implementation of paragraph (a) above; or

(c) any agreement pursuant to the implementation of paragraphs (a) or (b) above with the US Internal Revenue Service, the US government or any governmental or taxation authority in any other jurisdiction.

"**FATCA Application Date**" means, in relation to a:

(a) "*withholdable payment*" described in section 1473(1)(A)(i) of the Code (which relates to payments of interest and certain other payments from sources within the US), 1 July 2014;

(b) "*withholdable payment*" described in section 1473(1)(A)(ii) of the Code (which relates to "*gross proceeds*" from the disposition of property of a type that can produce interest from sources within the U.S.), 1 January 2017; or

(c) "*passthru payment*" described in section 1471(d)(7) of the Code not falling within paragraphs (a) or (b) above, 1 January 2017, or, in each case, such other date from which such payment may become subject to a deduction or withholding required by FATCA as a result of any change in FATCA after the First Effective Date.

"**FATCA Deduction**" means a deduction or withholding from a payment under a Finance Document required by FATCA.

"**FATCA Exempt Party**" means a Party that is entitled to receive payments free from any FATCA Deduction.

"**FCC**" shall mean the Federal Communications Commission.

"**FDIC**" means the Federal Deposit Insurance Corporation.

"**Final Discharge Date**" has the meaning given to such term in the Accounts Agreement.

"**Final In-Orbit Acceptance**" means the date upon which each of the following has occurred:

(a) the twenty-fourth (24^{th}) Satellite has reached its final altitude;

(b) the testing of the twenty-fourth (24^{th}) Satellite has been completed and the Borrower has provided to the BPIFAE Agent a certificate signed by a Responsible Officer certifying that the Borrower has delivered to its relevant insurer a confirmation that the Satellite Performance Criteria have been successfully met in respect of the twenty-fourth (24^{th}) Satellite (and attaching a copy of such confirmation to such certificate); and

(c) each Satellite has drifted into its final orbital plane position,

as certified by the Borrower in accordance with Clause 19.9 (*Final In-Orbit Acceptance*).

"**Final Maturity Date**" means 31 December 2022.

"**Finance Documents**" means:

(a) this Agreement;

(b) the First Global Deed of Amendment and Restatement;

(c) the Second Global Amendment and Restatement Agreement;

(d) the Third Global Amendment and Restatement Agreement;

(e) the Fourth Global Amendment and Restatement Agreement;

(f) the Accounts Agreement;

(g) the Supplier Direct Agreement;

(h) the LSP Direct Agreement;

(i) each Security Document;

(j) each Guarantee Agreement;

(k) any Transfer Certificate and/or Assignment Agreement;

(l) each Promissory Note (if any);

(m) prior to its termination pursuant to the terms of the Second Lien Intercreditor Agreement, the Thermo Subordination Deed;

(n) prior to its termination pursuant to the terms of the Second Lien Intercreditor Agreement, the Subsidiary Guarantor Subordination Deed;

(o) prior to its termination pursuant to the terms of the Second Lien Intercreditor Agreement, the 2019 Bridge Loan Subordination Deed;

(p) the First Thermo Group Undertaking Letter;

(q) the Second Thermo Group Undertaking Letter;

(r) the Third Thermo Group Undertaking Letter;

(s) the Restructuring Support and Consent Agreement (to the extent that the provisions thereof are expressed to survive the termination of such document upon the occurrence of the First Effective Date);

(t) the "*Defaults Side-Letter*" (as such term is defined in the First Global Deed of Amendment and Restatement);

(u) the Second Terrapin Purchase Agreement;

(v) the "*August 2015 Side-Letter*" (as such term is defined in the Second Global Amendment and Restatement Agreement);

(w) to the extent not already covered by items (a) to (t) (inclusive) above, each "*Restructuring Document*" (as such term is defined in either the First Global Deed of Amendment and Restatement or the Second Global Amendment and Restatement Agreement);

(x) any Acceptable Intercreditor Agreement;

(y) the Second Lien Intercreditor Agreement; and

(z) any other document designated in writing as a "*Finance Document*" by the BPIFAE Agent and the Borrower (acting reasonably).

"**Finance Lease**" means any lease of any property by the Borrower or any of its Subsidiaries, as lessee, that should, in accordance with GAAP, be classified and accounted for as a finance lease on a Consolidated balance sheet of the Borrower and its Subsidiaries.

"**Finance Parties**" means:

(a) the BPIFAE Agent;

(b) each Mandated Lead Arranger;

(c) the Security Agent; and

(d) the Lenders.

"**Financial Advisor**" means FTI Consulting, Inc or any other financial advisor appointed by the BPIFAE Agent (for and on behalf of the Lenders) from time to time.

"**Financial Close**" means the date on which each of the conditions precedent referred to in Clause 4.1 (*Initial Conditions Precedent*) and Clause 4.2 (*Further Conditions Precedent*) have been satisfied or waived in accordance with the terms of this Agreement.

"**Financial Conduct Authority**" means the body responsible for regulating the financial services industry in the United Kingdom.

"**Financial Indebtedness**" means, with respect to the Borrower and its Subsidiaries at any date and without duplication, the sum of the following calculated in accordance with GAAP:

(a) all liabilities, obligations and indebtedness for borrowed money including, but not limited to, obligations evidenced by bonds, debentures, notes or other similar instruments of any such person;

(b) all obligations of the Borrower or any of its Subsidiaries to pay the deferred purchase price of property or services (including, without limitation, all obligations under non-competition, earn-out or similar agreements) and any Permitted Vendor Indebtedness, in each case, to the extent classified as debt in accordance with GAAP, except trade payables arising in the ordinary course of trading:

  (i) not more than ninety (90) days past due; or

  (ii) being duly contested by the Borrower in good faith;

(c) the Attributable Indebtedness of the Borrower or any of its Subsidiaries with respect to the obligations of the Borrower or such Subsidiary in respect of Finance Leases and Synthetic Leases (regardless of whether accounted for as indebtedness under GAAP);

(d) all Financial Indebtedness of any third party secured by a Lien on any asset owned or being purchased by the Borrower or any of its Subsidiaries (including indebtedness arising under conditional sales or other title retention agreements), whether or not such indebtedness shall have been assumed by the Borrower or any of its Subsidiaries or is limited in recourse;

(e) all Guarantee Obligations of the Borrower or any of its Subsidiaries;

(f) all obligations, contingent or otherwise, of the Borrower or any of its Subsidiaries relative to the face amount of letters of credit, whether or not drawn, including without limitation, any banker's acceptances issued for the account of the Borrower of any of its Subsidiaries;

(g) all obligations of the Borrower or any of its Subsidiaries to redeem, repurchase exchange, defease or otherwise make payments in respect of Capital Stock of such person; and

(h) all Net Hedging Obligations.

"**First Effective Date**" means 22 August 2013, which was the "*Effective Date*" as such term is defined in the First Global Deed of Amendment and Restatement.

"**First Effective Date Commitment**" means the equity commitment made by Thermo in respect of the Borrower prior to the First Effective Date pursuant to the Restructuring Support and Consent Agreement in an amount equal to US$25,000,000.

"**First Global Deed of Amendment and Restatement**" means the global amendment and restatement agreement dated 31 July 2013 between, among others, the Parties.

"**First Half Payment Period**" means the period from 1 January to 30 June (inclusive) in any calendar year.

"**First Repayment Date**" means 31 December 2014.

"**First Terrapin Purchase Agreement**" means the common stock purchase agreement dated 28 December 2012 between the Borrower and Terrapin.

"**First Thermo Group Undertaking Letter**" means the undertaking letter dated 22 August 2013 entered into by each of the members of the Thermo Group in favour of the BPIFAE Agent.

"**Fiscal Year**" means the fiscal year of the Borrower and its Subsidiaries ending on 31 December.

"**Foreign Investment Limitation**" means, as of any date of determination, an amount equal to the sum of:

(a) US$25,000,000; *less*

(b) the aggregate amount of:

(i) Financial Indebtedness permitted pursuant to Clause 22.1(f)(iii) (*Limitations on Financial Indebtedness*) outstanding as of such date of determination; *less*

(ii) all investments in Foreign Subsidiaries (valued as of the initial date of such investment without regard to any subsequent changes in value thereof) made after the date of this Agreement and prior to such date of determination pursuant to Clause 22.3(a)(ii)(B) (*Limitations on Loans, Investments and Acquisitions*); *less*

(iii) all investments (valued as of the initial date of such investment without regard to any subsequent changed in value thereof) in Foreign Subsidiaries (or any entities that would constitute Foreign Subsidiaries if the Borrower or one of its

Subsidiaries owned more than fifty *per cent.* (50%) of the outstanding Capital Stock of such entity) made after the date of this Agreement and prior to such date of determination pursuant to Clause 22.3(c) (*Limitations on Loans, Investments and Acquisitions*),

provided that, any investment of non-cash consideration constituting stock in the Borrower (howsoever described):

(A) in the case of a single transaction, that does not exceed US$10,000,000 in value; and

(B) which transactions in aggregate since the date of this Agreement do not exceed US$50,000,000 in aggregate,

shall be excluded from the determination of the Foreign Investment Limitation.

"**Foreign Subsidiary**" means any Subsidiary that is not a Domestic Subsidiary.

"**Fourth Effective Date**" means the "*Effective Date*" as such term is defined in the Fourth Global Amendment and Restatement Agreement.

"**Fourth Global Amendment and Restatement Agreement**" means the global amendment and restatement agreement dated 26 November 2019 between, among others, the Parties.

"**Fourth Supplemental Indenture**" means the fourth supplemental indenture dated 20 May 2013 in respect of the 8% New Notes between the Borrower and U.S. Bank National Association.

"**French Authorities**" means the "*Direction Générale du Trésor et de la Politique Economiques (DGTPE)*" of the French Ministry of Finance, any successors thereto, or any other Governmental Authority in or of France involved in the provision, management or regulation of the terms, conditions and issuance of export credits including, among others, such entities to whom authority in respect of the extension or administration of export financing matters have been delegated, such as BPIFAE.

"**French Security Documents**" means:

(a) the Borrower Pledge of Bank Accounts;

(b) the Borrower Additional Pledge of Bank Accounts;

(c) each Delegation Agreement;

(d) the Holding Account Pledge Agreement; and

(e) any other Security Document governed by French law.

"**Funding Rate**" means any individual rate notified by a Lender to the BPIFAE Agent pursuant to paragraph (a)(ii) of Clause 10.3 (*Market Disruption*).

"**GAAP**" means generally accepted accounting principles, as recognised by the American Institute of Certified Public Accountants and the Financial Accounting Standards Board, consistently applied and maintained on a consistent basis for the Borrower and its Subsidiaries

throughout the period indicated and consistent with the prior financial practice of the Borrower and its Subsidiaries.

"**Governmental Approvals**" means all authorisations, consents, approvals, permits, licences and exemptions of, registrations and filings with, and reports to, all Governmental Authorities.

"**Governmental Authority**" means the government of the United States or any other nation, or of any political subdivision thereof, whether state or local, and any agency, authority, instrumentality, regulatory body, court, central bank or other entity exercising executive, legislative, judicial, taxing, regulatory or administrative powers or functions of or pertaining to government (including any supra-national bodies such as the European Union, the European Central Bank, or the International Telecommunications Union).

"**Group**" means the Borrower and its Subsidiaries from time to time.

"**Group Structure Chart**" means the group structure chart set out in Schedule 23 (*Group Structure Chart*).

"**Guarantee Agreements**" means:

(a) the guarantee agreement dated 5 June 2009 (as amended and restated pursuant to the First Global Deed of Amendment and Restatement) and between the Security Agent and each Subsidiary Guarantor (other than Globalstar Media, L.L.C. and Globalstar Broadband Services Inc.);

(b) the guarantee agreement dated 18 October 2010 and between the Security Agent, Globalstar Media, L.L.C. and Globalstar Broadband Services Inc.;

(c) the guarantee agreement dated 4 June 2019 and made between the Security Agent and Globalstar Holdings US, LLC; and

(d) each guarantee agreement (to be in substantially the same form as the guarantee agreement referred to in paragraph (a) above) to be entered into by a Subsidiary Guarantor in accordance with Clause 21.5 (*Additional Domestic Subsidiaries*) and/or a Licence Subsidiary in accordance with Clause 22.12 (*Nature of Business*) (as the case may be).

"**Guarantee Obligations**" means, with respect to the Borrower and its Subsidiaries, without duplication, any obligation, contingent or otherwise, of any such person pursuant to which such person has directly or indirectly guaranteed any Financial Indebtedness of any other person and, without limiting the generality of the foregoing, any obligation, direct or indirect, contingent or otherwise, of any such person:

(a) to purchase or pay (or advance or supply funds for the purchase or payment of) such Financial Indebtedness (whether arising by virtue of partnership arrangements, by agreement to keep well, to purchase assets goods, securities or services to take-or-pay, or to maintain financial statement condition or otherwise); or

(b) entered into for the purpose of assuring in any other manner the obligee of such Financial Indebtedness of the payment thereof or to protect such obligee against loss in respect thereof (in whole or in part),

provided that, the term Guarantee Obligation shall not include endorsements for collection or deposit in the ordinary course of trading. The amount of any Guarantee Obligation shall be deemed equal to the lesser of the stated or determinable amount of the primary obligation or the maximum liability of the person giving the Guarantee Obligation.

"**Hazardous Materials**" means any substances or materials:

(a) which are or become defined as hazardous wastes, hazardous substances, pollutants, contaminants, chemical substances or mixtures or toxic substances under any Environmental Law;

(b) which are toxic, explosive, corrosive, flammable, infectious, radioactive, carcinogenic, mutagenic or otherwise harmful to human health or the environment and are or become regulated by any Governmental Authority;

(c) the presence of which require investigation or remediation under any Environmental Law;

(d) the possession, use, storage, discharge, emission or release of which requires a permit or licence under any Environmental Law or other Authorisation;

(e) the presence of which could be deemed to constitute a nuisance or a trespass or threatens to pose a health or safety hazard to persons or neighbouring properties;

(f) which consist of underground or above ground storage tanks, whether empty, filled or partially filled with any substance; or

(g) which contain, without limitation, asbestos, polychlorinated biphenyls, urea formaldehyde foam insulation, petroleum hydrocarbons, petroleum derived substances or waste, crude oil, nuclear fuel, natural gas or synthetic gas.

"**Hedging Agreement**" means any agreement with respect to any Interest Rate Contract, forward rate agreement, commodity swap, forward foreign exchange agreement, currency swap agreement, cross-currency rate swap agreement, currency option agreement or other agreement or arrangement designed to alter the risks of any person arising from fluctuations in interest rates, currency values or commodity prices, all as amended, restated, supplemented or otherwise modified from time to time.

"**Hedging Obligations**" means all existing or future payment and other obligations owing by the Borrower under any Hedging Agreement with any person approved by the BPIFAE Agent.

"**Holding Account**" has the meaning given to such term in the Accounts Agreement.

"**Holding Account Pledge Agreement**" has the meaning given to such term in Schedule 33 (*Security Documents*).

"**Holding Company**" means, in relation to a person, any other person in respect of which it is a Subsidiary.

"**Hughes**" means Hughes Network Systems LLC a limited liability company organised under the laws of Delaware with its principal place of business at 11717 Exploration Lance, Georgetown, Maryland 20876, USA.

"**Incapacity**" means absence of the legal right to enter into binding contractual relations (other than pursuant to a civil or criminal sanction (including without limitation, personal bankruptcy or analogous proceedings)).

"**Individual In-Orbit Acceptance**" means the date upon which each of the following has occurred with respect to each individual Satellite:

(a) the relevant Satellite has reached its final altitude;

(b) the relevant Satellite is fully operational and properly integrated into the constellation;

(c) the testing of the relevant Satellite has been completed and the Borrower has provided to the BPIFAE Agent a certificate signed by a Responsible Officer certifying that the Borrower has delivered to its relevant insurer a confirmation that the Satellite Performance Criteria has been successfully met in respect of the relevant Satellite (and attaching a copy of such confirmation to such certificate); and

(d) the relevant Satellite has drifted into its final orbital plane position,

as certified by the Borrower in accordance with Clause 19.10 (*Individual In-Orbit Acceptance*).

"**Initial Equity**" means the equity contributed by Thermo (or any other third party) pursuant to paragraph 11 (*Equity contribution*) of Schedule 2 (*Conditions Precedent*) or issued to Thermo pursuant to paragraph 10 (*Equity / subordinated debt*) of Schedule 2 (*Conditions Precedent*).

"**Initial Minimum Cash Commitment**" means the equity commitment made by Thermo in respect of the Borrower to fund on or before the First Effective Date pursuant to the Restructuring Support and Consent Agreement an amount of up to US$20,000,000.

"**Insurance and Condemnation Event**" means the receipt by the Borrower or any of its Subsidiaries of any cash insurance proceeds or condemnation award payable by reason of theft, loss, physical destruction, damage or similar event with respect to any of their respective property or assets.

"**Insurance Consultant**" means Jardine Lloyd Thompson Limited.

"**Insurance Proceeds Account**" has the meaning given to such term in the Accounts Agreement.

"**Insurances**" means the insurances required by Clause 21.4 (*Insurance*).

"**Intellectual Property**" has the meaning given to such term at Clause 18.7(a) (*Intellectual Property Matters*).

"**Interest Period**" means:

(a) in relation to a Loan, each period determined in accordance with Clause 9 (*Interest Periods*); and

(b) in relation to an Unpaid Sum, each period determined in accordance with Clause 8.3 (*Default Interest*).

"**Interest Rate Cap Agreement**" means each interest rate cap agreement to be entered into by the Borrower and the Original Lenders which shall (without limitation) provide that monies payable to the Borrower under such agreements are paid directly to the Debt Service Account.

"**Interest Rate Contract**" means any interest rate swap agreement, interest rate cap agreement, interest rate floor agreement, interest rate collar agreement, interest rate option or other agreement regarding the hedging of interest rate risk exposure executed in connection with hedging the interest rate exposure of any person and any confirming letter executed pursuant to such agreement, all as amended, restated, supplemented or otherwise modified from time to time.

"**Interpolated Screen Rate**" means, in relation to any Loan, the rate which results from interpolating on a linear basis between:

(a) the applicable Screen Rate for the longest period (for which that Screen Rate is available) which is less than the Interest Period of that Loan; and

(b) the applicable Screen Rate for the shortest period (for which that Screen Rate is available) which exceeds the Interest Period of that Loan,

each as of 11:00 a.m. (London time) on the Quotation Day for Dollars.

"**Invoice**" means any invoice or demand for payment issued by the Supplier and/or the Launch Services Provider pursuant to the Satellite Construction Contract and/or Launch Services Contract, as the case may be.

"**Joinder Agreement**" has the meaning given to such term in Schedule 33 (*Security Documents*).

"**Key Agreements**" means:

(a) each Material Contract set out in Schedule 12 (*Material Contracts*) other than those Material Contracts referred to in paragraphs 8, 11 and 12 of Schedule 12 (*Material Contracts*); and

(b) each other Material Contract entered into after the First Effective Date.

"**Landlord Waiver and Consent Agreements**" has the meaning given to such term in Schedule 33 (*Security Documents*).

"**Launch**" means the disconnection of the lift-off plug of the SOYUZ launch vehicle, if such event follows the ignition of the first (strap-on boosters) and second (core stage) stage liquid engines of the launch vehicle.

"**Launch Failure**" has the meaning given to such term in the Launch Services Contract.

"**Launch Insurance**" has the meaning given to such term at Clause 21.4(c)(ii) (*Launch Insurance*).

"**Launch Insurance Documentation**" has the meaning given to such term at Clause 21.4(c)(ii) (*Launch Insurance*).

"**Launch Services Contract**" means the launch services contract dated 5 September 2007 (as amended and restated on 9 March 2010 and from time to time and as further amended) and made

between the Borrower and the Launch Services Provider for the launching into low earth orbit of the Satellites through four (4) SOYUZ launch vehicles, with an option for four (4) other similar launches.

"**Launch Services Provider**" means Arianespace, a French *société anonyme* registered at the *Registre du Commerce et des Société of Evry* under registration number 318 516 457, whose registered office is at Boulevard de l'Europe, 91006 Evry, France.

"**Lender**" means:

(a) any Original Lender; and

(b) any bank, financial institution, trust, fund or other entity which has become a Party in accordance with Clause 26 (*Changes to the Lenders*),

which in each case has not ceased to be a Party in accordance with the terms of this Agreement.

"**LIBOR**" means, in relation to any Loan:

(a) the applicable Screen Rate as of 11:00 a.m. (London time) on the Quotation Day for Dollars and for a period comparable to the Interest Period of that Loan; or

(b) (if no Screen Rate is available for Dollars for the Interest Period of that Loan) as otherwise determined pursuant to Clause 10.1 (*Unavailability of Screen Rate*),

and if, in either case, that rate is less than zero, LIBOR will be deemed to be zero.

"**Licence Subsidiary**" means any single purpose Wholly-Owned Subsidiary of the Borrower or of another Subsidiary of the Borrower, the sole business and operations of which single purpose Subsidiary is to hold one (1) or more Communications Licences, except where it is a mandatory condition of a Communications Licence in the relevant jurisdiction that any such entity is not such a vehicle (*provided that*, this exception shall not apply to any Communications Licence issued by the FCC or the ANFR).

"**Lien**" means, with respect to any asset, any mortgage, leasehold mortgage, lien, pledge, charge, security interest, hypothecation or encumbrance of any kind in respect of such asset. For the purposes of this Agreement, a person shall be deemed to own subject to a Lien any asset which it has acquired or holds subject to the interest of a vendor or lessor under any conditional sale agreement, Finance Lease or other title retention agreement relating to such asset.

"**Liquidity**" means the sum of Cash and Cash Equivalent Instruments held by any of the Obligors (other than Thermo), but excluding any amounts held in:

(a) the Debt Service Reserve Account; and

(b) the Insurance Proceeds Account.

"**Loans**" means:

(a) a Facility A Loan; and/or

(b) a Facility B Loan.

"**Loss Payee**" has the meaning given to such term at Clause 21.4(c)(ii) (*Launch Insurance*).

"**Loss Payee Clause**" means a loss payee clause in substantially the same form as set out in Schedule 28 (*Loss Payee Clause*).

"**LSP Direct Agreement**" means the direct agreement dated 24 June 2009 between the Borrower, the Launch Services Provider and the Security Agent.

"**Majority Lenders**" means:

(a) if there are no Loans then outstanding, a Lender or Lenders whose Commitments aggregate more than seventy five *per cent.* (75%) of the Total Commitments (or, if the Total Commitments have been reduced to zero, aggregated more than seventy five *per cent.* (75%) of the Total Commitments immediately prior to the reduction); or

(b) at any other time, a Lender or Lenders whose participations in the Loans then outstanding aggregate more than seventy five *per cent.* (75%) of all the Loans then outstanding.

"**Mandatory Cost**" means any fee or cost payable by banks arising from any regulation imposed by:

(a) the European Central Bank;

(b) the Financial Conduct Authority; or

(c) the Prudential Regulation Authority,

in each case, similar to those customarily considered to be "*mandatory costs*".

"**Material Adverse Effect**" means with respect to the Borrower or any of its Subsidiaries, a material adverse effect on:

(a) the properties, business, operations, prospects or condition (financial or otherwise) of the Borrower and its Subsidiaries, taken as a whole; or

(b) the legality, validity or enforceability of any provision of any Transaction Document; or

(c) the rights and remedies of any Finance Party under any of the Finance Documents; or

(d) the security interests provided under the Security Documents or the value thereof; or

(e) its ability to perform any of its obligations under the Finance Documents,

provided that, existing and future first-generation satellite constellation degradation or failure issues and the effects thereof (which, for the avoidance of doubt, shall exclude any Satellite delivered under the Satellite Construction Contract) on the Borrower and its Subsidiaries, taken individually or collectively, shall not constitute a Material Adverse Effect.

"**Material Communications Licence**" means any Communications Licence, the loss, revocation, modification, non-renewal, suspension or termination of which, could be reasonably expected to have a Material Adverse Effect.

"**Material Contract**" means:

(a) any contract or other agreement, written or oral, of the Borrower or any of its Subsidiaries involving monetary liability of or to any such person in an amount in excess of US$10,000,000 per annum; or

(b) any other contract or agreement, written or oral, of the Borrower or any of its Subsidiaries the failure to comply with which could reasonably be expected to have a Material Adverse Effect,

but excluding in either case any contract or other agreement that the Borrower or such Subsidiary may terminate on less than ninety (90) days' notice without material liability.

"**Material Subsidiary**" means:

(a) the Borrower;

(b) each Subsidiary Guarantor;

(c) Globalstar Canada Satellite Co.;

(d) each Licence Subsidiary (including, GCL Licensee LLC);

(e) any Subsidiary of the Borrower which, in the opinion of the BPIFAE Agent (acting reasonably), is of material operational or strategic importance to the business of the Group;

(f) any Subsidiary of the Borrower which has gross assets (excluding intra group items) representing ten *per cent.* (10%) or more of the gross assets of the Group; and

(g) any Subsidiary of the Borrower which has gross revenues per annum from all sources including intra-company revenues which are allocated to such Subsidiary of US$10,000,000 or more in aggregate.

For the purpose of paragraphs (f) and (g) above:

(i) subject to paragraph (ii) below:

(A) the contribution of a Subsidiary of the Borrower will be determined from its financial statements which were consolidated into the latest relevant financial statements; and

(B) the financial condition of the Group will be determined from the latest relevant financial statements;

(ii) if a Subsidiary of the Borrower becomes a member of the Group after the date on which the latest relevant financial statements were prepared:

(A) the contribution of the Subsidiary will be determined from its latest financial statements; and

(B) the financial condition of the Group will be determined from the latest relevant financial statements but adjusted to take into account any

subsequent acquisition or disposal of a business or a company (including that Subsidiary);

(iii) the contribution of a Subsidiary will, if it has Subsidiaries, be determined from its consolidated financial statements;

(iv) if a Material Subsidiary disposes of all or substantially all of its assets to another member of the Group, it will immediately cease to be a Material Subsidiary and the other member of the Group (if it is not the Borrower or already a Material Subsidiary) will immediately become a Material Subsidiary;

(v) a Subsidiary of the Borrower (if it is not already a Material Subsidiary) will become a Material Subsidiary on completion of any other intra-Group transfer or reorganisation if it would have been a Material Subsidiary had the intra-Group transfer or reorganisation occurred on the date of the latest relevant financial statements; and

(vi) except as specifically mentioned in paragraph (iv) above, a member of the Group will remain a Material Subsidiary until the next relevant financial statements show otherwise under paragraph (i) above.

If there is a dispute as to whether or not a member of the Group is a Material Subsidiary, a determination by the BPIFAE Agent will be, in the absence of manifest error, conclusive.

"**Minimum Contribution Amount**" has the meaning given to such term in Clause 23.2(c) (*Financial Covenants*).

"**Month**" means a period starting on one day in a calendar month and ending on the numerically corresponding day in the next calendar month, except that:

(a) (subject to paragraph (c) below) if the numerically corresponding day is not a Business Day, that period shall end on the next Business Day in that calendar month in which that period is to end if there is one, or if there is not, on the immediately preceding Business Day;

(b) if there is no numerically corresponding day in the calendar month in which that period is to end, that period shall end on the last Business Day in that calendar month; and

(c) if an Interest Period begins on the last Business Day of a calendar month, that Interest Period shall end on the last Business Day in the calendar month in which that Interest Period is to end.

The above rules will only apply to the last Month of any period.

"**Monthly Report**" has the meaning given to such term in Clause 19.5(d) (*Other Reports*)

"**Moody's**" means Moody's Investors Service, Inc. and any successor thereto.

"**Mortgages**" has the meaning given to such term in Schedule 33 (*Security Documents*).

"**Multiemployer Plan**" means a "*multiemployer plan*" as defined in Section 4001(a)(3) of ERISA to which any Obligor or any ERISA Affiliate is making, or is accruing an obligation to

make, or has accrued an obligation to make contributions, and each such plan for the six (6) year period immediately following the latest date on which any Obligor or ERISA Affiliate contributed to or had an obligation to contribute to such plan.

"**Net Cash Proceeds**" means, as applicable:

(a) with respect to any Equity Issuance, any Asset Disposition or any Debt Issuance, the gross cash proceeds received by the Borrower or any of its Subsidiaries therefrom *less* all legal, underwriting, placement agents and other commissions, discounts, premiums, fees and expenses incurred in connection therewith; and

(b) with respect to any Insurance and Condemnation Event, the gross cash proceeds received by the Borrower or any of its Subsidiaries *less* the sum of:

(i) all fees and expenses in connection therewith; and

(ii) the principal amount of, premium, if any, and interest on any Financial Indebtedness secured by a Lien on the asset (or a portion thereof) subject to such Insurance and Condemnation Event, which Financial Indebtedness is expressly permitted under this Agreement and required to be repaid in connection therewith.

"**Net Debt**" means, in respect of the Group at any time, the consolidated amount of all Financial Indebtedness, in each case, in cash and including:

(a) any vendor financings (howsoever described); and

(b) any Relevant Subordinated Indebtedness,

in each case, with a stated maturity or put date on or prior to the Final Maturity Date (including, without limitation, all Financial Indebtedness arising in respect of the Facilities), but:

(i) deducting the aggregate amount of Liquidity (which, for the purposes of this paragraph (b)(i), shall exclude any amounts held in the Debt Service Reserve Account and the Insurance Proceeds Account) at that time; and

(ii) excluding any Subordinated Indebtedness that does not constitute Relevant Subordinated Indebtedness.

"**Net Hedging Obligations**" means, as of any date, the Termination Value of any such Hedging Agreement on such date.

"**New Lender**" has the meaning given to such term in Clause 26.1 (*Assignments and Transfers by the Lenders*).

"**Obligations**" means, in each case, whether now in existence or hereafter arising:

(a) the principal of and interest on (including interest accruing after the filing of any bankruptcy or similar petition) the Loans;

(b) all Hedging Obligations; and

(c) all other fees (including the Restructuring Fee and the BPIFAE 2013 Deferred Fee Premium) and commissions (including attorneys' fees), charges, indebtedness, loans, liabilities, financial accommodations, obligations, covenants and duties owing by the Borrower or any of its Subsidiaries to the Finance Parties, in each case under any Finance Documents or otherwise, with respect to any Loan direct or indirect, absolute or contingent, due or to become due, contractual or tortuous, liquidated or unliquidated, and whether or not evidenced by any note.

"**Obligors**" means:

(a) the Borrower; and

(b) each Subsidiary Guarantor.

"**OFAC**" means the US Department of the Treasury's Office of Foreign Assets Control.

"**Offshore Account Bank**" has the meaning given to such term in the Accounts Agreement.

"**Onshore Account Bank**" has the meaning given to such term in the Accounts Agreement.

"**Operating Expenditure**" means all operating and maintenance costs, expenses and liabilities (including inventory purchases) incurred by a member of the Group and including any VAT in respect of any such amount (excluding any capital expenditure (other than maintenance capital expenditure)) and any other costs and expenses agreed between the BPIFAE Agent and the Borrower.

"**Operating Lease**" means, as to any person as determined in accordance with GAAP, any lease of property (whether real, personal or mixed) by such person as lessee which is not a Finance Lease.

"**Original Indenture**" means the indenture dated as of 15 April 2008 between the Borrower as issuer and U.S. Bank National Association as trustee.

"**Original Lenders**" has the meaning given to such term in the Recitals.

"**Participating Member State**" means any member state of the European Union that has the Euro as its lawful currency in accordance with legislation of the European Union relating to Economic and Monetary Union, other than Slovakia, Slovenia, Malta and Cyprus.

"**Party**" means a party to this Agreement.

"**Payment Date**" has the meaning given to such term in the Accounts Agreement.

"**Payment Period**" means a First Half Payment Period or a Second Half Payment Period, as the case may be.

"**PBGC**" means the Pension Benefit Guaranty Corporation or any successor agency.

"**Pension Plan**" means any Employee Benefit Plan, other than a Multiemployer Plan, which is subject to the provisions of Title IV of ERISA or Section 412 of the Code or Section 302 of ERISA.

"**Permitted Acquisition**" means any investment by the Borrower, any Subsidiary Guarantor or Globalstar Canada Satellite Co. in the form of acquisition of all or substantially all of the business or a line of business (whether by the acquisition of Capital Stock, assets or any combination thereof) of any other person (a "**Target Company**") if each such acquisition meets each of the following requirements:

(a) no less than fifteen (15) days prior to the proposed closing date of such acquisition, the Borrower shall have delivered written notice and financial details of such acquisition to the BPIFAE Agent, which notice shall include the proposed closing date of such acquisition;

(b) the Borrower shall have certified on or before the closing date of such acquisition, in writing and in a form reasonably acceptable to the BPIFAE Agent (acting on the instructions of the Majority Lenders), that such acquisition has been approved by the board of directors or equivalent governing body of the Target Company;

(c) the Target Company shall be in a substantially similar line of business as the Borrower and its Subsidiaries pursuant to Clause 22.12 (*Nature of Business*) or a parallel business the acquisition of which would be of commercial or strategic importance to such business;

(d) if such proposed transaction is a merger with respect to the Borrower or any Subsidiary Guarantor, the Borrower shall have received the prior written consent of the BPIFAE Agent to such transaction;

(e) such proposed transaction shall not include or result in any actual or contingent liabilities that could reasonably be expected to be material to the business, financial condition, operations or prospects of the Borrower and its Subsidiaries, taken as a whole;

(f) if such proposed transaction is in respect of a Target Company which has negative Adjusted Consolidated EBITDA, the prior written consent of the BPIFAE Agent shall be required unless:

(i) such proposed transaction:

(A) is in respect of a Target Company which is an international gateway operator; and

(B) the cash consideration of such transaction does not exceed US$5,000,000 in value,

provided that, the Borrower shall only be permitted to enter into two (2) transactions of the type described in this paragraph (f)(i) in each Fiscal Year; or

(ii) the relevant Target Company (other than an international gateway operator) has for the twelve (12) Month period prior to the date of the proposed transaction a negative Adjusted Consolidated EBITDA no greater than US$2,000,000 in aggregate when taking into account all other acquisitions with negative Adjusted Consolidated EBITDA made following the date of this Agreement.

For the purpose of the calculations required to be made in respect of this paragraph (f) only:

(A) any reference to "*the Borrower and its Subsidiaries*" in the definitions of Consolidated EBITDA, Consolidated Net Income, Equity Issuance, Subordinated Indebtedness, Consolidated Interest Expense and Finance Lease (and any other definition used in the calculation of Adjusted Consolidated EBITDA) shall be construed as being a reference to "*the Target Company and its Subsidiaries*";

(B) any reference to "*the Borrower*" in the definitions of Consolidated EBITDA, Consolidated Net Income, Equity Issuance, Subordinated Indebtedness, Consolidated Interest Expense and Finance Lease (and any other definition used in the calculation of Adjusted Consolidated EBITDA) shall be construed as being a reference to "*the Target Company*"; and

(C) any reference to "*Subsidiary*" in the definitions of Consolidated EBITDA, Consolidated Net Income, Equity Issuance, Subordinated Indebtedness, Consolidated Interest Expense and Finance Lease (and any other definition used in the calculation of Adjusted Consolidated EBITDA) shall be construed as being a reference to a Subsidiary of a Target Company;

(g) the Borrower shall have delivered to the BPIFAE Agent:

(i) no less than fifteen (15) days prior to the proposed closing date of such acquisition, forward looking financial statements taking into account the proposed transaction and demonstrating to the satisfaction of the BPIFAE Agent, compliance with each of the financial covenants set out in Clause 20 (*Financial Covenants*) on the proposed closing date of such acquisition and on a twelve (12) Month projected basis; and

(ii) such other documents reasonably requested by the BPIFAE Agent;

(h) no Event of Default shall have occurred and be continuing both before and after giving effect to such acquisition; and

(i) such acquisition is not in violation of Sanctions applicable to any member of the Group.

"**Permitted Joint Venture Investments**" means any investment by the Borrower, any Subsidiary Guarantor or Globalstar Canada Satellite Co. in joint ventures and partnerships if each such investment meets all of the following requirements:

(a) no less than fifteen (15) days prior to the proposed closing date (in the case where the consent of the BPIFAE Agent and the Majority Lenders is required) or after the closing date (in the case where no consent is required) of any such investment of more than US$10,000,000, the Borrower shall have delivered written notice of such investment to the BPIFAE Agent, which notice shall include the proposed closing date (or actual closing date, applicable) of such investment;

(b) such joint venture or partnership shall be in a substantially similar line of business as the Borrower and its Subsidiaries pursuant to Clause 22.12 (*Nature of Business*) or a parallel business which is of commercial or strategic importance to such business;

(c) the Borrower shall have delivered to the BPIFAE Agent:

(i) such documents reasonably requested by the BPIFAE Agent or any Finance Party (through the BPIFAE Agent) pursuant to Clause 21.5 (*Additional Domestic Subsidiaries*) to be delivered at the time required pursuant to Clause 21.5 (*Additional Domestic Subsidiaries*);

(ii) forward looking financial statements taking into account the proposed transaction and demonstrating to the satisfaction of the BPIFAE Agent, compliance with each of the financial covenants set out in Clause 19.14 (*Spectrum Plan*) on the proposed closing date of such investment and on a twelve (12) Month projected basis;

(d) no Event of Default shall have occurred and be continuing both before and after giving effect to such investment;

(e) if such investment is as a general partner, such investment shall be made by a Subsidiary that has no assets other than such investment; and in any case, such investment shall not include or result in any contingent liabilities that could reasonably be expected to be material to the business, financial condition, operations or prospects of the Borrower and its Subsidiaries, taken as a whole; and

(f) the Borrower shall have obtained the prior written consent of the BPIFAE Agent and the Majority Lenders prior to the consummation of such investment if the amount (including all cash and non-cash consideration paid by or on behalf of the Borrower and its Subsidiaries in connection with such investment) of such investment (or series of related investments), together with all other investments in joint ventures and partnerships consummated during the term of this Agreement, exceeds US$30,000,000 in aggregate (excluding any portion of such investment consisting of Capital Stock of the Borrower).

"**Permitted Liens**" means the Liens permitted pursuant to Clause 22.2(a) to (u) (*Limitations on Liens*).

"**Permitted Peruvian Acquisition**" means the acquisition by the Borrower of the entire share capital of the Peruvian TargetCo from the Sellers pursuant to, and in accordance with, the terms of the Acquisition Document for an amount not to exceed the Total Acquisition Costs.

"**Permitted Supplier Indebtedness**" means any Financial Indebtedness of the Borrower or any Subsidiary owing to the Supplier and relating to the Satellite Construction Contract.

"**Permitted Vendor Indebtedness**" means:

(a) any Permitted Supplier Indebtedness; and

(b) any Financial Indebtedness of the Borrower or any Subsidiary:

(i) owing to Ericsson pursuant to the purchase agreement between the Borrower and Ericsson dated 1 October 2008, as amended or any other agreement which replaces such agreement;

(ii) owing to Hughes pursuant to the agreement between the Borrower and Hughes dated 1 May 2008, as amended or any other agreement which replaces such agreement;

(iii) owing to a Satellite vendor or Satellite launch vendor or Affiliate thereof (in each case, other than the Supplier) for:

(A) the procurement, construction, launch and insurance of all or part of one or more Satellites or Satellite launches for such Satellites; or

(B) a ground or in-orbit space intended for future use or associated improvements to the ground portion of the network of the Borrower and its Subsidiaries;

(iv) owing to any other supplier or vendor in respect of any Capital Expenditure (*but excluding* the Supplier); or

(v) otherwise approved in writing by the BPIFAE Agent (acting on the instructions of all the Lenders),

provided that, in each case (other than paragraph (b)(v) above and unless stated to the contrary):

(A) in the case of paragraph (a) above only, such Permitted Supplier Indebtedness:

(1) does not exceed €17,530,000 (the "**Relevant Amount**") and the Borrower must have consented to the payment to the Supplier of the Relevant Amount (or any lesser amount), it being acknowledged that the Borrower has no obligation to pay the Relevant Amount to the Supplier; and

(2) is on such terms as may be approved by the BPIFAE Agent (acting on the instructions of each Lender in their absolute discretion);

(B) in the case of paragraphs (b)(i) to (iv) (inclusive) only, such Financial Indebtedness does not exceed (either under any individual agreement or in aggregate) US$25,000,000 (unless approved in writing by the BPIFAE Agent (acting on the instructions of all the Lenders));

(C) the issuance of such Financial Indebtedness shall not cause, and could not reasonably be expected to cause, a Default;

(D) any interest payable in respect of such Financial Indebtedness does not exceed ten *per cent.* (10%) per annum;

(E) such Financial Indebtedness is not evidenced by any promissory note; and

(F) such Financial Indebtedness is not secured by any Lien (other than a Permitted Lien) on any asset or property of the Borrower or any Subsidiary thereof.

"**Peruvian TargetCo**" means Globalstar Telecomunicaciones Perú S.A.C., a corporation incorporated in the Republic of Peru and registered under Electronic File No. 13766834 of the Registry of Legal Entities of the Registry of Lima, whose register capital amounts to S/ 1,000.00 (One Thousand and 00/100 Soles).

"**PIK Interest**" means interest paid by the Borrower or any Subsidiary in respect of a debt instrument by the issuance of:

(a) shares in the Borrower's Capital Stock issued for the sole purpose of a making a dividend to the shareholders of the Borrower; and/or

(b) additional debt securities,

in each case:

(i) which debt securities will not mature or become payable prior to the maturity date of such instrument and the Final Discharge Date (other than in the case of the 5% Notes and the 8% Old Notes); and

(ii) no cash payment is made by the Borrower or any Subsidiary prior to the Final Discharge Date.

"**Project**" means:

(a) the supply of twenty five (25) Satellites plus the long lead items for six (6) subsequent Satellites by the Supplier pursuant to the Satellite Construction Contract; and

(b) the launching of such Satellites by the Launch Services Provider pursuant to the terms of the Launch Services Contract,

to form for the Borrower the second generation satellite constellation.

"**Project Accounts**" has the meaning given to such term in the Accounts Agreement.

"**Promissory Notes**" means a promissory note made by the Borrower in accordance with Clause 31.2(c) (*Evidence of Financial Indebtedness*) in substantially (and in all material respects in) the same form as set out in Schedule 25 (*Form of Promissory Note*) and amendments, supplements and modifications thereto, any substitutes therefor, and any replacements, restatements, renewals or extension thereof, in whole or in part.

"**Property All Risks Insurance**" means the insurance to be procured by the Borrower in accordance with Clause 21.4(c)(i) (*Insurance*).

"**Protected Party**" means a Finance Party which is or will be subject to any liability, or required to make any payment, for or on account of Tax in relation to a sum received or receivable (or any sum deemed for the purposes of Tax to be received or receivable) under a Finance Document.

"**Prudential Regulation Authority**" means the Bank of England body responsible for the prudential regulation and supervision of banks, building societies, credit unions, insurers and major investment firms.

"**Purchase Notice**" has the meaning given to such term in the Fourth Supplemental Indenture.

"**Qualifying Certificate**" means a certificate from the Supplier and/or the Launch Services Provider (as the case may be) substantially in the form set out in Schedule 18 (*Qualifying Certificate*) and signed by an Authorised Signatory of such person.

"**Qualifying Lender**" means a Lender which is:

(a) a United States person (as defined in Section 7701(a)(30) of the Code);

(b) engaged in a US trade or business with which such interest is "*effectively connected*" within the meaning of the Code;

(c) entitled in respect of payments of interest receivable by it under this Agreement to the benefit of a double taxation agreement with the United States which makes provision for full exemption from tax imposed by the United States on interest; or

(d) entitled to the benefit of the "*portfolio interest*" exemption under Section 871(h) or 881(c) of the Code.

"**Quotation Day**" means, in relation to any period for which an interest rate is to be determined, two (2) Business Days before the first day of that period unless market practice differs in the London interbank market in which case the Quotation Day will be determined by the BPIFAE Agent in accordance with market practice in the London interbank market (and if quotations would normally be given by leading banks in the London interbank market on more than one day, the Quotation Day will be the last of those days).

"**Reference Bank Quotation**" means any quotation supplied to the BPIFAE Agent by a Reference Bank.

"**Reference Bank Rate**" means the arithmetic mean of the rates (rounded upwards to four decimal places) as supplied to the BPIFAE Agent at its request by the Reference Banks as either:

(a) if:

(i) the Reference Bank is a contributor to the applicable Screen Rate; and

(ii) it consists of a single figure,

the rate (applied to the relevant Reference Bank, and the relevant currency and period) which contributors to the applicable Screen Rate are asked to submit to the relevant administrator; or

(b) in any other case, the rate at which the relevant Reference Bank could borrow funds in the London interbank market in the relevant currency and for the relevant period, were it to do so by asking for and then accepting interbank offers for deposits in reasonable market size in that currency and for that period.

"**Reference Banks**" means the principal London offices of BNP Paribas, Société Générale, Crédit Industriel et Commercial, Crédit Agricole Corporate and Investment Bank and Natixis or such other banks as may be appointed by the BPIFAE Agent in consultation with the Borrower.

"**Relevant Contribution**" has the meaning given to such term in Clause 23.2(c) (*Financial Covenants*).

"**Relevant Domestic Account**" has the meaning given to such term in the Accounts Agreement.

"**Relevant EIPs**" means the employee incentive plans set out in Schedule 22 (*Employee Incentive Plans*).

"**Relevant Nominating Body**" means any applicable central bank, regulator or other supervisory authority or a group of them, or any working group or committee sponsored or chaired by, or constituted at the request of, any of them or the Financial Stability Board.

"**Relevant Period**" means each period of six (6) Months or twelve (12) Months (as the case may be) referred to in each of the columns titled "*Column 1 – Relevant Period*" in the tables contained in Clauses 20.1 (*Maximum Covenant Capital Expenditures*), 20.3 (*Adjusted Consolidated EBITDA*), 20.4 (*Debt Service Coverage Ratio*) and 20.5 (*Net Debt to Adjusted Consolidated EBITDA*).

"**Relevant Subordinated Indebtedness**" means any Subordinated Indebtedness the terms of which require the payment of:

(a) cash interest *but excluding* the payment of any cash interest under the 5% Notes or the 8% Old Notes which may become due to the relevant noteholders under the 5% Notes or the 8% Old Notes (as the case may be) following the maturity of, or the occurrence of a default pursuant to, and in accordance with, the terms of the indenture relating to the relevant Convertible Notes; or

(b) any fees *but excluding* any fees payable to an administrative agent of, or trustee for, any noteholders.

For the avoidance of doubt, the 8% New Notes shall constitute Relevant Subordinated Indebtedness.

"**Repayment Date**" has the meaning given to such term at Clause 6.1 (*Repayment*).

"**Repayment Schedule**" means the repayment schedule set out at Schedule 29 (*Repayment Schedule*).

"**Repeating Representations**" means each of the representations set out in Clauses 18.1 (*Status*), 18.2 (*Binding Obligations*), 18.3 (*Non-Conflict with other Obligations*), 18.4 (*Power and Authority*), 18.6 (*Authorisations*), 18.10 (*Margin Stock*), 18.11 (*Government Regulation*), 18.13 (*Employee Relations*), 18.14 (*Burdensome Provisions*), 18.18 (*Titles to Properties*), 18.23(a) (*Satellites*), 18.26 (*Anti-bribery, Anti-corruption and Anti-money Laundering*), 18.27 (*Sanctions*), 18.28 (*Governing Law and Enforcement*), 18.32 (*No Misleading Information*), 18.34 (*No Immunity*) and 18.37(a) and (b) (*Notes and First Terrapin Purchase Agreement*).

"**Replacement Benchmark**" means a benchmark rate which is:

(a) formally designated, nominated or recommended as the replacement for a Screen Rate by:

(i) the administrator of that Screen Rate; or

(ii) any Relevant Nominating Body,

and if replacements have, at the relevant time, been formally designated, nominated or recommended under both paragraphs, the "Replacement Benchmark" will be the replacement under paragraph (ii) above;

(b) in the opinion of the Majority Lenders and the Borrower, generally accepted in the international or any relevant domestic syndicated loan markets as the appropriate successor to a Screen Rate; or

(c) in the opinion of the Majority Lenders and the Borrower, an appropriate successor to a Screen Rate.

"**Replacement Investor**" has the meaning given to such term at Clause 23.19(a) (*Second Terrapin Purchase Agreement*).

"**Replacement Purchase Agreement**" has the meaning given to such term at Clause 23.19(a) (*Second Terrapin Purchase Agreement*).

"**Reporting Date**" means, in relation to a Monthly Report, the last day of the Month which immediately follows the Month to which such Monthly Report relates.

"**Reservations**" means:

(a) the principle that equitable remedies may be granted or refused at the discretion of a court;

(b) the limitation of enforcement by laws relating to insolvency, reorganisation and other laws generally affecting the rights of creditors;

(c) the time barring of claims under applicable statutes of limitation;

(d) the possibility that an undertaking to assume liability for or indemnify a person against non-payment of stamp duty may be void;

(e) defences of set-off or counterclaim;

(f) a court construing a Lien expressed to be created by way of fixed security as being floating security;

(g) any additional interest imposed pursuant to any relevant agreement may be held to be irrecoverable on the grounds that it is a penalty;

(h) an English court may not give effect to any indemnity for legal costs incurred by an unsuccessful litigant; and

(i) equivalent principles, rights and defences under the laws of any relevant jurisdiction.

"**Resolution Authority**" means any body which has authority to exercise any Write-down and Conversion Powers.

"**Responsible Officer**" means the chief executive officer, president, chief financial officer, controller, treasurer or assistant treasurer of an Obligor or any other officer of an Obligor reasonably acceptable to the BPIFAE Agent. Any document delivered under this Agreement that is signed by a Responsible Officer of an Obligor shall be conclusively presumed to have been authorised by all necessary corporate, partnership and/or other action on the part of such Obligor and such Responsible Officer shall be conclusively presumed to have acted on behalf of such Obligor.

"**Restructuring Fee**" has the meaning given to such term in Clause 11.5 (*Restructuring Fee*).

"**Restructuring Support and Consent Agreement**" means the equity commitment, restructuring, support and consent agreement dated 20 May 2013 between the Borrower, the Subsidiary Guarantors, the Security Agent, the BPIFAE Agent, the Lenders and Thermo.

"**S&P**" means Standard & Poor's Rating Services, a division of The McGraw-Hill Companies, Inc. and any successor thereto.

"**Sanctions**" means any economic or trade sanctions or restrictive measures enacted, administered, imposed or enforced by the U.S. Department of the Treasury's Office of Foreign Assets Control (OFAC), the U.S. Department of State, the United Nations Security Council, and/or the European Union and/or the French Republic and/or Her Majesty's Treasury or any other such sanctions authority in a jurisdiction that is relevant to the Facilities.

"**Satellite**" shall mean any single non-geostationary satellite, or group of substantially identical non-geostationary satellites, delivered or to be delivered by the Supplier to the Borrower pursuant to the Satellite Construction Contract and owned by, leased to or for which a contract to purchase has been entered into by, the Borrower or any of its Subsidiaries, whether such satellite is in the process of manufacture, has been delivered for Launch or is in orbit (whether or not in operational service) and including any replacement satellite of the Borrower following a Launch Failure delivered or to be delivered by:

(a) the Supplier to the Borrower pursuant to the Satellite Construction Contract; or

(b) a French supplier (other than the Supplier) pursuant to an agreement entered into by the Borrower with such French supplier which is permitted by the Finance Documents.

"**Satellite Construction Contract**" means the satellite construction contract dated 30 November 2006 and made between the Borrower and the Supplier for the construction of forty eight (48) satellites, as amended and supplemented from time to time (and as further amended and restated on or about the date of this Agreement and delivered in satisfaction of the condition precedent set out at paragraph 7 (*Commercial contracts*) of Schedule 2 (*Conditions Precedent*)) for the purpose of, among other things, detailing a new phasing of the contract for the first twenty five (25) satellites and a final phase of twenty three (23) satellites.

"**Satellite Performance Criteria**" means the criteria set out at Schedule 31 (*Satellite Performance Criteria*).

"**SCF Amount**" has the meaning given to such term in Clause 7.3(a) (*Mandatory Prepayment – Cash Sweep of Spectrum Cash Flow*).

"**Scheduled Launch Period**" means the three (3) Month contractual period during which a Satellite is scheduled to be launched in accordance with the Launch Services Contract.

"**Screen Rate**" means the London interbank offered rate administered by the ICE Benchmark Administration Limited (or any other person which takes over the administration of that rate) for Dollars for the relevant period displayed on pages LIBOR01 or LIBOR02 of the Reuters screen (or any replacement Reuters page which displays that rate) or on the appropriate page of such other information service which publishes that rate from time to time in place of Reuters. If such page or service ceases to be available, the BPIFAE Agent may specify another page or service displaying the relevant rate after consultation with the Borrower and the Lenders.

"**Screen Rate Replacement Event**" means, in relation to a Screen Rate:

(a) the methodology, formula or other means of determining that Screen Rate has, in the opinion of the Majority Lenders, and the Borrower materially changed;

(b) the:

(i)

(A) administrator of that Screen Rate or its supervisor publicly announces that such administrator is insolvent; or

(B) information is published in any order, decree, notice, petition or filing, however described, of or filed with a court, tribunal, exchange, regulatory authority or similar administrative, regulatory or judicial body which reasonably confirms that the administrator of that Screen Rate is insolvent,

provided that, in each case, at that time, there is no successor administrator to continue to provide that Screen Rate;

(ii) administrator of that Screen Rate publicly announces that it has ceased or will cease, to provide that Screen Rate permanently or indefinitely and, at that time, there is no successor administrator to continue to provide that Screen Rate;

(iii) supervisor of the administrator of that Screen Rate publicly announces that such Screen Rate has been or will be permanently or indefinitely discontinued; or

(iv) administrator of that Screen Rate or its supervisor announces that that Screen Rate may no longer be used; or

(v) administrator of that Screen Rate determines that that Screen Rate should be calculated in accordance with its reduced submissions or other contingency or fallback policies or arrangements and the circumstance(s) or event(s) leading to such determination are not (in the opinion of the Majority Lenders and the Borrower) temporary; or

(c) in the opinion of the Majority Lenders and the Borrower, that Screen Rate is otherwise no longer appropriate for the purposes of calculating interest under this Agreement.

"**Second Effective Date Commitment**" means the equity commitment made by Thermo in respect of the Borrower pursuant to the Second Global Amendment and Restatement Agreement in an amount equal to US$30,000,000.

"**Second Global Amendment and Restatement Agreement**" means the global amendment and restatement agreement dated 7 August 2015 between, among others, the Parties.

"**Second Half 2017 Payment Period**" means the Second Half Payment Period occurring in the calendar year of 2017.

"**Second Half Payment Period**" means the period from 1 July to 31 December (inclusive) in any calendar year.

"**Second Lien Facility**" means the "*Facility*" as such term is defined in the Second Lien Facility Agreement.

"**Second Lien Facility Agent**" means the "*Agent*" as such term is defined in the Second Lien Facility Agreement.

"**Second Lien Facility Agreement**" means the second lien facility agreement to be entered into between, among others, the Borrower and the Second Lien Finance Parties.

"**Second Lien Facility Prepayment Date**" has the meaning given to such term in Clause 7.15(a)(*Mandatory Prepayment – Second Lien Facility*).

"**Second Lien Facility Minimum Commitment**" means an aggregate commitment extended to the Borrower under the Second Lien Facility Agreement of no less than the sum of:

(a) US$195,000,000; *plus*

(b) an amount equivalent to the capitalised interest accrued since the signing date of the 2019 Bridge Facility Agreement under the 2019 Bridge Facility Agreement.

"**Second Lien Finance Documents**" means the "*Finance Documents*" as such term is defined in the Second Lien Facility Agreement.

"**Second Lien Finance Parties**" means the "*Finance Parties*" as such term is defined in the Second Lien Facility Agreement.

"**Second Lien Intercreditor Agreement**" means the intercreditor agreement to be entered into between each Finance Party, the Borrower and each other party to the Second Lien Facility Agreement in form and substance satisfactory to each Finance Party.

"**Second Lien Security Documents**" means those security documents entered into in pursuant to, and in connection with, the Second Lien Finance Documents from time to time.

"**Second Lien Utilisation Date**" means the date of the first utilisation by the Borrower under the Second Lien Facility Agreement.

"**Second Terrapin Purchase Agreement**" means the common stock purchase agreement dated 7 August 2015 between the Borrower and Terrapin.

"**Second Thermo Group Undertaking Letter**" means the undertaking letter dated 7 August 2015 entered into by each of the members of the Thermo Group in favour of the BPIFAE Agent.

"**Security Amendment and Restatement Agreement**" has the meaning given to such term in Schedule 33 (*Security Documents*).

"**Security Documents**" has the meaning given to such term in Schedule 33 (*Security Documents*).

"**Sellers**" means:

(a) Luis Manuel Vinatea Recoba, as further identified in the Acquisition Document; and

(b) Javier Humberto García Vélez, as further identified in the Acquisition Document.

"**Senior Facility Security Documents**" has the meaning given to such term in Schedule 33 (*Security Documents*).

"**Shareholder Distributions**" means:

(a) any dividend paid, made or declared, other than a dividend paid exclusively in Capital Stock or rights to acquire Capital Stock which, in each case, no cash payment is made by the Borrower;

(b) any payment by way of return on or repayment of share capital;

(c) any payment of cash interest or capitalised interest by the Borrower to any member of the Thermo Group under any distribution (whether in cash or in kind), including, without limitation, any distribution of assets or other payment whatsoever in respect of share capital whether directly or indirectly *but excluding*:

(i) any distributions or other payments pursuant to any employee stock incentive plan (howsoever described) expressly permitted under the terms of this Agreement;

(ii) any PIK Interest relating to:

(A) the Thermo Loan Agreement; or

(B) any Convertible Note held by Thermo; and

(iii) any cash interest relating to any Convertible Note held by Thermo and permitted by the terms of this Agreement; and

(iv) any "*Permitted Second Lien Payment*" (as such term is defined in the Second Lien Intercreditor Agreement);

(d) any redemption, cancellation or repurchase of the Borrower's shares or any class of its shares other than any conversion on mandatory repurchase or redemption of any of the Convertible Notes in accordance with their terms or in connection with any employee

stock incentive plan (howsoever described) expressly permitted under the terms of this Agreement; and

(e) any payments under a subordinated loan (including interest and fees).

"**Solvent**" and "**Solvency**" means, with respect to any person on any date of determination, that on such date:

(a) the fair value of the assets of such person is greater than the total amount of liabilities, including contingent liabilities, of such person;

(b) the present fair saleable value of the assets of such person is not less than the amount that will be required to pay the probable liability of such person on its debts as they become absolute and matured;

(c) such person does not intend to, and does not believe that it will, incur debts or liabilities beyond such person's ability to pay such debts and liabilities as they mature;

(d) such person is not engaged in business or a transaction, and is not about to engage in business or a transaction, for which such person's assets would constitute an unreasonably small capital; and

(e) such person is able to pay its debts and liabilities, contingent obligations and other commitments as they mature in the ordinary course of business.

The amount of contingent liabilities at any time shall be computed as the amount that, in the light of all the facts and circumstances existing at such time, represents the amount that can reasonably be expected to become an actual or matured liability.

"**Spectrum**" means spectrum in specific frequency bands that are subject to a Communications Licence issued to the Borrower or an Affiliate, and in the case of spectrum licensed by the FCC, this refers to, without limitation, spectrum that is licensed to the Borrower or an Affiliate in the 1610-1618.725 and the 2483.5 – 2500 MHz frequency bands.

"**Spectrum Cash Flow**" means any cash received by a member of the Group from monetizing (howsoever defined) the Group's Spectrum rights, including, but not limited to, upfront payments, operating lease payments, and any other payments to a member of the Group associated with the commercial use of any Spectrum by any third parties: *less*

(a) any capital or operating expenses incurred (or reasonably expected to be incurred) by the Borrower in direct connection with such Spectrum Cash Flow; and

(b) any payments received by a member of the Group under such Spectrum Cash Flow which are to be "*passed through*" to any third party,

provided that all such deductions (including deducted expenses incurred and "*passed through*" payments) must:

(i) be directly related to the corresponding monetization of Spectrum rights;

(ii) be approved in good faith by the BPIFAE Agent (acting on the instructions of the Majority Lenders) in the exercise of their commercially reasonable judgment; and

(iii) not have been deducted from the calculation of Excess Cash Flow (without double counting).

"**Spectrum Plan**" means the plan relating to the Group's Spectrum rights, which shall include the information required pursuant to Clause 19.14 (*Spectrum Plan*) (as updated and supplemented from time to time pursuant to each Monthly Report).

"**Spectrum Sale**" means any sale or other disposition of title (legal or equitable) of any of the Group's Spectrum rights.

"**Spot Rate of Exchange**" means the exchange rate between Euros and Dollars as notified by the BPIFAE Agent to the Borrower and calculated on the basis of the official fixing rate (as between Euros and Dollars) of the European Central Bank quoted on Reuter's page ECB37, more or less two (2) basis points, on the date that is two (2) Business Days prior to the relevant Utilisation Date. If the agreed page is replaced or the service ceases to be available, the BPIFAE Agent may specify another page or service displaying the appropriate rate.

"**Stock Pledge Agreement**" has the meaning given to such term in Schedule 33 (*Security Documents*).

"**Subordinated Indebtedness**" means any Financial Indebtedness of the Borrower or any Subsidiary:

(a) subordinated in right and time of payment to the Obligations pursuant to an Acceptable Intercreditor Agreement (including, for the avoidance of doubt, the provisions of any subordinated subsidiary guarantees provided in connection with the 8% New Notes pursuant to the provisions of Clause 22.1(l) (*Limitations on Financial Indebtedness*) (*provided that* the Borrower shall be entitled to pay PIK Interest);

(b) to be applied by the Borrower or the relevant Subsidiary (as the case may be) towards:

(i) financing costs directly arising from the construction and Launch of the Satellites or additional satellites;

(ii) financing payments due by the Borrower to second generation ground segment vendors; and/or

(iii) payment of the Borrower's working capital and general corporate purposes;

(c) containing such other terms and conditions, in each case as are reasonably satisfactory to the BPIFAE Agent; and

(d) the issuance of such Financial Indebtedness shall not cause, and could not reasonably be expected to cause, a Default.

"**Subsidiary**" means, as to any person, any company of which more than fifty *per cent.* (50%) of the outstanding Capital Stock having ordinary voting power to elect a majority of the board of directors or other managers of such person is at the time owned (directly or indirectly) by, or

the management is otherwise controlled by, such person (irrespective of whether, at the time, Capital Stock of any other class or classes of such person shall have or might have voting power by reason of the occurrence of any contingency). Unless otherwise qualified, references to "**Subsidiary**" or "**Subsidiaries**" in this Agreement shall refer to those of the Borrower.

"**Subsidiary Guarantor**" means each direct or indirect Domestic Subsidiary of the Borrower:

(a) set out in Schedule 26 (*Subsidiary Guarantors*); or

(b) which becomes a party to a Guarantee Agreement pursuant to Clause 21.5 (*Additional Domestic Subsidiaries*).

"**Subsidiary Guarantor Subordination Deed**" means the subordination deed dated 31 July 2013 and made between the Subsidiary Guarantors (other than Globalstar Holdings US, LLC), the Borrower, the Security Agent and the BPIFAE Agent.

"**Supplier**" means Thales Alenia Space France, a French *société par actions simplifiée* registered at the *Registre du Commerce et des Société* of Toulouse under registration number 414 725 101, whose registered office is at 26, Avenue Jean François Champollion, 31100 Toulouse, France.

"**Supplier Direct Agreement**" means the direct agreement dated 5 June 2009 between the Borrower, the Supplier and the Security Agent.

"**Synthetic Lease**" means any synthetic lease, tax retention operating lease, off-balance sheet loan or similar off-balance sheet financing product where such transaction is considered borrowed money indebtedness for tax purposes but is classified as an Operating Lease in accordance with GAAP.

"**Target Company**" has the meaning given to such term in the definition of "*Permitted Acquisition*".

"**Tax**" means any tax, levy, impost, duty, fee, assessment or other charge or withholding of a similar nature (including any penalty or interest payable in connection with any failure to pay or any delay in paying any of the same).

"**Tax Credit**" means a credit against, relief or remission for, or repayment of any Tax.

"**Tax Deduction**" means a deduction or withholding for or on account of Tax from a payment under a Finance Document, other than a FATCA Deduction.

"**Tax Payment**" means either the increase in a payment made by the Borrower to a Finance Party under Clause 13.1 (*Tax Gross-up*) or a payment under Clause 13.2 (*Tax Indemnity*).

"**Termination Value**" means, in respect of any one (1) or more Hedging Agreements, after taking into account the effect of any legally enforceable netting agreement relating to such Hedging Agreements:

(a) for any date on or after such Hedging Agreements have been closed out and termination value(s) determined in accordance therewith, such termination value(s); and

(b) for any date prior to the date referenced in paragraph (a), the amount(s) determined as the mark-to-market value(s) for such Hedging Agreements, as determined based upon

one (1) or more mid-market or other readily available quotations provided by any recognised dealer in such Hedging Agreements (which may include a Lender or an Affiliate of a Lender).

"**Terrapin**" means Terrapin Opportunity, L.P.

"**Thermo**" means Thermo Funding Company LLC.

"**Thermo Commitment**" has the meaning given to such term in the Third Global Amendment and Restatement Agreement.

"**Thermo Group**" means:

(a) Globalstar Satellite LP;

(b) Thermo;

(c) FL Investment Holdings LLC (formerly known as Globalstar Holdings LLC); and

(d) Thermo Funding II LLC.

"**Thermo Loan Agreement**" means the loan agreement dated 25 June 2009 between the Borrower as borrower and Thermo as lender, as the same may be amended from time to time, and the subordinated promissory note evidencing such loan.

"**Thermo Subordination Deed**" means the subordination deed dated 22 June 2009 (as amended and restated on 31 July 2013 pursuant to the First Global Deed of Amendment and Restatement) made between Thermo, the Borrower, the Security Agent and the BPIFAE Agent.

"**Third Effective Date**" means the "*Effective Date*" as such term is defined in the Third Global Amendment and Restatement Agreement.

"**Third Effective Date Commitment**" has the meaning given to such term in the Third Thermo Group Undertaking Letter.

"**Third Global Amendment and Restatement Agreement**" means the global amendment and restatement agreement dated 30 June 2017 between, among others, the Parties.

"**Third Parties Act**" has the meaning given to such term in Clause 1.5(a) (*Third Party Rights*).

"**Third Thermo Group Undertaking Letter**" means the undertaking letter dated on or around the Third Effective Date entered into by each of the members of the Thermo Group in favour of the BPIFAE Agent.

"**Total Acquisition Costs**" means an amount no greater than US$500, being the total consideration, fees, costs and expenses, stamp, registration and other Taxes incurred by the Borrower in connection with the Permitted Peruvian Acquisition, *but excluding* legal fees and expenses.

"**Total Commitments**" means the aggregate of:

(a) the Total Facility A Commitments; and

(b) the Total Facility B Commitments.

"**Total Facility A Commitments**" means the aggregate of the Facility A Commitments, being US$563,299,120 as at the date of this Agreement.

"**Total Facility B Commitments**" means the aggregate of the Facility B Commitments, being US$23,042,880 as at the date of this Agreement.

"**Transaction Costs**" means all transaction fees, charges and other amounts related to the Facilities or the Second Lien Facility or any transaction which, if consummated, would be a Permitted Acquisition or a Permitted Joint Venture Investment (including, without limitation, any financing fees, merger and acquisition fees, legal fees and expenses, due diligence fees or any other fees and expenses in connection therewith).

"**Transaction Documents**" means:

(a) each Finance Document;

(b) each Commercial Contract;

(c) any Acceptable Intercreditor Agreement; and

(d) each Material Communications Licence.

"**Transfer Certificate**" means a certificate substantially in the form set out in Part A (*Form of Transfer Certificate*) of Schedule 5 (*Form of Transfer Certificate and Assignment Agreement*) or any other form agreed between the BPIFAE Agent and the Borrower (acting reasonably).

"**Transfer Date**" means, in relation to an assignment or a transfer, the later of:

(a) the proposed Transfer Date specified in the relevant Assignment Agreement or Transfer Certificate; and

(b) the date on which the BPIFAE Agent executes the relevant Assignment Agreement or Transfer Certificate.

"**UCC**" means the Uniform Commercial Code as in effect in the State of New York, as amended or modified from time to time.

"**UK Bail-In Legislation**" means (to the extent that the United Kingdom is not an EEA Member Country which has implemented, or implements, Article 55 BRRD) Part I of the United Kingdom Banking Act 2009 and any other law or regulation applicable in the United Kingdom relating to the resolution of unsound or failing banks, investment firms or other financial institutions or their affiliates (otherwise than through liquidation, administration or other insolvency proceedings).

"**Unfunded Pension Liability**" of any Pension Plan means the excess of such Pension Plan's benefit liabilities under Section 4001(a)(16) of ERISA over the current value of such Pension Plan's assets, determined in accordance with the assumptions used for funding such Pension Plan pursuant to Section 412 of the Code for the applicable plan year.

"**Unpaid Sum**" means any sum due and payable but unpaid by the Borrower under the Finance Documents.

"**United States**" or "**US**" means the United States of America.

"**US Tax Obligor**" means:

(a) a borrower which is resident for tax purposes in the United States of America; or

(b) an Obligor some or all of whose payments under the Finance Documents are from sources within the United States for US federal income tax purposes.

"**Utilisation**" means a utilisation of a Facility.

"**Utilisation Date**" means the date of a Utilisation, being the date on which the relevant Loan is to be made.

"**Utilisation Request**" means a notice substantially in the form set out in Schedule 3 (*Utilisation Request*).

"**VAT**" means:

(a) any tax imposed in compliance with Council Directive of 28 November 2006 on the common system of value added tax (EC Directive 2006/112); and

(b) any other tax of a similar nature, whether imposed in a member state of the European Union in substitution for, or levied in addition to, such tax referred to in paragraph (a) above, or imposed elsewhere.

"**Wholly-Owned**" means, with respect to a Subsidiary, that all the shares of the Capital Stock of such Subsidiary are, directly or indirectly, owned or controlled by the Borrower and/or one (1) or more of its Wholly-Owned Subsidiaries (except for directors' qualifying shares or other shares required by Applicable Law to be owned by a person other than the Borrower).

"**Withholding Forms**" means United States Internal Revenue Service ("**IRS**") Form *W-8BEN*, *W-8ECI* or *W-9* (or, in each case, any successor form and, in each case, attached to an IRS Form *W-8IMY* if required) or any other IRS form by which a person may claim an exemption from withholding of US federal income tax on interest payments to that person and, in the case of a person claiming an exemption under the "*portfolio interest exemption*", a statement certifying that such person is not a "*bank*" within the meaning of Section 881(c)(3)(A) of the Internal Revenue Code of 1986, as amended.

"**Working Capital**" means, on any date, Current Assets *less* Current Liabilities.

"**Write-down and Conversion Powers**" means, in relation to:

(a) any Bail-In Legislation described in the EU Bail-In Legislation Schedule from time to time, the powers described as such in relation to that Bail-In Legislation in the EU Bail-In Legislation Schedule;

(b) any other applicable Bail-In Legislation:

(i) any powers under that Bail-In Legislation to cancel, transfer or dilute shares issued by a person that is a bank or investment firm or other financial institution or affiliate of a bank, investment firm or other financial institution, to cancel,

reduce, modify or change the form of a liability of such a person or any contract or instrument under which that liability arises, to convert all or part of that liability into shares, securities or obligations of that person or any other person, to provide that any such contract or instrument is to have effect as if a right had been exercised under it or to suspend any obligation in respect of that liability or any of the powers under that Bail-In Legislation that are related to or ancillary to any of those powers; and

(ii) any similar or analogous powers under that Bail-In Legislation; and

(c) UK Bail-In Legislation:

(iii) any powers under that UK Bail-In Legislation to cancel, transfer or dilute shares issued by a person that is a bank or investment firm or other financial institution or affiliate of a bank, investment firm or other financial institution, to cancel, reduce, modify or change the form of a liability of such a person or any contract or instrument under which that liability arises, to convert all or part of that liability into shares, securities or obligations of that person or any other person, to provide that any such contract or instrument is to have effect as if a right had been exercised under it or to suspend any obligation in respect of that liability or any of the powers under that UK Bail-In Legislation that are related to or ancillary to any of those powers; and

(iv) any similar or analogous powers under that UK Bail-In Legislation.

1.2 Construction

(a) Unless a contrary indication appears, any reference in this Agreement to:

(i) "**annual**" means a period of twelve (12) Months;

(ii) an "**agreement**" includes a deed and an instrument;

(iii) "**BPIFAE**", the "**BPIFAE Agent**", "**COFACE**", any "**Finance Party**", any "**Lender**", any "**Mandated Lead Arranger**", an "**Obligor**", any "**Party**", the "**Security Agent**" or any other person shall be construed so as to include its successors in title, permitted assigns and permitted transferees;

(iv) "**assets**" includes present and future properties, revenues and rights of every description;

(v) "**determines**" or "**determined**" means a determination made in the absolute discretion of the person making the determination;

(vi) "**disposal**" means a sale, transfer, assignment, grant, lease, licence or other disposal, whether voluntary or involuntary, and "**dispose**" shall be construed accordingly;

(vii) the "**equivalent**" on any given date in one currency (the "**first currency**") of an amount denominated in another currency (the "**second currency**") is a reference to the amount of the first currency which could be purchased with the

second currency at the Spot Rate of Exchange for the purchase of the first currency with the second currency;

(viii) a "**Finance Document**" or any other agreement or instrument is a reference to that Finance Document or other agreement or instrument as amended, novated, supplemented, extended or restated;

(ix) "**guarantee**" means (other than in relation to a Guarantee Agreement) any guarantee, letter of credit, bond, indemnity or similar assurance against loss, or any obligation, direct or indirect, actual or contingent, to purchase or assume any indebtedness of any person or to make an investment in or loan to any person or to purchase assets of any person where, in each case, such obligation is assumed in order to maintain or assist the ability of such person to meet its indebtedness;

(x) "**include**" or "**including**" are to be construed without limitation;

(xi) "**indebtedness**" includes any obligation (whether incurred as principal or as surety) for the payment or repayment of money, whether present or future, actual or contingent;

(xii) a "**judgment**" includes any order, injunction, determination, award or other judicial or arbitral measure in any jurisdiction;

(xiii) a "**notice**" includes any notice, request, instruction, demand or other communication;

(xiv) any "**obligation**" of any person under this Agreement or any other agreement or document shall be construed as a reference to an obligation expressed to be assumed by or imposed on it under this Agreement or, as the case may be, that other agreement or document (and "**due**", "**owing**", "**payable**" and "**receivable**" shall be similarly construed);

(xv) "***pari passu***" shall mean, in relation to indebtedness due to more than one person, that the payment or repayment thereof shall be made pro rata in the proportion which each such indebtedness bears to the aggregate indebtedness owed to both or all of such persons, subject to the provisions of this Agreement;

(xvi) a "**payment**" includes a distribution, prepayment or repayment and references to "**pay**" include distribute, repay or prepay;

(xvii) a "**person**" includes any individual, firm, company, corporation, government, state or agency of a state or any association, trust, joint venture, consortium or partnership (whether or not having separate legal personality);

(xviii) a "**regulation**" includes any regulation, rule, official directive, request or guideline (whether or not having the force of law) of any governmental, intergovernmental or supranational body, agency, department or of any regulatory, self-regulatory or other authority or organisation;

(xix) "**rights**" includes rights, authorities, discretions, remedies, liberties, powers, easements, quasi-easements and appurtenances (in each case, of any nature whatsoever);

(xx) a "**share**" in a company includes a share, participation, participating interest or any other analogous ownership interest;

(xxi) words importing the singular include the plural and vice versa;

(xxii) a provision of law is a reference to that provision as amended or re-enacted;

(xxiii) a time of day is a reference to Paris time; and

(xxiv) the "*date of this Agreement*" shall be a reference to the original date of this Agreement, being 5 June 2009.

(b) Section, Clause and Schedule headings are for ease of reference only.

(c) Unless a contrary indication appears, a term used in any other Finance Document or in any notice given under or in connection with any Finance Document has the same meaning in that Finance Document or notice as in this Agreement.

(d) A Default (other than an Event of Default) is "**continuing**" if it has not been remedied or waived, and an Event of Default is "**continuing**" if it has not been waived in writing by the BPIFAE Agent.

1.3 Accounting Terms

All accounting terms not specifically or completely defined in this Agreement shall be construed in conformity with, and all financial data (including financial ratios and other financial calculations) required to be submitted pursuant to this Agreement shall be prepared in conformity with, GAAP applied on a consistent basis, as in effect from time to time, applied in a manner consistent with that used in preparing the audited financial statements required by Clause 19.2 (*Annual Financial Statements*), except as otherwise specifically prescribed in this Agreement.

1.4 UCC Terms

Terms defined in the UCC in effect on the date of this Agreement and not otherwise defined in this Agreement shall, unless the context otherwise indicates, have the meanings provided by those definitions. Subject to the foregoing, the term "**UCC**" refers, as of any date of determination, to the UCC then in effect.

1.5 Third Party Rights

(a) Unless expressly provided to the contrary in a Finance Document a person who is not a Party has no right under the Contracts (Rights of Third Parties) Act 1999 (the "**Third Parties Act**") to enforce or to enjoy the benefit of any term of this Agreement.

(b) Notwithstanding any term of any Finance Document the consent of any person who is not a Party is not required to rescind or vary this Agreement at any time.

1.6 Conflict

(a) This Agreement is entered into subject to, and with the benefit of, the terms of the Second Lien Intercreditor Agreement.

(b) Notwithstanding anything to the contrary in this Agreement, the terms of the Second Lien Intercreditor Agreement will prevail if there is a conflict between the terms of this Agreement and the terms of the Second Lien Intercreditor Agreement.

(c) The fact that a provision of this Agreement is expressed to be subject to the terms of the Second Lien Intercreditor Agreement does not mean, and will not be taken to mean, that any other provision of this Agreement is not so subject.

2. The Facilities

2.1 Facility A and Facility B

Subject to the terms of this Agreement, the First Global Deed of Amendment and Restatement and the Second Global Amendment and Restatement Agreement, the Lenders make available to the Borrower a:

(a) Dollar term loan facility in an aggregate amount equal to the Total Facility A Commitments ("**Facility A**"); and

(b) Dollar term loan facility in an aggregate amount equal to the Total Facility B Commitments ("**Facility B**").

2.2 Finance Parties' Rights and Obligations

(a) The obligations of each Finance Party (other than the Lenders) under the Finance Documents are several. Failure by a Finance Party (other than a Lender) to perform its obligations under the Finance Documents does not affect the obligations of any other Party under the Finance Documents. No Finance Party (other than a Lender) is responsible for the obligations of any other Finance Party (other than a Lender) under the Finance Documents.

(b) The obligations of each Lender under the Finance Documents are joint and several. Each Party agrees that this Clause 2.2(b) is for the benefit of the Lenders only and the Borrower acknowledges that it has no rights of any kind whatsoever under this Clause 2.2(b).

(c) The rights of each Finance Party under or in connection with the Finance Documents are separate and independent rights and any debt arising under the Finance Documents to a Finance Party from an Obligor shall be a separate and independent debt.

(d) A Finance Party may, except as otherwise stated in the Finance Documents, separately enforce its rights under the Finance Documents.

2.3 Commercial Contracts

Each Party acknowledges that the Finance Parties shall have no responsibility or liability whatsoever regarding any performance or non-performance by any party to a Commercial Contract and that the Finance Parties shall have no obligation to intervene in any dispute in

connection with or arising out of such performance or non-performance. Any such dispute shall not affect the Borrower's performance under this Agreement nor entitle the Borrower to any suspension or other claim towards the Finance Parties.

3. Purpose

3.1 Purpose – Facility A

The Borrower shall apply all amounts borrowed by it under Facility A towards:

(a) ***Payments to the Supplier***

payment to the Supplier of the Eligible Amounts in excess of such amounts already paid by the Borrower to the Supplier. Such Eligible Amount shall be payable by way of direct disbursement to the Supplier in accordance with the terms of the Satellite Construction Contract;

(b) ***Reimbursement to the Borrower***

reimbursement to the Borrower of the Eligible Amounts already paid directly by the Borrower to the Supplier in excess of the Advance Payment. Such Eligible Amounts shall be payable by way of direct disbursement to the Borrower. Subject to Clause 3.4(b) (*Sub-Limits*), any amounts received by the Borrower by way of reimbursement may only be applied by the Borrower as follows:

(i) towards payment to the Launch Services Provider of amounts not funded by Facility B in an amount not exceeding US$216,000,000;

(ii) towards payment to Hughes in an amount not exceeding US$87,000,000;

(iii) towards payment to Ericsson in an amount not exceeding US$8,000,000; and

(iv) towards payment of the Borrower's working capital and general corporate purposes in an amount not exceeding US$150,000,000,

and, in each case, such additional amounts as BPIFAE may agree; and

(c) ***Payment of the BPIFAE Insurance Premia***

payment to the BPIFAE Agent (for the account of BPIFAE) of an amount equal to one hundred *per cent.* (100%) of the BPIFAE Insurance Premia with respect to Facility A, being the amount specified by BPIFAE,

in each case, in accordance with the terms of this Agreement.

3.2 Purpose – Facility B

The Borrower shall apply all amounts borrowed by it under Facility B towards:

(a) ***Payments to the Launch Services Provider***

payment to the Launch Services Provider of the Eligible Amounts. Such Eligible Amount shall be payable by way of direct disbursement to the Launch Services Provider in accordance with the terms of the Launch Services Contract; and

(b) ***Payment of the BPIFAE Insurance Premia***

payment to the BPIFAE Agent (for the account of BPIFAE) of an amount equal to one hundred *per cent.* (100%) of the BPIFAE Insurance Premia with respect to Facility B, being the amount specified by BPIFAE,

in each case, in accordance with the terms of this Agreement.

3.3 Monitoring

No Finance Party is bound to monitor or verify the application of any amount borrowed pursuant to this Agreement.

3.4 Sub-Limits

The aggregate amount that the Borrower may utilise under:

(a) Clause 3.1(a) **(***Payments to the Supplier*) and Clause 3.1(b) (*Reimbursement to the Borrower*) shall not exceed US$528,026,844;

(b) Clause 3.1(b) (*Reimbursement to the Borrower*) shall not exceed US$309,543,626; and

(c) Clause 3.2(a) (*Payments to the Launch Services Provider*) shall not exceed US$21,600,000.

4. Conditions of Utilisation

4.1 Initial Conditions Precedent

The Borrower shall not deliver a Utilisation Request unless the BPIFAE Agent has received all of the documents and other evidence listed in Schedule 2 (*Conditions Precedent*) in form and substance satisfactory to the BPIFAE Agent. The BPIFAE Agent shall notify the Borrower and the Lenders promptly upon being so satisfied.

4.2 Further Conditions Precedent

The Lenders will only be obliged to comply with Clause 5.6 (*Lenders' Participation*) if on the date of the Utilisation Request and on the proposed Utilisation Date:

(a) no Default is continuing or would be likely to result from the proposed Loan;

(b) the Repeating Representations to be made by the Borrower are true in all material respects;

(c) the credit insurance cover under the BPIFAE Insurance Policy extended by BPIFAE in favour of the Lenders in respect of each Facility is in full force and effect and has not been suspended or cancelled, and the BPIFAE Agent shall, in its sole discretion, be satisfied that all conditions of the BPIFAE Insurance Policy and of the credit insurance

cover with respect to such BPIFAE Insurance Policy have been satisfied in full and that the credit insurance coverage will apply to such Utilisation;

(d) each Commercial Contract is in full force and effect and has not been suspended, interrupted, cancelled, terminated, amended or modified in any material respect (otherwise than as authorised by the BPIFAE Agent) and no arbitration or other legal proceedings have been initiated between the Borrower and the Supplier and/or Launch Services Provider (as the case may be) in respect of a Commercial Contract;

(e) for any Utilisation Request made for the purpose referred to in Clause 3.1(b) (*Reimbursement to the Borrower*), the BPIFAE Agent shall have received evidence that the payment to the Supplier of the corresponding Invoices has been made;

(f) each of the documents, information and other evidence specified in and required to be enclosed with each Utilisation Request and Qualifying Certificate, together with any other documents, information or evidence requested by the BPIFAE Agent (on behalf of the Lenders) and/or the French Authorities from time to time, shall have been delivered to the BPIFAE Agent (in form and substance satisfactory to the BPIFAE Agent);

(g) the Borrower shall have paid or arranged for payment when due:

(i) all fees, costs, expenses, charges and other amounts due and payable by it under this Agreement on the Utilisation Date for such Utilisation; and

(ii) any and all other amounts due and payable under this Agreement on such Utilisation Date, and

(iii) the Borrower shall have delivered to the BPIFAE Agent such evidence of payment as the BPIFAE Agent may reasonably request; and

(h) in respect of any payment to the Supplier, the Launch Services Provider and/or the Borrower in accordance with Clauses 3.1(a) (*Payments to the Supplier*), 3.1(b) (*Reimbursement to the Borrower*) and 3.2(a) (*Payments to the Launch Services Provider*), the Supplier and/or the Launch Services Provider (as the case may be) has delivered to the BPIFAE Agent a Qualifying Certificate, which:

(i) conforms to the amount and payment timing specified in the relevant Utilisation Request; and

(ii) to the extent applicable, specifies whether such Loan is to be applied in payment:

(A) of a portion of the Contract Price directly to the Supplier or the Launch Services Provider (as the case may be); or

(B) by reimbursement to the Borrower to the account directed by the Borrower in the Utilisation Request of any portion of the Contract Price paid by the Borrower to the Supplier or the Launch Services Provider (as the case may be);

(i) a certificate from a Responsible Officer certifying that each of the eight (8) Satellites referred to in Schedule 16 (*Satellites*) has been launched, is in-service and is fully operational (in form and substance satisfactory to the BPIFAE Agent); and

(j) the conditions in Clause 5 (*Utilisation*) have been fulfilled.

The BPIFAE Agent shall notify the Borrower and the Lenders promptly upon being so satisfied.

4.3 Conditions Precedent to Certain Utilisations

The Lenders will only be obliged to comply with Clause 5.6 (*Lenders' Participation*) if on the date of the Utilisation Request and on the proposed Utilisation Date:

(a) no later than one hundred and twenty (120) days prior to the first day of the Scheduled Launch Period, the BPIFAE Agent shall have received the drafts of the Launch Insurance Documentation, in compliance with the provisions of Clause 21.4 (*Insurance*) and in form and substance satisfactory to the BPIFAE Agent; and

(b) no later than ninety (90) days prior to each scheduled Launch date, the Borrower shall have delivered to the BPIFAE Agent the Launch Insurance Documentation duly executed by each party thereto together with:

(i) the Loss Payee Clause;

(ii) each certificate in respect of the Launch Insurance Documentation referred to in Clause 21.4(c)(ii) (*Launch Insurance*); and

(iii) evidence that all premia due at that time has been paid in full in compliance with Clause 21.4(c)(ii) (*Launch Insurance*) and in form and substance satisfactory to the BPIFAE Agent.

4.4 Failure to Satisfy Conditions Precedent

(a) The Borrower agrees that all the initial conditions precedent referred to in Clause 4.1 (*Initial Conditions Precedent*) must be fulfilled within sixty (60) days of the date of this Agreement.

(b) Subject to paragraph (c) below, if the Borrower is unable to fulfil any such conditions precedent within such sixty (60) day time period, each Lender's Commitment shall be immediately cancelled and each Lender shall have no further obligations under this Agreement.

(c) Each Lender's Commitment shall not be cancelled pursuant to paragraph (b) above if each of the initial conditions precedent has been satisfied by the Borrower except for the condition precedent referred to in paragraph 8 (*BPIFAE Insurance Policy*) of Schedule 2 (*Conditions Precedent*) but only to the extent that the BPIFAE Insurance Policy has not been issued by BPIFAE for a reason not attributable to a breach by the Borrower of the terms of the BPIFAE Insurance Policy.

5. Utilisation

5.1 Delivery of a Utilisation Request

(a) Subject to the terms of the First Global Deed of Amendment and Restatement, the Borrower may utilise a Facility by delivery to the BPIFAE Agent of a duly completed Utilisation Request not later than 11:00 a.m. (Paris time) ten (10) Business Days prior to the proposed Utilisation Date.

(b) Each Utilisation Request shall instruct the BPIFAE Agent to remit the amount utilised on behalf of the Borrower to:

(i) the Supplier and/or the Launch Services Provider's account, as the case may be, as part of the payment of the relevant Contract Price; or

(ii) in relation to a reimbursement to the Borrower under Facility A, such account as directed by the Borrower in the Utilisation Request.

5.2 Borrower's Mandate

(a) The Borrower irrevocably authorises and mandates the BPIFAE Agent (on its behalf and for its account):

(i) in the case of Facility A:

(A) to pay the Supplier with respect to any Eligible Amount under the Satellite Construction Contract, upon presentation of the documents set out in Schedule 11 (*Payment Terms*);

(B) to reimburse the Borrower for any payments in respect of Eligible Goods and Services under the Satellite Construction Contract which exceed fifteen *per cent.* (15%) of the Satellite Construction Contract's Contract Price; and

(C) to pay to the BPIFAE Agent the BPIFAE Insurance Premia;

(ii) in the case of Facility B:

(A) to pay the Launch Services Provider with respect to any Eligible Amount under the Launch Services Contract, upon presentation of the documents set out in Schedule 11 (*Payment Terms*); and

(B) to pay to the BPIFAE Agent the BPIFAE Insurance Premia.

(b) This mandate is irrevocable.

(c) The payment terms set out in Schedule 11 (*Payment Terms*) may only be amended with the prior written consent of the BPIFAE Agent (acting on the instructions of all the Lenders).

(d) The Borrower agrees that any Utilisation made under or pursuant to this Clause 5 shall be deemed to have been made to or for the benefit of the Borrower and the Borrower waives all rights of protest it may have to the contrary.

5.3 Examination of Documents

(a) The BPIFAE Agent's role in examining the documents set out in Schedule 11 (*Payment Terms*) shall be limited to verifying that such documents appear on their face to be what is indicated in such Schedule 11 (*Payment Terms*) and the BPIFAE Agent shall bear no other responsibility in connection thereof. Such role shall be construed in accordance with the terms of Article 14 of the Uniform Customs and Practice for Documentary Credits of the International Chamber of Commerce 2007 Revision (Publication 600).

(b) The BPIFAE Agent and the Lenders shall not be responsible for any delay in making available any Loans resulting from any requirement for the delivery of further information or documents required by the BPIFAE Agent to confirm the relevant conditions precedent in this Agreement have been met.

5.4 Completion of a Utilisation Request

(a) Subject to the terms of the First Global Deed of Amendment and Restatement, each Utilisation Request is irrevocable and will not be regarded as having been duly completed unless:

(i) the proposed Utilisation Date is a Business Day within the Availability Period applicable to that Facility; and

(ii) the currency and amount of the Utilisation comply with Clause 5.5 (*Currency and Amount*).

(b) Only one (1) Loan may be requested in each Utilisation Request.

(c) The Borrower may only deliver one (1) Utilisation Request in each Month in respect of each Facility.

5.5 Currency and Amount

In the case of:

(a) ***Payments to the Supplier***

any Utilisation to be made in accordance with Clause 3.1(a) (*Payments to the Supplier*), the Loan requested in a Utilisation Request must be in Dollars. Each payment to the Supplier by the BPIFAE Agent shall be made in Dollars;

(b) ***Payments to the Launch Services Provider***

any Utilisation to be made in accordance with Clause 3.2(a) (*Payments to the Launch Services Provider*), the Loan requested in a Utilisation Request must be in Dollars. Each payment to the Launch Services Provider by the BPIFAE Agent shall be made in Dollars;

(c) ***Reimbursement to the Borrower***

any Utilisation to be made in accordance with Clause 3.1(b) (*Reimbursement to the Borrower*), the Loan requested in a Utilisation Request must be in Dollars. The Borrower shall confirm in each such Utilisation Request that the requested Dollar amount is the Dollar equivalent of the relevant Euro amount applying a Euro to Dollar exchange rate

of one (1) Euro for US$1.34. Each Utilisation made pursuant to Clause 3.1(b) (*Reimbursement to the Borrower*) shall be made in Dollars;

(d) ***Facility A – Payment of the BPIFAE Insurance Premia***

any Utilisation to be made in accordance with Clause 3.1(c) (*Payment of the BPIFAE Insurance Premia*), the Loan requested in a Utilisation Request must be, subject to Clause 12.3(d) (*Borrower's Payment Obligations*), US$35,272,276. Any payment to BPIFAE of the BPIFAE Insurance Premia shall be made in Dollars;

(e) ***Facility B – Payment of the BPIFAE Insurance Premia***

any Utilisation to be made in accordance with Clause 3.2(b) (*Payment of the BPIFAE Insurance Premia*), the Loan requested in a Utilisation Request must be, subject to Clause 12.3(d) (*Borrower's Payment Obligations*), US$1,442,880. Any payment to BPIFAE of the BPIFAE Insurance Premia shall be made in Dollars;

(f) ***Facility A – Minimum Amount***

Facility A, the amount of the proposed Loan must be an amount which is not more than the Available Facility and which is a minimum of US$1,000,000 or, if less, the Available Facility; and

(g) ***Facility B – Minimum Amount***

Facility B, the amount of the proposed Loan must be an amount which is not more than the Available Facility and which is a minimum of US$1,000,000 or, if less, the Available Facility.

5.6 Lenders' Participation

(a) If the conditions set out in this Agreement, the First Global Deed of Amendment and Restatement and the Second Global Amendment and Restatement Agreement have been met, each Lender shall make its participation in each Loan available by the Utilisation Date through its Facility Office.

(b) The amount of each Lender's participation in each Loan will be equal to the proportion borne by its Available Commitment to the Available Facility immediately prior to making the Loan.

(c) Subject to the terms of the First Global Deed of Amendment and Restatement and the Second Global Amendment and Restatement Agreement, the BPIFAE Agent shall notify each Lender of the amount of each Loan and the amount of its participation in that Loan by 11:00 a.m. (Paris time) on a Business Day which is seven (7) Business Days prior to the proposed Utilisation Date for such Utilisation.

5.7 Cancellation of Commitment

Subject to the terms of the First Global Deed of Amendment and Restatement and the Second Global Amendment and Restatement Agreement, the Total Commitments which, at that time, are unutilised shall be immediately cancelled at the end of the Availability Period.

6. Repayment

6.1 Repayment

(a) Subject to paragraph (b) below, the Borrower shall repay the Loans made to it in full by making the repayments as set out in the Repayment Schedule on the dates (each a "**Repayment Date**") and in the amounts set out opposite each Repayment Date in the Repayment Schedule (each a "**Principal Repayment Amount**").

(b) If the Principal Repayment Amount scheduled to be repaid by the Borrower on a Repayment Date is greater than the principal amount of the Loans outstanding on that Repayment Date (the "**Outstanding Amount**") then the relevant Principal Repayment Amount will be reduced to the Outstanding Amount and the Borrower shall repay the relevant Outstanding Amount on the relevant Repayment Date.

6.2 Reborrowing

The Borrower may not reborrow any part of a Facility which is repaid.

7. Prepayment and Cancellation

7.1 Illegality

If in any applicable jurisdiction it becomes unlawful for any Lender to perform any of its obligations as contemplated by this Agreement or to fund or maintain its participation in any Loan or it becomes unlawful for any Affiliate of a Lender for that Lender to do so:

(a) that Lender shall promptly notify the BPIFAE Agent upon becoming aware of that event;

(b) upon the BPIFAE Agent notifying the Borrower, the Commitment of that Lender will be immediately cancelled; and

(c) the Borrower shall repay that Lender's participation in the Loans made to the Borrower on the last day of the Interest Period for each Loan occurring after the BPIFAE Agent has notified the Borrower or, if earlier, the date specified by the Lender in the notice delivered to the BPIFAE Agent (being no earlier than the last day of any applicable grace period permitted by law).

7.2 Mandatory Prepayment - Exit

(a) For the purposes of this Clause 7.2:

"**Acting in Concert**" means acting together pursuant to an agreement or understanding (formal or informal).

"**Borrower Change of Control**" means:

(i) the Thermo Group shall at any time and for any reason fail to own and control (without being subject to a voting trust, voting agreement, shareholders agreement or any other agreement limiting or affecting the voting of such stock other than any agreement entered into among the members of Thermo Group

and their Affiliates which agreement is not otherwise inconsistent with this Agreement), free and clear of any Lien, at least fifty one *per cent.* (51%) of both the economic and voting interests in the Borrower's Capital Stock (assuming that all convertible instruments, warrants or options then outstanding have been exercised); or

(ii) any "*person*" (other than the Thermo Group) together with its Affiliates owns or acquires (together with all stock that such person or Affiliate has the right to acquire whether such right is exercisable immediately or only after the passage of time), directly or indirectly, twenty five *per cent.* (25%) or more of the economic or voting interests in the Borrower's Capital Stock (assuming that all convertible instruments, warrants or options then outstanding have been exercised); or

(iii) any "*person*" or "*group*" (as such terms are used in Sections 13(d) and 14(d) of the US Securities Exchange Act of 1934 (the "**Exchange Act**")), Acting in Concert or otherwise (other than Thermo Group), is or shall become the "*beneficial owner*" (as defined in Rules 13(d)-3 and 13(d)-5 under the Exchange Act, except that a person shall be deemed to have beneficial ownership of all stock that such person has the right to acquire whether such right is exercisable immediately or only after the passage of time), directly or indirectly, of thirty three *per cent.* (33%) or more of the economic or voting interests in the Borrower's Capital Stock (assuming that all convertible instruments, warrants or options then outstanding have been exercised); or

(iv) the board of directors of the Borrower shall cease to consist of a majority of Continuing Directors.

"**Change of Control**" means either a Borrower Change of Control or a Thermo Change of Control.

"**Continuing Directors**" means the directors of the Borrower and/or Thermo Group (as the case may be) on the date of this Agreement and each other director if such director's nomination for election to the board of directors of the Borrower and/or Thermo Group (as the case may be) is recommended by a majority of the then Continuing Directors.

"**Thermo Change of Control**" means:

(i) James Monroe III (or, in the event of his death or Incapacity, his executors, trustees, heirs or legal representatives) shall at any time and for any reason fail to own and control (without being subject to a voting trust, voting agreement, shareholders agreement or any other agreement limiting or affecting the voting of such stock), free and clear of any Lien, at least fifty one *per cent.* (51%) of both the economic and voting interests in any member of the Thermo Group's Capital Stock (assuming that all convertible instruments, warrants or options then outstanding have been exercised); or

(ii) any "*person*" or "*group*" (as such terms are used in the Exchange Act, Acting in Concert or otherwise, other than James Monroe III (or, in the event of his

death or Incapacity, his executors, trustees, heirs or legal representatives), is or shall become the "*beneficial owner*" (as defined in Rules 13(d)-3 and 13(d)-5 under the Exchange Act, except that a person shall be deemed to have beneficial ownership of all stock that such person has the right to acquire whether such right is exercisable immediately or only after the passage of time), directly or indirectly, of twenty five *per cent.* (25%) or more of the economic or voting interests in any member of the Thermo Group's Capital Stock (assuming that all convertible instruments, warrants or options then outstanding have been exercised); or

(iii) the board of directors (or its equivalent) of any member of the Thermo Group shall cease to consist of a majority of Continuing Directors; or

(iv) James Monroe III (or, in the event of his death or Incapacity, his executors, trustees, heirs or legal representatives) shall cease to have the power to elect or remove a majority of the board of directors (or its equivalent) of any member of the Thermo Group; or

(v) any "*change of control*" or similar event shall occur under any document with respect to any equity or debt instrument issued or incurred by the Thermo Group.

(b) The Borrower must promptly notify the BPIFAE Agent if it becomes aware that the circumstances referred to in paragraph (c) below have occurred or are likely to occur.

(c) Upon the occurrence of a Change of Control, the Total Commitments shall be cancelled and all outstanding Loans, together with accrued interest and all other amounts accrued under the Finance Documents, shall become immediately due and payable.

7.3 Mandatory Prepayment – Cash Sweep of Spectrum Cash Flow

(a) The Borrower shall prepay the Loans (in the order set out in Clause 7.13 (*Application of Mandatory Prepayments*)) in an amount equal to seventy five *per cent.* (75%) of any Spectrum Cash Flow received by the Group at any time (the "**SCF Amount**"), *provided that* if the Excess Cash Flow for the Payment Period during which the Spectrum Cash Flow is realised is negative, the amount to be prepaid by the Borrower shall be the greater of:

(i) an amount equal to the Available Cash; and

(ii) the SCF Amount *minus* the Applicable Negative Excess Cash Flow,

unless the Available Cash referred to in paragraph (a)(i) above is greater than the SCF Amount, in which case, the amount to be prepaid by the Borrower shall be the SCF Amount.

(b) The prepayment referred to in paragraph (a) above shall be made within:

(i) forty-five (45) days following the end of a First Half Payment Period, if the Spectrum Cash Flow is realised by a member of the Group during such First Half Payment Period; or

(ii) seventy-five (75) days following the end of a Second Half Payment Period if the Spectrum Cash Flow is realised by a member of the Group during such Second Half Payment Period.

(c) Any mandatory prepayment arising as a result of any Spectrum Sale shall be made in accordance with Clause 7.8 (*Mandatory Prepayment – Cash Sweep following Spectrum Sale*).

7.4 Mandatory Prepayment – Excess Cash Flow

(a) No later than 8 January 2020, the Borrower shall apply an amount equivalent to one hundred *per cent*. (100%) of:

(i) the Group's consolidated unrestricted cash balance calculated on 31 December 2019 and as calculated by the Borrower in consultation with the Financial Advisor by reference to the applicable Cash Movement Summary Report, the Borrower's bank account statements and such other information that the BPIFAE Agent may reasonably request; *less*

(ii) the amount required to ensure that such prepayment will not result in the minimum Liquidity requirement set out in Clause 20.2 (*Minimum Liquidity*) being breached for the succeeding thirty (30) days after such prepayment, provided that, the Borrower delivers a certified copy of the calculations confirming such projected Liquidity requirements at least 5 Business Days prior to such prepayment; and

(b) from and including 30 June 2020 and no later than:

(i) forty-five (45) days after the end of any First Half Payment Period; and

(ii) seventy-five (75) days after the end of any Second Half Payment Period,

the Borrower shall, in each case, apply seventy five per cent. (75%) of all Excess Cash Flow calculated as of the last day of such Payment Period or such lesser amount required to ensure that such prepayment will not result in the minimum Liquidity requirement set out in Clause 20.2 (*Minimum Liquidity*) being breached,

in each case, in mandatory prepayment of the Loans in accordance with the provisions of Clause 7.13 (*Application of Mandatory Prepayments*).

7.5 Mandatory Prepayment - Insurance and Condemnation Events

(a) Subject to Clause 7.5(b) below, the Borrower shall prepay the Loans (in the order set out in Clause 7.13 (*Application of Mandatory Prepayments*)) in an amount equal to one hundred *per cent.* (100%) of the aggregate Net Cash Proceeds from any Insurance and Condemnation Event and other extraordinary recoveries by the Borrower or any of its Subsidiaries.

(b) Such prepayments shall be made within three (3) Business Days after receipt of the Net Cash Proceeds from any Insurance and Condemnation Event by the Borrower or any of its Subsidiaries, *provided that* so long as no Event of Default has occurred and is

continuing (and so long as no action is being taken under Clause 24 (*Remedies Upon an Event of Default*)), no prepayment shall be required:

(i) in connection with such Insurance and Condemnation Event yielding in aggregate less than US$500,000 in Net Cash Proceeds; or

(ii) with respect to any such Net Cash Proceeds which are committed by the Borrower to be reinvested in replacement assets of French suppliers or the procurement or Launch of a Satellite or Satellites acquired or planned to be acquired pursuant to the then current Agreed Business Plan of the Borrower (as evidenced by a contractual agreement for the purchase or acquisition of assets) within six (6) Months after receipt of such Net Cash Proceeds and the proceeds arising out of the relevant Insurance are placed into the Insurance Proceeds Account (such account to be secured in favour of the Security Agent (for and on behalf of itself and the other Finance Parties)) and, *provided that* no action is being taken under Clause 24 (*Remedies Upon an Event of Default*), will be applied by the BPIFAE Agent in payment to a supplier of such replacement asset or replacement Satellite, any long lead items, launch services, insurances or other costs directly arising in relation to such purchase or Launch in accordance with the terms and conditions agreed between the Borrower and the Supplier. Any excess in Net Cash Proceeds after taking into account such payments and costs shall be transferred to the Collection Account in accordance with the Accounts Agreement.

7.6 Mandatory Prepayments – Asset Dispositions

(a) The Borrower shall prepay the Loans (in the order set out in Clause 7.13 (*Application of Mandatory Prepayments*)) in an amount equal to one hundred *per cent.* (100%) of the aggregate Net Cash Proceeds from any Asset Disposition by the Borrower or any of its Subsidiaries.

(b) Such prepayment shall be made within three (3) days after the date of receipt of the Net Cash Proceeds of any such transaction by the Borrower or any of its Subsidiaries, *provided that*, so long as no Default has occurred and is continuing, no prepayment shall be required pursuant to this Clause 7.6:

(i) in connection with such Asset Dispositions yielding less than US$50,000 per disposal in Net Cash Proceeds (*provided that* any such disposal shall be deemed to include the Net Cash Proceeds from any related disposal or series of disposals), and in any event subject to an annual aggregate of US$200,000 and a total aggregate of US$1,000,000; or

(ii) with respect to any such Net Cash Proceeds which are:

(A) reinvested within six (6) Months after receipt of such Net Cash Proceeds by such person in replacement assets (useful to the Borrower and its Subsidiaries in the conduct of business in accordance with Clause 22.12 (*Nature of Business*)); or

(B) committed (as evidenced by a contractual agreement for the purchase or acquisition of assets with a vendor of such assets) within six (6) Months after receipt of such Net Cash Proceeds by such person to be reinvested in the procurement or Launch of a Satellite or Satellites acquired or to be acquired pursuant to the then current Agreed Business Plan of the Borrower,

provided further that the Borrower shall procure that all such Net Cash Proceeds referred to in this paragraph (b)(ii) shall, immediately upon receipt thereof by the Borrower, be paid into the Holding Account.

(c) The Borrower irrevocably authorises the BPIFAE Agent to instruct the Offshore Account Bank to apply amounts credited to the Holding Account (to the extent not applied in accordance with sub-paragraphs (A) and (B) above) in prepayment of the Loans.

(d) Prior to any application of the Net Cash Proceeds in accordance with paragraphs (b)(ii)(A) and (B) above, the Borrower shall deliver to the BPIFAE Agent a certificate satisfactory in all respects to the BPIFAE Agent and signed by a Responsible Officer providing details of the intended use of such Net Cash Proceeds.

(e) Any application of the Net Cash Proceeds in accordance with paragraphs (b)(ii)(A) and (B) above shall be made in a manner consistent with the then current Agreed Business Plan.

(f) Solely for the purposes of this Clause 7.6, the term Asset Disposition shall exclude any Spectrum Sale and any disposal of inventory in the ordinary cause of trading (but shall include any disposal of obsolete, damaged, worn-out or surplus assets).

7.7 Mandatory Prepayment – BPIFAE Insurance Policy

If the credit insurance cover under the BPIFAE Insurance Policy is not in full force and effect for a reason not attributable to the Borrower, the BPIFAE Agent shall, by not less than thirty (30) days' notice to the Borrower, cancel the Total Commitments and declare all outstanding Loans, together with accrued interest, and all other amounts accrued under the Finance Documents immediately due and payable, whereupon the Total Commitments will be cancelled and all such outstanding amounts will become immediately due and payable.

7.8 Mandatory Prepayment – Cash Sweep following Spectrum Sale

(a) The Borrower shall prepay the Loans (in the order set out in Clause 7.13 (*Application of Mandatory Prepayments*)) in an amount equal to one hundred *per cent.* (100%) of the aggregate Net Cash Proceeds from any Spectrum Sale.

(b) Such prepayment shall be made within three (3) Business Days after receipt of the Net Cash Proceeds from any Spectrum Sale by the Borrower or such other member of the Group.

(c) Any Liens held by the BPIFAE Agent in respect of any Spectrum which is the subject of a Spectrum Sale shall only be released upon the BPIFAE Agent being satisfied that:

(i) all Net Cash Proceeds in respect of such Spectrum Sale have been applied in accordance with Clause 7.13 (*Application of Mandatory Prepayments*);

(ii) no amount being prepaid is, or shall be, the subject of any clawback or restitution claim; and

(iii) no Default is continuing (unless otherwise agreed by the BPIFAE Agent).

7.9 Mandatory Prepayment – Cash Sweep following Equity Issuance and Debt Issuance

(a) Subject to paragraphs (b) and (d) below, in the case of:

(i) any Debt Issuance (other than any Subordinated Indebtedness required pursuant to clause 5.1(a)(iv) and (v) (*Payments to the Collection Account*) of the Accounts Agreement to be paid to the Collection Account for onward transfer to either the Equity Proceeds Account or the Relevant Domestic Account (as the case may be) in accordance with the terms of the Accounts Agreement) occurring on or after the First Effective Date; or

(ii) any Equity Issuance (other than the 2021 Equity Issuance) occurring on or after 1 January 2020,

any Net Cash Proceeds raised by the Borrower pursuant to any such Equity Issuance or any Debt Issuance (*but excluding* any Net Cash Proceeds raised pursuant to any Equity Commitments and the Excluded Purchase Agreement Amount) which exceed, in aggregate, an amount of US$145,000,000 shall be prepaid by the Borrower in accordance with the provisions of Clause 7.13 (*Application of Mandatory Prepayments*) in the following amounts in respect of any Net Cash Proceeds raised pursuant to any relevant:

(A) Equity Issuance (including any Equity Linked Securities), in an amount equal to fifty *per cent.* (50%) of such Net Cash Proceeds; and

(B) Debt Issuance, in an amount equal to seventy five *per cent.* (75%) of such Net Cash Proceeds.

(b) On the first Business Day following 1 July 2021, any remaining proceeds standing to the credit of the Equity Proceeds Account shall be prepaid by the Borrower:

(i) either:

(A) immediately; or

(B) in accordance with clause 6 (*Holding Account*) of the Accounts Agreement,

as may be determined by the BPIFAE Agent (acting on the instructions of the Majority Lenders) at such time; and

(ii) in accordance with the provisions of Clause 7.13 (*Application of Mandatory Prepayments*) (with, in the case of paragraph (b)(i)(B) above only, such prepayment being made on 30 June 2020, and in all other cases such prepayment being made immediately).

(c) Any prepayment made in relation to paragraph (a) above shall be made:

(i) in respect of any relevant Equity Issuance, within three (3) Business Days of the completion of such Equity Issuance; or

(ii) in respect of any relevant Debt Issuance, simultaneously with the funding of such Debt Issuance.

(d) For the avoidance of doubt, no prepayment from the proceeds of the Second Lien Facility shall be required pursuant to this Clause 7.9 (with any such proceeds to be applied in prepayment in accordance with Clause 7.15 (*Mandatory Prepayment – Second Lien Facility*) below).

7.10 Voluntary Cancellation

The Borrower may, if it:

(a) gives the BPIFAE Agent not less than twenty (20) Business Days' (or such shorter period as the Majority Lenders may agree) prior notice; and

(b) delivers to the BPIFAE Agent a certificate signed by a Responsible Officer demonstrating that the Borrower has sufficient funds to finance the Project to the satisfaction of the BPIFAE Agent after any such cancellation,

cancel the whole or any part (being a minimum amount of US$1,000,000) of the Available Facility. Any cancellation under this Clause 7.10 shall reduce the Commitments of the Lenders in inverse order of maturity.

7.11 Voluntary Prepayment of the Loans

(a) The Borrower may, if it gives the BPIFAE Agent not less than twenty (20) Business Days' (or such shorter period as the Majority Lenders may agree) prior notice, prepay the whole or any part of the Loans (but, if in part, being an amount that reduces the amount of the Loans by a minimum amount of US$1,000,000). The Borrower may make a prepayment in accordance with this Clause 7.11 on a Repayment Date.

(b) If such a prepayment is made on a day other than the last day of an Interest Period, the Borrower shall make that prepayment together with any Break Costs in accordance with Clause 10.5 (*Break Costs*), without premium or penalty.

(c) The Loans may only be prepaid after the last day of the Availability Period (or, if earlier, the day on which the Available Facility is zero (0)).

(d) Any prepayment under this Clause 7.11 shall be applied:

(i) *pro rata* among the Facilities and within each Facility; and

(ii) in inverse order of maturity across the remaining scheduled repayments under each Facility.

7.12 Right of Repayment and Cancellation in relation to a Single Lender

(a) If:

(i) any sum payable to any Lender by the Borrower is required to be increased under paragraph (c) of Clause 13.1 (*Tax Gross-up*); or

(ii) any Lender claims indemnification from the Borrower under Clause 13.2 (*Tax Indemnity*) or Clause 14.1 (*Increased Costs*),

the Borrower may, whilst the circumstance giving rise to the requirement for indemnification continues, give the BPIFAE Agent notice of cancellation of the Commitment of that Lender and its intention to procure the repayment of that Lender's participation in the Loans.

(b) On receipt of a notice of cancellation referred to in paragraph (a) above, the Commitment of that Lender shall immediately be reduced to zero (0).

(c) On the last day of each Interest Period which ends after the Borrower has given notice of cancellation under paragraph (a) above (or, if earlier, the date specified by the Borrower in that notice), the Borrower shall repay that Lender's participation in that Loan.

7.13 Application of Mandatory Prepayments

Other than in respect of any prepayment under Clause 7.1 (*Illegality*), all other mandatory prepayments under this Clause 7 (*Prepayment and Cancellation*) shall be applied:

(a) solely in the case of a prepayment pursuant to Clause 7.15(a)(i) (*Mandatory Prepayment – Second Lien Facility*):

(i) in prepayment of the scheduled principal repayment amount due on 31 December 2019 (being those amounts that were, prior to the occurrence of the Fourth Effective Date, scheduled to be due and payable under each Facility in respect of the Repayment Dates falling on each of 31 December 2019, 30 June 2020 and 31 December 2020 as set out in schedule 29 (*Repayment Schedule*) of the Third Amended and Restated Facility Agreement (as such term is defined in the Fourth Global Amendment and Restatement Agreement)); and

(ii) an amount equivalent to US$200,000, in prepayment of the scheduled principal repayment amount due under each Facility on 30 June 2021,

in each case, *pro rata* among the Facilities and within each Facility;

(b) in the case of prepayments pursuant to Clause 7.4 ((*Mandatory Prepayment – Excess Cash Flow*):

(i) for each of the Payment Periods ended 31 December 2019, 30 June 2020, 31 December 2020 and 30 June 2021:

(A) ***first***, in prepayment of the scheduled principal repayment amounts due on 30 June 2021; and

(B) ***thereafter***, in prepayment of the Loans in inverse order of maturity in respect of the remaining scheduled repayments under each Facility.

in each case, *pro rata* among the Facilities and within each Facility;

(c) solely in the case of a prepayment pursuant to Clause 7.16 (*Mandatory Prepayment – 2021 Equity Issuance*):

(i) *pro rata* among the Facilities and within each Facility; and

(ii) in respect of the scheduled principal repayment due under each Facility on 30 June 2021 and then, if applicable, to subsequent instalments in the order of maturity; and

(d) in all other cases:

(i) *pro rata* among the Facilities and within each Facility; and

(ii) in inverse order of maturity across the remaining scheduled repayments under each Facility.

7.14 Restrictions

(a) Any notice of cancellation or prepayment given by the Borrower under this Clause 7 (*Prepayment and Cancellation*) shall be irrevocable and, unless a contrary indication appears in this Agreement, shall specify the date or dates upon which the relevant cancellation or prepayment is to be made and the amount of that cancellation or prepayment.

(b) Any prepayment under this Agreement shall be made together with accrued interest on the amount prepaid and, subject to any Break Costs, without premium or penalty.

(c) The Borrower may not reborrow any part of a Facility which is prepaid.

(d) The Borrower shall not repay or prepay all or any part of the Loans or cancel all or any part of the Commitments except at the times and in the manner expressly provided for in this Agreement.

(e) No amount of the Total Commitments cancelled under this Agreement may be subsequently reinstated.

(f) If the BPIFAE Agent receives a notice under this Clause 7 (*Prepayment and Cancellation*) it shall promptly forward a copy of that notice to either the Borrower or the affected Lender, as appropriate.

(g) The Borrower shall promptly notify the BPIFAE Agent (but in any event no later than three (3) Business Days) of any payment pursuant to this Clause 7 (*Prepayment and Cancellation*), and the BPIFAE Agent shall promptly notify the Lenders (but in any event no later than five (5) Business Days) of the same.

7.15 Mandatory Prepayment – Second Lien Facility

(a) The Borrower shall prepay the Loans from the Net Cash Proceeds of the Second Lien Facility:

(i) in an amount equal to US$147,635,060; and

(ii) *provided that* the principal amount of the 2019 Bridge Facility has been repaid in accordance with Clause 21.25 (*Second Lien Facility*), if the total commitments under the Second Lien Facility exceed, in aggregate, US$195,000,000, in an amount equal to one hundred *per cent.* (100%) of all total commitments in excess of US$195,000,000,

in accordance with the provisions of Clause 7.13(a) (*Application of Mandatory Prepayments*).

(b) Any prepayment made in relation to paragraph (a) above shall be made on the Second Lien Utilisation Date (the "**Second Lien Facility Prepayment Date**").

7.16 Mandatory Prepayment – 2021 Equity Issuance

The Borrower shall prepay the Loans, from the Net Cash Proceeds of the 2021 Equity Issuance, in accordance with the provisions of Clause 7.13(c) (*Application of Mandatory Prepayments*) in an amount equal to at least US$45,000,000 within three (3) Business Days of the completion of the 2021 Equity Issuance.

7.17 Mandatory Prepayment – DSRA

On the Second Lien Facility Prepayment Date, the Borrower shall apply:

(a) US$7,933,582.67 standing to the credit of the Debt Service Reserve Account; and

(b) US$ 2,066,417.33 standing to the credit of the Equity Proceeds Account,

in each case, towards prepayment of the Loans in accordance with the provisions of Clause 7.13 (*Application of Mandatory Prepayments*) and the Accounts Agreement.

7.18 Mandatory Prepayment – Second Lien Intercreditor Agreement

If:

(a) any:

(i) party to the Second Lien Intercreditor Agreement (other than a Finance Party or an Obligor) fails to comply with the provisions of, or does not perform its obligations under, the Second Lien Intercreditor Agreement; or

(ii) representation or warranty given by that party in the Second Lien Intercreditor Agreement is incorrect in any material respect,

and, if the non-compliance or circumstances giving rise to the misrepresentation are capable of remedy, it is not remedied within ten (10) Business Days of the earlier of the BPIFAE Agent giving notice to that party or that party becoming aware of the non-compliance or misrepresentation; or

(b) any party to the Second Lien Intercreditor Agreement rescinds or purports to rescind or repudiates or purports to repudiate that agreement in whole or in part where to do so has or is, in the reasonable opinion of the Majority Lenders, likely to have a material adverse effect on the interests of the Lenders under the Finance Documents,

the BPIFAE Agent shall (acting on the instructions of the Majority Lenders), have the right to issue a Blocking Notice (as such term is defined in the Accounts Agreement) and/or request that the Total Commitments shall be cancelled and all outstanding Loans, together with accrued interest and all other amounts accrued under the Finance Documents, shall become immediately due and payable.

8. Interest

8.1 Calculation of Interest

The rate of interest on each Loan for each Interest Period is the percentage rate per annum which is the aggregate of the:

(a) Applicable Margin; and

(b) LIBOR.

8.2 Payment of Interest

The Borrower shall pay accrued interest on each Loan on the last day of each Interest Period.

8.3 Default Interest

(a) If an Obligor fails to pay any amount payable by it under a Finance Document on its due date, interest shall accrue on the overdue amount from the due date up to the date of actual payment (both before and after judgment) at a rate which, subject to paragraph (b) below, is two *per cent.* (2%) higher than the rate which would have been payable if the overdue amount had, during the period of non-payment, constituted a Loan in the currency of the overdue amount for successive Interest Periods, each of a duration selected by the BPIFAE Agent (acting reasonably). Any interest accruing under this Clause 8.3 shall be immediately payable by the Borrower on demand by the BPIFAE Agent.

(b) If any overdue amount consists of all or part of a Loan which became due on a day which was not the last day of an Interest Period relating to that Loan:

(i) the first Interest Period for that overdue amount shall have a duration equal to the unexpired portion of the current Interest Period relating to that Loan; and

(ii) the rate of interest applying to the overdue amount during that first Interest Period shall be two *per cent.* (2%) higher than the rate which would have applied if the overdue amount had not become due.

(c) Default interest (if unpaid) arising on an overdue amount will be compounded with the overdue amount at the end of each Interest Period applicable to that overdue amount but will remain immediately due and payable.

8.4 Notification of Rates of Interest

(a) The BPIFAE Agent shall within two (2) Business Days after a Quotation Day notify the Lenders and the Borrower of the determination of a rate of interest under this Agreement.

(b) The BPIFAE Agent shall within two (2) Business Days after a Quotation Day notify the Borrower of each Funding Rate relating to a Loan or any Unpaid Sum.

9. Interest Periods

9.1 Interest Periods

(a) The Interest Period for which any Loan is outstanding shall be divided into successive Interest Periods each of which shall start on the last day of the preceding such Interest Period.

(b) The initial Interest Period for each Loan:

(i) shall start on (and include) the Utilisation Date of such Loan and end on (but excluding) the last day of such Interest Period. Each subsequent Interest Period in respect of such Loan shall start on (and include) the last day of the previous Interest Period and end on (but exclude) the last day of the relevant Interest Period *provided that*, the Interest Period occurring prior to the First Repayment Date shall start (and include) on the last day of the previous Interest Period and end on (but excluding) the First Repayment Date; and

(ii) after the first Utilisation shall start on (and include) the Utilisation Date of the relevant Loan and end on (but excluding) the last day of the current Interest Period for the first Utilisation.

9.2 Duration

(a) The duration of each Interest Period shall, save as otherwise provided in this Agreement, be six (6) Months or such other period as the BPIFAE Agent may agree, *provided that* any Interest Period that would otherwise extend beyond a Repayment Date relating to any Loan shall be of such duration that it shall end on that Repayment Date.

(b) Notwithstanding anything to the contrary in this Agreement, if the Interest Period falling immediately prior to the First Repayment Date would be shorter than ten (10) days (a "**Relevant Interest Period**"), then the Interest Period falling immediately prior to the Relevant Interest Period shall be extended so that it shall end on the First Repayment Date.

(c) Each Interest Period commencing after the First Repayment Date shall end on the following Repayment Date.

(d) An Interest Period for a Loan shall not extend beyond the Final Maturity Date.

9.3 Non-Business Days

If an Interest Period would otherwise end on a day which is not a Business Day, that Interest Period will instead end on the next Business Day in that calendar month (if there is one) or the preceding Business Day (if there is not).

9.4 Consolidation of Loans

If two (2) or more Interest Periods:

(a) relate to Loans; and

(b) end on the same date,

those Loans will be consolidated into, and treated as, a single Loan on the last day of the Interest Period.

10. Changes to the Calculation of Interest

10.1 Unavailability of Screen Rate

(a) *Interpolated Screen Rate*: If no Screen Rate is available for LIBOR for the Interest Period of a Loan, the applicable LIBOR shall be the Interpolated Screen Rate for a period equal in length to the Interest Period of that Loan.

(b) *Reference Bank Rate*: If no Screen Rate is available for LIBOR for:

(i) Dollars; or

(ii) the Interest Period of a Loan and it is not possible to calculate the Interpolated Screen Rate,

the applicable LIBOR shall be the Reference Bank Rate as of 11:00 a.m. (London time) on the Quotation Day for Dollars and for a period equal in length to the Interest Period of that Loan.

10.2 Absence of Quotations

Subject to Clause 10.3 (*Market Disruption*), if LIBOR is to be determined on the basis of a Reference Bank Rate but a Reference Bank does not supply a quotation by 11:00 a.m. (London time) on the Quotation Day, the Reference Bank Rate shall be determined on the basis of the quotations of the remaining Reference Banks.

10.3 Market Disruption

(a) If a Market Disruption Event occurs in relation to a Loan for any Interest Period, then the rate of interest on each Lender's share of that Loan for the Interest Period shall be the percentage rate per annum which is the sum of:

(i) the Applicable Margin; and

(ii) the rate notified to the BPIFAE Agent by that Lender as soon as practicable and in any event before interest is due to be paid in respect of that Interest Period, to be that which expresses as a percentage rate per annum the cost to that Lender of funding its participation in that Loan from whatever source it may reasonably select.

(b) In this Agreement "**Market Disruption Event**" means:

(i) if paragraph (b) of Clause 10.1 (*Unavailability of Screen Rate*) applies but no Reference Bank Rate is available for Dollars or the relevant Interest Period;

(ii) at or about noon on the Quotation Day for the relevant Interest Period none or only one (1) of the Reference Banks supplies a rate to the BPIFAE Agent to determine LIBOR for Dollars for the relevant Interest Period; or

(iii) before close of business in London on the Quotation Day for the relevant Interest Period, the BPIFAE Agent receives notifications from a Lender or Lenders (whose participations in a Loan exceed thirty *per cent.* (30%) of that Loan) that the cost to it or them of obtaining matching deposits in the London interbank market would be in excess of LIBOR.

10.4 Alternative Basis of Interest or Funding

(a) If a Market Disruption Event occurs and the BPIFAE Agent or the Borrower so requires, the BPIFAE Agent and the Borrower shall enter into negotiations (for a period of not more than thirty (30) days) with a view to agreeing a substitute basis for determining the rate of interest.

(b) Any alternative basis agreed pursuant to paragraph (a) above shall, with the prior consent of all the Lenders and the Borrower, be binding on all Parties.

(c) If a Market Disruption Event occurs and:

(i) a Lender's Funding Rate is less than LIBOR; or

(ii) a Lender does not supply a quotation by the time specified in paragraph (a)(ii) of Clause 10.3 (*Market Disruption*),

the cost to that Lender of funding its participation in that Loan for that Interest Period shall be deemed, for the purposes of paragraph (a)(ii) of Clause 10.3 (*Market Disruption*), to be LIBOR.

10.5 Break Costs

(a) The Borrower shall, within three (3) Business Days of demand by a Finance Party, pay to that Finance Party its Break Costs attributable to all or any part of a Loan or Unpaid Sum being paid by the Borrower on a day other than the last day of an Interest Period for that Loan or Unpaid Sum.

(b) Each Lender shall, as soon as reasonably practicable after a demand by the BPIFAE Agent, provide a certificate confirming the amount of its Break Costs for any Interest Period in which they accrue.

11. Fees

11.1 Commitment Fee

(a) The Borrower shall pay to the BPIFAE Agent (for the account of each Lender) a fee computed at the rate of one point fifteen *per cent.* (1.15%) per annum on that Lender's daily undrawn Available Commitment under:

(i) Facility A for the Availability Period applicable to Facility A; and

(ii) Facility B for the Availability Period applicable to Facility B.

(b) The accrued commitment fee is payable:

(i) on the last day of each successive period of six (6) Months which ends during the Availability Period;

(ii) on the last day of the Availability Period; and

(iii) if cancelled in full, on the cancelled amount of the relevant Lender's Commitment at the time the cancellation is effective.

11.2 Up-front Fee

(a) The Borrower shall pay to the BPIFAE Agent (for the account of each Mandated Lead Arranger) an arrangement fee in an amount equal to two point eight *per cent.* (2.8%) of the aggregate principal amount of the Total Commitments as at the date of this Agreement (the "**Up-front Fee**").

(b) The Up-front Fee shall be due on the date of this Agreement and payable on the earlier of:

(i) sixty (60) days from the date of this Agreement; and

(ii) Financial Close.

11.3 BPIFAE Agent Fees

(a) The Borrower shall pay to the BPIFAE Agent (for its own account) an annual agency fee of US$65,000 (the "**BPIFAE Agent Fee**"), which must be paid annually in advance in accordance with paragraphs (b) and (c) below.

(b) The BPIFAE Agent Fee for 2020 shall be payable in full on the Fourth Effective Date.

(c) Each subsequent payment of the BPIFAE Agent Fee is payable on each anniversary of the Fourth Effective Date for as long as any Commitment is in force or amount is outstanding under the Finance Documents.

11.4 Security Agent Fees

(a) The Borrower shall pay to the Security Agent (for its own account) an annual agency fee of US$65,000 (the "**Security Agent Fee**"), which must be paid annually in advance in accordance with paragraphs (b) and (c) below.

(b) The Security Agent Fee for 2020 shall be payable in full on the Fourth Effective Date.

(c) Each subsequent payment of the BPIFAE Agent Fee is payable on each anniversary of the Fourth Effective Date for as long as any Commitment is in force or amount is outstanding under the Finance Documents.

11.5 Restructuring Fee

(a) Pursuant to clause 4.1 (*Restructuring Fee*) of the First Global Deed of Amendment and Restatement, the Borrower is required to pay to the BPIFAE Agent (for the account of each Lender *pro rata* to the proportion of each Lender's Commitment) a restructuring fee in an amount equal to two point five *per cent*. (2.5%) of the Total Commitments as at the First Effective Date, being US$14,658,550 (the "**Restructuring Fee**") which amount shall become due on the First Effective Date and shall be payable in accordance with paragraph (b) below.

(b) Pursuant to clause 4.2 (*Restructuring Fee Payment*) of the First Global Deed of Amendment and Restatement, the Borrower has agreed to pay the Restructuring Fee on the following dates:

(i) an amount equal to forty *per cent.* (40%) of the Restructuring Fee (being US$5,863,420) on or prior to the First Effective Date as a condition precedent to the occurrence thereof; and

(ii) an amount equal to sixty *per cent.* (60%) of the Restructuring Fee (being US$8,795,130) on 30 June 2017 (or such earlier date as all principal, interest and other amounts outstanding under this Agreement have been repaid in full).

(c) For the avoidance of doubt, the Restructuring Fee is payable in accordance with the First Global Deed of Amendment and Restatement and this Clause 11.5 does not create a separate obligation to pay such fee pursuant to this Agreement.

11.6 Non-Refundable

Each of the fees set out in this Clause 11 (*Fees*) once paid are non-refundable and non-creditable against other fees payable in connection with the Project.

12. BPIFAE Insurance Premia and BPIFAE 2013 Deferred Fee Insurance Premium

12.1 Payment by the Borrower

(a) The Borrower shall bear the cost of the BPIFAE Insurance Premia and the BPIFAE 2013 Deferred Fee Premium payable in respect of, or in connection with, the BPIFAE Insurance Policy and shall pay all such amounts to the BPIFAE Agent (for the account of BPIFAE).

(b) The BPIFAE Insurance Premia is due and payable in full to the BPIFAE Agent (for the account of BPIFAE) on the Utilisation Date for the first Utilisation and such amounts have been paid by the Borrower.

(c) The BPIFAE 2013 Deferred Fee Premium is due to the BPIFAE Agent (for the account of BPIFAE) on the First Effective Date and shall be paid by the Borrower as follows:

(i) US$8,000,000 shall be paid on the First Effective Date; and

(ii) US$12,000,000 shall be paid on 30 June 2017,

(or, if earlier, in each case, the date on which the BPIFAE 2013 Deferred Fee Premium has been paid in full pursuant to any prepayments applied against such BPIFAE 2013 Deferred Fee Premium under the terms of this Agreement).

12.2 Financing with Proceeds of Loans

(a) Subject to all the other terms and conditions of this Agreement, the BPIFAE Insurance Premia shall be financed from the first Utilisation under the Facilities.

(b) Loans made under a Facility on account of the BPIFAE Insurance Premia shall be included in the principal amount of a Facility and repaid to the BPIFAE Agent in accordance with the relevant provisions in this Agreement and the Borrower shall pay interest on such amount at the rates determined under, and in accordance with, Clause 8 (*Interest*) and repay such amount together with all other principal as stated in Clause 6.1 (*Repayment*).

(c) For the avoidance of doubt, the BPIFAE 2013 Deferred Fee Premium shall not be financed by the proceeds of either Facility.

12.3 Borrower's Payment Obligations

(a) The Borrower acknowledges that the obligation to pay one hundred *per cent.* (100%) of the BPIFAE Insurance Premia and the BPIFAE 2013 Deferred Fee Premium as and when they arise is absolute and unconditional.

(b) If the BPIFAE Insurance Premia due and payable is not financed or paid out of any Loans under this Agreement or if the undrawn amount under a Facility is not sufficient to finance one hundred *per cent.* (100%) of the BPIFAE Insurance Premia due to BPIFAE under the BPIFAE Insurance Policy, the Borrower shall pay directly to the BPIFAE Agent the amount of any such BPIFAE Insurance Premia not so financed or paid.

(c) Subject to Clause 12.3(d) below, as of the date of this Agreement the premia due to BPIFAE in respect of the BPIFAE Insurance Premia shall be calculated at a rate estimated to be six point sixty eight *per cent.* (6.68%), and in an estimated amount being the aggregate of:

(i) US$35,272,276 in respect of Facility A; and

(ii) US$1,442,880 in respect of Facility B.

(d) The BPIFAE Agent will only be notified of the actual amount of the BPIFAE Insurance Premia on the date of final issuance of each BPIFAE Insurance Policy.

(e) Following receipt of each BPIFAE Insurance Policy, the BPIFAE Agent shall promptly notify the Borrower of the actual amount of the BPIFAE Insurance Premia. If the actual

amount of the BPIFAE Insurance Premia is greater than the estimated amount set out in paragraph (c) above, the Borrower shall be obliged to make payment of the actual amount of the BPIFAE Insurance Premia. Accordingly, the estimated amount provided in Clauses 3.1(c) (*Payment of the BPIFAE Insurance Premia*) and 3.2(b) (*Payment of the BPIFAE Insurance Premia*) shall be automatically increased or reduced by the amounts required to ensure the payment of the premiums after adjustment by BPIFAE, which would result in an increase or reduction by a corresponding amount in the Total Commitments subject to available Commitments).

(f) [*Intentionally omitted*]

(g) Notwithstanding the above, a minimum premium being, as of the date of this Agreement, in an amount equal to the Dollar equivalent of €1,515 shall be paid to BPIFAE by the Borrower in respect of each BPIFAE Insurance Policy upon the execution of the relevant BPIFAE Insurance Policy. Such amounts shall remain the property of BPIFAE and are accordingly payable by the Borrower to BPIFAE in any event.

(h) Subject to paragraph (i) below, the Borrower shall not be entitled to claim any credit or reimbursement of the BPIFAE Insurance Premia or the BPIFAE 2013 Deferred Fee Premium, including in the event of a cancellation, an acceleration or a prepayment of any Loan under this Agreement.

(i) Notwithstanding paragraph (h) above and subject to paragraph (j) below:

(i) with respect to any partial cancellation of any undisbursed amount of a Facility; and/or

(ii) immediately following the end of the Availability Period, where an Available Commitment remains outstanding,

the Borrower shall be entitled to submit a request to the BPIFAE Agent for reimbursement of any proportionate amount of the BPIFAE Insurance Premia, in an amount up to one hundred *per cent.* (100%) of the total amount of the BPIFAE Insurance Premia, which relates to such cancelled amount of any undisbursed portion of a Facility and/or outstanding Available Commitment referred to in paragraphs (i)(i) and (ii) above, as the case may be, in each case such amount to be subject to the approval of the BPIFAE Agent. For the avoidance of doubt, this paragraph (i) does not apply to the BPIFAE 2013 Deferred Fee Premium.

(j) No reimbursement of the BPIFAE Insurance Premia pursuant to paragraph (i) above shall be made by the BPIFAE Agent if:

(i) a Default shall have occurred and be continuing; and

(ii) the BPIFAE Agent has not received funds from BPIFAE in an amount equal to the BPIFAE Insurance Premia to be reimbursed.

(k) Notwithstanding anything to the contrary in this Agreement, the Parties acknowledge that the Borrower has paid the BPIFAE Insurance Premia on or around Financial Close. This paragraph (k) does not apply to the BPIFAE 2013 Deferred Fee Premium.

13. Tax gross-up and Indemnities

13.1 Tax Gross-up

(a) The Borrower shall make all payments to be made by it without any Tax Deduction, unless a Tax Deduction is required by law.

(b) The Borrower shall, promptly upon becoming aware that it must make a Tax Deduction (or that there is any change in the rate or the basis of a Tax Deduction) notify the BPIFAE Agent accordingly. Similarly, a Lender shall notify the BPIFAE Agent on becoming so aware in respect of a payment payable to that Lender. If the BPIFAE Agent receives such notification from a Lender it shall notify the Borrower.

(c) If a Tax Deduction is required by law to be made by the Borrower, the amount of the payment due from the Borrower shall be increased to an amount which (after making any Tax Deduction) leaves an amount equal to the payment which would have been due if no Tax Deduction had been required.

(d) If the Borrower is required to make a Tax Deduction, it shall make that Tax Deduction and any payment required in connection with that Tax Deduction within the time allowed and in the minimum amount required by law.

(e) Within thirty (30) days of making either a Tax Deduction or any payment required in connection with that Tax Deduction, the Borrower making that Tax Deduction shall deliver to the BPIFAE Agent for the Finance Party entitled to the payment evidence reasonably satisfactory to that Finance Party that the Tax Deduction has been made or (as applicable) any appropriate payment paid to the relevant taxing authority.

(f) A payment shall not be increased under paragraph (c) above by reason of a Tax Deduction on account of Tax, if on the date on which the payment falls due:

(i) the payment could have been made to the relevant Lender without a Tax Deduction if the Lender had been a Qualifying Lender, but on that date that Lender is not, or has ceased to be, a Qualifying Lender other than as a result of any change after the date it became a Lender under this Agreement:

(A) in (or in the interpretation, administration, or application of) any law or double taxation agreement, or any published practice or published concession of any relevant authority; or

(B) in the circumstance of the Borrower; or

(ii) the Borrower is able to demonstrate that the payment could have been made to the Lender without the Tax Deduction had that Lender complied with its obligations under paragraph (g) below.

(g) Each Lender agrees to use reasonable efforts (consistent with legal and regulatory restrictions and subject to overall policy considerations of such Lender) to file any Withholding Forms as requested by the Borrower that may be necessary to establish an exemption from withholding of US federal income taxes.

13.2 Tax Indemnity

(a) The Borrower shall (within three (3) Business Days of demand by the BPIFAE Agent) pay to a Protected Party an amount equal to the loss, liability or cost which that Protected Party determines will be or has been (directly or indirectly) suffered for or on account of Tax by that Protected Party in respect of a Finance Document.

(b) Paragraph (a) above shall not apply with respect to any Tax assessed on a Finance Party:

(i) under the law of the jurisdiction in which that Finance Party is incorporated or, if different, the jurisdiction (or jurisdictions) in which that Finance Party is treated as resident for tax purposes; or

(ii) under the law of the jurisdiction in which that Finance Party's Facility Office is located in respect of amounts received or receivable in that jurisdiction,

if that Tax is imposed on or calculated by reference to the net income received or receivable (but not any sum deemed to be received or receivable) by that Finance Party or to the extent a loss, liability or cost:

(A) is compensated for by an increased payment under Clause 13.1 (*Tax Gross-up*);

(B) would have been compensated for by an increased payment under Clause 13.1 (*Tax Gross-up*) but was not so compensated solely because one of the exclusions in paragraph (f) of Clause 13.1 (*Tax Gross-up*) applied; or

(C) relates to a FATCA Deduction required to be made by a Party.

(c) A Protected Party making, or intending to make a claim under paragraph (a) above shall promptly notify the BPIFAE Agent of the event which will give, or has given, rise to the claim, following which the BPIFAE Agent shall notify the Borrower.

(d) A Protected Party shall, on receiving a payment from the Borrower under this Clause 13.2, notify the BPIFAE Agent.

13.3 Tax Credit

If the Borrower makes a Tax Payment and the relevant Finance Party determines that:

(a) a Tax Credit is attributable to an increased payment of which that Tax Payment forms part, to that Tax Payment or to a Tax Deduction in consequence of which that Tax Payment was required; and

(b) that Finance Party has obtained and utilised that Tax Credit,

the Finance Party shall pay an amount to the Borrower which that Finance Party determines will leave it (after that payment) in the same after-Tax position as it would have been in had the Tax Payment not been required to be made by the Borrower *provided that*,

(i) any Finance Party may determine, in its sole discretion consistent with the policies of such Finance Party, whether to seek a Tax Credit;

(ii) if such Tax Credit is subsequently disallowed or reduced, the Borrower shall indemnify the Finance Party for such amount; and

(iii) nothing in this Clause 13.3 shall require a Finance Party to disclose any confidential information to the Borrower (including, without limitation, its tax returns or its calculations).

13.4 Stamp Taxes

The Borrower shall pay and, within three (3) Business Days of demand, indemnify each Finance Party against any cost, loss or liability that Finance Party incurs in relation to all stamp duty, registration and other similar Taxes payable in respect of any Finance Document.

13.5 Value Added Tax

(a) All amounts expressed to be payable under a Finance Document by any Party to a Finance Party which (in whole or in part) constitute the consideration for any supply for VAT purposes are deemed to be exclusive of any VAT which is chargeable on that supply, and accordingly, subject to paragraph (b) below, if VAT is or becomes chargeable on any supply made by any Finance Party to any Party under a Finance Document and such Finance Party is required to account to the relevant tax authority for the VAT, that Party must pay to such Finance Party (in addition to and at the same time as paying the consideration for such supply) an amount equal to the amount of the VAT (and such Finance Party must promptly provide an appropriate VAT invoice to that Party).

(b) Where a Finance Document requires any Party to reimburse or indemnify a Finance Party for any cost or expense, that Party shall reimburse or indemnify (as the case may be) such Finance Party for the full amount of such cost or expense, including such part thereof as represents VAT, save to the extent that such Finance Party reasonably determines that it is entitled to credit or repayment in respect of such VAT from the relevant tax authority.

(c) In relation to any supply made by a Finance Party to any Party under a Finance Document, if reasonably requested by such Finance Party, that Party must promptly provide such Finance Party with details of that Party's VAT registration and such other information as is reasonably requested in connection with such Finance Party's VAT reporting requirements in relation to such supply.

13.6 Lender Status Confirmation

Each Lender which becomes a Party to this Agreement after the date of this Agreement shall indicate, in the Transfer Certificate or Assignment Agreement which it executes on becoming a Party, and for the benefit of the BPIFAE Agent and without liability to any Obligor, which of the following categories it falls in:

(a) not a Qualifying Lender; or

(b) a Qualifying Lender.

If a New Lender fails to indicate its status in accordance with this Clause 13.6 then such New Lender shall be treated for the purposes of this Agreement (including by each Obligor) as if it is not a Qualifying Lender until such time as it notifies the BPIFAE Agent which category applies (and the BPIFAE Agent, upon receipt of such notification, shall inform the Borrower). For the avoidance of doubt, a Transfer Certificate or Assignment Agreement shall not be invalidated by any failure of a Lender to comply with this Clause 13.6.

13.7 FATCA Information

(a) Subject to paragraph (c) below, each Party shall, within ten (10) Business Days of a reasonable request by another Party:

(i) confirm to that other Party whether it is:

(A) a FATCA Exempt Party; or

(B) not a FATCA Exempt Party; and

(ii) supply to that other Party such forms, documentation and other information relating to its status under FATCA (including other information required under the US Treasury Regulations or other official guidance including intergovernmental agreements) as that other Party reasonably requests for the purposes of that other Party's compliance with FATCA.

(b) If a Party confirms to another Party pursuant to Clause 13.7(a)(i) above that it is a FATCA Exempt Party and it subsequently becomes aware that it is not, or has ceased to be a FATCA Exempt Party, that Party shall notify that other Party reasonably promptly.

(c) Paragraph (a) above shall not oblige any Finance Party to do anything which would or might in its reasonable opinion constitute a breach of:

(i) any law or regulation;

(ii) any fiduciary duty; or

(iii) any duty of confidentiality.

(d) If a Party fails to confirm its status or to supply forms, documentation or other information requested in accordance with paragraph (a) above (including, for the avoidance of doubt, where paragraph (c) above applies), then if that Party failed to confirm whether it is (and/or remains) a FATCA Exempt Party such Party shall be treated for the purposes of the Finance Documents as if it is not a FATCA Exempt Party until such time as the Party in question provides the requested confirmation, forms, documentation or other information.

(e) If the Borrower is a US Tax Obligor, or where the BPIFAE Agent reasonably believes that its obligations under FATCA require it, each Lender shall, within ten Business Days of:

(i) where the Borrower is a US Tax Obligor and the relevant Lender is an Original Lender, the date of this Agreement;

(ii) where the Borrower is a US Tax Obligor and the relevant Lender is a New Lender, the relevant Transfer Date; or

(iii) where the Borrower is not a US Tax Obligor, the date of a request from the BPIFAE Agent,

supply to the BPIFAE Agent:

(A) a withholding certificate on Form W-8 or Form W-9 (or any successor form) (as applicable); or

(B) any withholding statement and other documentation, authorisations and waivers as the BPIFAE Agent may require to certify or establish the status of such Lender under FATCA.

The BPIFAE Agent shall provide any withholding certificate, withholding statement, documentation, authorisations and waivers it receives from a Lender pursuant to this paragraph (e) to the Borrower and shall be entitled to rely on any such withholding certificate, withholding statement, documentation, authorisations and waivers provided without further verification. The BPIFAE Agent shall not be liable for any action taken by it under or in connection with this paragraph (e).

(f) Each Lender agrees that if any withholding certificate, withholding statement, documentation, authorisations and waivers provided to the BPIFAE Agent pursuant to paragraph (e) above is or becomes materially inaccurate or incomplete, it shall promptly update such withholding certificate, withholding statement, documentation, authorisations and waivers or promptly notify the BPIFAE Agent in writing of its legal inability to do so. The BPIFAE Agent shall provide any such updated withholding certificate, withholding statement, documentation, authorisations and waivers to the Borrower. The BPIFAE Agent shall not be liable for any action taken by it under or in connection with this paragraph (f).

13.8 FATCA Deduction

(a) Each Party may make any FATCA Deduction it is required to make by FATCA, and any payment required in connection with that FATCA Deduction, and no Party shall be required to increase any payment in respect of which it makes such a FATCA Deduction or otherwise compensate the recipient of the payment for that FATCA Deduction.

(b) Each Party shall promptly, upon becoming aware that it must make a FATCA Deduction (or that there is any change in the rate or the basis of such FATCA Deduction) notify the Party to whom it is making the payment and, in addition, shall notify the Borrower, the BPIFAE Agent and the other Finance Parties.

14. Increased Costs

14.1 Increased Costs

(a) Subject to Clause 14.3 (*Exceptions*) the Borrower shall, within five (5) Business Days of a demand by the BPIFAE Agent, pay for the account of a Finance Party the amount of any Increased Costs incurred by that Finance Party or any of its Affiliates as a result of:

(i) the introduction of or any change in (or in the interpretation, administration or application of) any law or regulation;

(ii) compliance with any law or regulation made after the date of this Agreement; or

(iii) the implementation or application of or compliance with (including any change in the interpretation, administration or application of) the Bank for International Settlements' recommendations on banking laws and regulations published by the Bank for International Settlements on 16 December 2010 in the form of the consultative documents entitled "*A global regulatory framework for more resilient banks and banking systems*" and "*International Framework for Liquidity Risk Measurement, Standards and Monitoring*" (collectively, commonly referred to as "*Basel III*") or any other law or regulation which implements Basel III (whether such implementation, application or compliance is by a government, regulator, Finance Party or any of its Affiliates) ("**Basel III**").

(b) In this Agreement "**Increased Costs**" means:

(i) a reduction in the rate of return from a Facility or on a Finance Party's (or its Affiliate's) overall capital;

(ii) an additional or increased cost; or

(iii) a reduction of any amount due and payable under any Finance Document,

which is incurred or suffered by a Finance Party or any of its Affiliates to the extent that it is attributable to that Finance Party having entered into its Commitment or funding or performing its obligations under any Finance Document.

(c) For the purposes of this Clause 14 (*Increased Costs*), any regulation imposed by the European Central Bank, the Financial Conduct Authority or the Prudential Regulation Authority in effect as of the First Effective Date with respect to fees and costs payable by banks similar to those customarily considered to be "*Mandatory Costs*" shall be deemed to be an Applicable Law made after the First Effective Date.

14.2 Increased Cost Claims

(a) Subject to paragraphs (c) below, a Finance Party intending to make a claim pursuant to Clause 14.1 (*Increased Costs*) shall notify the BPIFAE Agent of the event giving rise to the claim, following which the BPIFAE Agent shall promptly notify the Borrower.

(b) Each Finance Party shall, as soon as practicable after a demand by the BPIFAE Agent, provide a certificate confirming the amount of its Increased Costs.

(c) A Finance Party intending to make a claim in relation to Mandatory Costs as contemplated by Clause 14.1(c) (*Increased Costs*) shall notify (with a copy to the BPIFAE Agent) the Borrower of its claim in respect of such Mandatory Costs.

14.3 Exceptions

Clause 14.1 (*Increased Costs*) does not apply to the extent any Increased Cost is:

(a) attributable to a Tax Deduction required by law to be made by the Borrower;

(b) compensated for by Clause 13.2 (*Tax Indemnity*) (or would have been compensated for under Clause 13.2 (*Tax Indemnity*) but was not so compensated solely because any of the exclusions in paragraph (b) of Clause 13.2 (*Tax Indemnity*) applied);

(c) attributable to the wilful breach by the relevant Finance Party or its Affiliates of any law or regulation; or

(d) attributable to a FATCA Deduction required to be made by a Party.

15. Other Indemnities

15.1 Currency Indemnity

(a) If any sum due from an Obligor under the Finance Documents (a "**Sum**"), or any order, judgment or award given or made in relation to a Sum, has to be converted from the currency (the "**First Currency**") in which that Sum is payable into another currency (the "**Second Currency**") for the purpose of:

(i) making or filing a claim or proof against an Obligor;

(ii) obtaining or enforcing an order, judgment or award in relation to any litigation or arbitration proceedings,

the Borrower shall as an independent obligation, within three (3) Business Days of demand, indemnify each Finance Party to whom that Sum is due against any cost, loss or liability arising out of or as a result of the conversion including any discrepancy between:

(A) the rate of exchange used to convert that Sum from the First Currency into the Second Currency; and

(B) the rate or rates of exchange available to that person at the time of its receipt of that Sum.

(b) The Borrower waives any right it may have in any jurisdiction to pay any amount under the Finance Documents in a currency or currency unit other than that in which it is expressed to be payable.

15.2 Other Indemnities

The Borrower shall, within five (5) Business Days of demand, indemnify each Finance Party (and its Affiliates) against any cost, loss or liability incurred by that Finance Party (or Affiliate) as a result of:

(a) the occurrence of any Event of Default;

(b) a failure by the Borrower to pay any amount due under a Finance Document on its due date, including without limitation, any cost, loss or liability arising as a result of Clause 30 (*Sharing among the Finance Parties*);

(c) funding, or making arrangements to fund, its participation in a Loan requested by the Borrower in a Utilisation Request but not made by reason of the operation of any one or more of the provisions of this Agreement (other than by reason of default or negligence by that Lender alone);

(d) a Loan (or part of a Loan) not being prepaid in accordance with a notice of prepayment given by the Borrower; or

(e) the breach by the Borrower or any member of the Group of any applicable Environmental Laws or Environmental Permits. Any Affiliate of a Finance Party may rely on this Clause 15.2(e).

15.3 Indemnity to the BPIFAE Agent

The Borrower shall promptly indemnify the BPIFAE Agent against any cost, loss or liability incurred by the BPIFAE Agent (acting reasonably) as a result of:

(a) investigating any event which it reasonably believes is a Default; or

(b) acting or relying on any notice, request or instruction which it reasonably believes to be genuine, correct and appropriately authorised.

15.4 Indemnity to the Security Agent

(a) The Borrower shall promptly indemnify the Security Agent against any cost, loss or liability incurred by the Security Agent as a result of:

(i) the protection or enforcement of a Lien expressed to be created under a Security Document; or

(ii) the exercise of any of the rights, powers, discretions and remedies vested in it by the Finance Documents or by law.

(b) The Security Agent may, in priority to any payment to other Finance Parties, indemnify itself out of the assets subject to a Lien expressed to be created under the Security Documents in respect of, and pay and retain, all sums necessary to give effect to the indemnity in this Clause 15.4.

16. Mitigation by the Lenders

16.1 Mitigation

(a) Each Finance Party shall, in consultation with the Borrower, take all reasonable steps to mitigate any circumstances which arise and which would result in any amount becoming payable under or pursuant to, or cancelled pursuant to, any of Clause 7.1 (*Illegality*), Clause 13 (*Tax gross-up and Indemnities*) or Clause 14 (*Increased Costs*) including (but not limited to) transferring its rights and obligations under the Finance Documents to another Affiliate or Facility Office.

(b) Paragraph (a) above does not in any way limit the obligations of the Borrower under the Finance Documents.

16.2 Limitation of Liability

(a) The Borrower shall promptly indemnify each Finance Party for all costs and expenses reasonably incurred by that Finance Party as a result of steps taken by it under Clause 16.1 (*Mitigation*).

(b) A Finance Party is not obliged to take any steps under Clause 16.1 (*Mitigation*) if, in the opinion of that Finance Party (acting reasonably), to do so might be prejudicial to it.

17. Costs and Expenses

17.1 Transaction Expenses

The Borrower shall promptly on demand pay the BPIFAE Agent, the Security Agent and each Mandated Lead Arranger the amount of all costs and expenses (including legal fees) reasonably incurred by any of them in connection with the negotiation, preparation, printing, execution and syndication of:

(a) this Agreement and any other documents referred to in this Agreement; and

(b) any other Finance Documents executed after the date of this Agreement.

17.2 Amendment Costs

If:

(a) the Borrower requests an amendment, waiver or consent; or

(b) an amendment is required pursuant to Clause 31.10 (*Change of Currency*),

the Borrower shall, within three (3) Business Days of demand, reimburse the BPIFAE Agent and the Security Agent for the amount of all costs and expenses (including legal fees) incurred by the BPIFAE Agent and the Security Agent in responding to, evaluating, negotiating or complying with that request or requirement.

17.3 Enforcement Costs

The Borrower shall, within three (3) Business Days of demand, pay to each Finance Party the amount of all costs and expenses (including legal fees) incurred by that Finance Party in connection with the enforcement of, or the preservation of any rights under, any Finance Document.

17.4 Security Agent Expenses

The Borrower shall, within three (3) Business Days of demand, pay to the Security Agent the amount of all costs and expenses (including legal fees) incurred by it in connection with the release of any Lien created pursuant to any Security Document.

17.5 Financial Advisory Appointment

The Borrower shall, within three (3) Business Days of demand, pay to the BPIFAE Agent all fees and expenses payable in connection with the appointment by the BPIFAE Agent of FTI, Consulting, Inc., (or such other financial advisor acceptable to the BPIFAE Agent (acting on the instructions of the Majority Lenders)):

(a) on and from the First Effective Date (for so long as shall be required in order to complete any reports required in connection with the financial year ending 2013), at agreed hourly rates, for the purposes of monitoring the Group's business and results of operations (including additional work to be undertaken in relation to monthly monitoring of the Accounts Agreement and quarterly monitoring in between Annual Business Plans as set out in greater details in the applicable engagement letter); and

(b) at any time following 31 December 2013 at agreed hourly rates if:

(i) an Event of Default as set out in Clauses 23.1 (*Non-Payment*), 23.2 (*Financial Covenants*), 23.5 (*Cross Default*), 23.6 (*Insolvency*), 23.7 (*Insolvency Proceedings*) or 23.8 (*Creditor's Process*) has occurred;

(ii) the Finance Parties receive any request from the Borrower to adjust, or a Lender or BPIFAE requires any adjustment of, the financial covenants as set out in Clause 20 (*Financial Covenants*);

(iii) a new business plan is provided to replace the Agreed Business Plan; or

(iv) the Borrower (acting reasonably) agrees to any request for such appointment from the BPIFAE Agent.

18. Representations

Subject to the disclosures made by the Borrower set out in Schedule 24 (*Disclosures*), the Borrower makes the representations and warranties set out in this Clause 18 (*Representations*) to each Finance Party on the Fourth Effective Date.

18.1 Status

(a) It is a corporation, duly incorporated and validly existing (and to the extent applicable, in good standing) under the law of its jurisdiction of incorporation.

(b) It and each of its Subsidiaries has the power to own its assets and carry on its business as it is being conducted.

18.2 Binding Obligations

Subject to the Reservations:

(a) the obligations expressed to be assumed by it in each Transaction Document to which it is a party are legal, valid, binding and enforceable obligations; and

(b) (without limiting the generality of paragraph (a) above), each Security Document to which it is a party creates the security interests which that Security Document purports to create and those security interests are valid and effective.

18.3 Non-Conflict with other Obligations

The entry into and performance by it of, and the transactions contemplated by, the Transaction Documents and the granting of the security interests contemplated by the Security Documents do not and will not conflict with:

(a) any Applicable Law;

(b) the constitutional documents of any member of the Group; or

(c) any agreement or instrument binding upon it or any member of the Group or any of its, or any member of the Group's, assets or constitute a default or termination event (however described) under any such agreement or instrument, where such conflict would have or is reasonably likely to have a Material Adverse Effect.

18.4 Power and Authority

(a) It has the power to enter into, perform and deliver, and has taken all necessary action to authorise its entry into, performance and delivery of, the Transaction Documents to which it is or will be a party and the transactions contemplated by those Transaction Documents.

(b) No limit on its powers will be exceeded as a result of the borrowing, grant of security or giving of guarantees or indemnities contemplated by the Transaction Documents to which it is a party.

18.5 No Proceedings Pending or Threatened

No litigation, arbitration or administrative proceedings of or before any court, arbitral body or agency which is not frivolous, vexatious or otherwise an abuse of court process, and which, if adversely determined, could reasonably have a Material Adverse Effect (to the best of its knowledge and belief) have been started against it or any of its Subsidiaries.

18.6 Authorisations

(a) Each of the Borrower and its Subsidiaries has all material Authorisations required:

(i) to enable it lawfully to enter into, exercise its rights and comply with its obligations in the Transaction Documents to which it is a party; and

(ii) to make the Transaction Documents to which it is a party admissible in evidence in its jurisdiction of incorporation,

have been obtained or effected and are in full force and effect.

(b) Each of the Borrower and its Subsidiaries:

(i) has all Authorisations required for it to conduct its business as currently conducted, each of which is in full force and effect, is final and not subject to review on appeal and is not the subject of any pending or, to the best of its knowledge, threatened attack by direct or collateral proceeding;

(ii) is in compliance with each Authorisation applicable to it and in compliance with all other Applicable Laws relating to it or any of its respective properties; and

(iii) has filed in a timely manner all material reports, documents and other materials required to be filed by it under all Applicable Laws with any Governmental Authority and has retained all material records and documents required to be retained by it under Applicable Law,

except in each case where the failure to have done so, comply or file could not reasonably be expected to have a Material Adverse Effect.

18.7 Intellectual Property Matters

(a) Each of the Borrower and its Subsidiaries owns or possesses rights to use all material franchises, licences, copyrights, copyright applications, patents, patent rights or licences, patent applications, trademarks, trademark rights, service marks, service mark rights, trade names, trade name rights, copyrights and other rights with respect to the foregoing which are reasonably necessary to conduct its business as currently conducted (the "**Intellectual Property**").

(b) No event has occurred which permits, or after notice or lapse of time or both would permit, the revocation or termination of any such material rights, and, to the Borrower's knowledge, neither the Borrower nor any Subsidiary thereof is liable to any person for infringement under Applicable Law with respect to any such rights as a result of its business operations except as could not reasonably be expected to have a Material Adverse Effect.

18.8 Environmental Matters

(a) The properties owned, leased or operated by the Borrower and its Subsidiaries now or in the past do not contain, and to their knowledge have not previously contained, any Hazardous Materials in amounts or concentrations which:

(i) constitute or constituted an unremediated violation of applicable Environmental Laws and Environmental Permits; or

(ii) could give rise to a material liability under applicable Environmental Laws and Environmental Permits.

(b) To the knowledge of the Borrower and its Subsidiaries, the Borrower, each of its Subsidiaries and such properties and all operations conducted in connection therewith are in compliance, and, at all such times when such properties have been owned or operated by the Borrower or any of its Subsidiaries have been in compliance, with all applicable Environmental Laws and Environmental Permits, and there is no

contamination at, under or about such properties or such operations which could interfere with the continued operation of such properties or materially impair the fair saleable value thereof.

(c) Neither the Borrower nor any Subsidiary thereof has received any notice of violation, alleged violation, non-compliance, liability or potential liability regarding environmental matters, Hazardous Materials, or compliance with Environmental Laws or Environmental Permits, nor does the Borrower or any Subsidiary thereof have knowledge or reason to believe that any such notice will be received or is being threatened.

(d) To the knowledge of the Borrower and its Subsidiaries, Hazardous Materials have not been transported or disposed of to or from the properties owned, leased or operated by the Borrower and its Subsidiaries in violation of, or in a manner or to a location which could give rise to material liability under, Environmental Laws or Environmental Permits, nor have any Hazardous Materials been generated, treated, stored or disposed of at, on or under any of such properties in violation of, or in a manner that could give rise to material liability under, any applicable Environmental Laws.

(e) No judicial proceedings or governmental or administrative action is pending or, to the knowledge of the Borrower, threatened under any Environmental Law or Environmental Permits to which the Borrower or any Subsidiary thereof is or will be named as a potentially responsible party, nor are there any consent decrees or other decrees, consent orders, administrative orders or other orders, or other administrative or judicial requirements outstanding under any Environmental Law with respect to the Borrower, any Subsidiary or properties owned, leased or operated by the Borrower or any Subsidiary, now or in the past, that could reasonably be expected to have a Material Adverse Effect.

(f) There has been no release, nor to the best of the Borrower's knowledge, threat of release, of Hazardous Materials at or from properties owned, leased or operated by the Borrower or any Subsidiary, now or in the past, in violation of or in amounts or in a manner that could give rise to liability under Environmental Laws or Environmental Permits that could reasonably be expected to have a Material Adverse Effect.

(g) There are no facts, circumstances or conditions relating to the past or present business or operations of the Borrower or any Subsidiary, including the disposal of any wastes, Hazardous Material or other materials, or to the past or present ownership or use of any real property by the Borrower or any Subsidiary, that could reasonably be expected to give rise to an Environmental Claim against or to liability (other than in an immaterial respect) of any Borrower or any Subsidiary under any Environmental Laws or Environmental Permits.

18.9 ERISA

(a) As of the date of this Agreement, neither an Obligor nor any ERISA Affiliate maintains or contributes to, or has any obligation under, any Employee Benefit Plans other than those identified in Schedule 9 (*ERISA Plans*).

(b) Each Employee Benefit Plan is in compliance in form and operation with its terms and with ERISA and the Code (including Code provisions compliance with which is necessary for any intended favourable tax treatment) and all other Applicable Laws, except where any failure to comply would not, individually or in the aggregate, reasonably be expected to result in any material liability of any Obligor or ERISA Affiliate.

(c) Each Employee Benefit Plan that is intended to be qualified under Section 401(a) of the Code has been determined by the Internal Revenue Service to be so qualified, and each trust related to such plan has been determined by the Internal Revenue Service to be exempt under Section 501(a) of the Code, taking into account all applicable tax law changes, and nothing has occurred since the date of each such determination that would reasonably be expected to adversely affect such determination (or, in the case of an Employee Benefit Plan with no determination, nothing has occurred that would materially adversely affect the issuance of a favourable determination by the Internal Revenue Service or otherwise materially adversely affect such qualification).

(d) No liability has been incurred by any Obligor or any ERISA Affiliate which remains unsatisfied for any taxes or penalties with respect to any Employee Benefit Plan or any Multiemployer Plan except for a liability that would not, individually or in the aggregate, reasonably be expected to result in a material liability of such Obligor or ERISA Affiliate.

(e) Except where the failure of any of the following representations to be correct in all material respects would not, individually or in the aggregate, reasonably be expected to result in a material liability of any Obligor or any ERISA Affiliate, no Obligor or any ERISA Affiliate has:

(i) engaged in a non-exempt prohibited transaction described in Section 406 of ERISA or Section 4975 of the Code;

(ii) incurred any liability to the PBGC which remains outstanding, or reasonably expects to incur any such liability other than the payment of premiums and there are no premium payments which are within the applicable time limits prescribed by Applicable Law, due and unpaid;

(iii) failed to make a required contribution or payment to a Multiemployer Plan within the applicable time limits prescribed by Applicable Law; or

(iv) failed to make a required instalment or other required payment under Section 412 of the Code or Section 302 of ERISA.

(f) No ERISA Termination Event, which individually or in the aggregate would reasonably be expected to result in a material liability of any Obligor or ERISA Affiliate has occurred or is reasonably expected to occur.

(g) Except where the failure of any of the following representations to be correct in all material respects would not, individually or in the aggregate, reasonably be expected to result in a material liability of any Obligor or any ERISA Affiliate, no proceeding, claim (other than a benefits claim in the ordinary course), lawsuit and/or investigation is

existing or, to the best knowledge of the Borrower after due inquiry, threatened concerning or involving any:

(i) employee welfare benefit plan (as defined in Section 3(1) of ERISA) currently maintained or contributed to any Obligor or any ERISA Affiliate;

(ii) Pension Plan; or

(iii) Multiemployer Plan.

(h) There exists no Unfunded Pension Liability with respect to any Pension Plan, except for any such Unfunded Pension Liability that individually or together with any other positive Unfunded Pension Liabilities with respect to any Pension Plans, is not reasonably expected to result in a material liability of any Obligor or ERISA Affiliate.

(i) If each Obligor and each ERISA Affiliate were to withdraw in a complete withdrawal from all Multiemployer Plans as of the date this assurance is given or deemed given, the aggregate withdrawal liability that would be incurred would not reasonably be expected to result in a material liability of any Obligor or ERISA Affiliate.

(j) No Pension Plan which is subject to Section 412 of the Code or Section 302 of ERISA has applied for or received an extension of any amortization period, within the meaning of Section 412 of the Code or Section 302 or 304 of ERISA. No Obligor or ERISA Affiliate has ceased operations at a facility so as to become subject to the provisions of Section 4062(e) of ERISA, withdrawn as a substantial employer so as to become subject to the provisions of Section 4063 of ERISA or ceased making contributions to any Pension Plan subject to Section 4064(a) of ERISA to which it made contributions. No Lien imposed under the Code or ERISA on the assets of any Obligor or any ERISA Affiliate exists or is likely to arise on account of any Pension Plan. No Obligor or ERISA Affiliate has any liability under Section 4069 or 4212(c) of ERISA.

18.10 Margin Stock

(a) Neither the Borrower nor any Subsidiary of it is engaged principally or as one of its activities in the business of extending credit for the purpose of "*purchasing*" or "*carrying*" any "*margin stock*" (as each such term is defined or used, directly or indirectly, in Regulation U of the Board of Governors of the Federal Reserve System).

(b) No part of the proceeds of the Loans will be used for purchasing or carrying margin stock or for any purpose which violates, or which would be inconsistent with, the provisions of Regulation T, U or X of such Board of Governors.

18.11 Government Regulation

Neither the Borrower nor any Subsidiary is an "*investment company*" or a company "*controlled*" by an "*investment company*" (as each such term is defined or used in the Investment Company Act of 1940, as amended) and neither the Borrower nor any Subsidiary is, or after giving effect to any Utilisation will be, subject to regulation under the Interstate Commerce Act, as amended, or any other Applicable Law which limits its ability to incur or consummate the transactions contemplated under this Agreement.

18.12 Material Contracts

(a) Schedule 12 (*Material Contracts*) contains a complete and accurate list of all Material Contracts of the Borrower and its Subsidiaries in effect as of the Fourth Effective Date.

(b) Other than as set out in Schedule 12 (*Material Contracts*), each such Material Contract is, and after giving effect to the consummation of the transactions contemplated by the Finance Documents will be, in full force and effect in accordance with the terms thereof.

(c) The Borrower and its Subsidiaries have delivered to the BPIFAE Agent a true and complete copy of each Material Contract required to be listed on Schedule 12 (*Material Contracts*) (including all amendments with respect thereto).

(d) Neither the Borrower nor any Subsidiary (nor, to the knowledge of the Borrower, any other party thereto) is in breach of or in default under any Material Contract in any material respect.

18.13 Employee Relations

(a) Each of the Borrower and its Subsidiaries has a work force in place adequate to conduct its business as currently conducted and is not, as of the date of this Agreement, party to any collective bargaining agreement nor has any labour union been recognised as the representative of its employees except as set out in Schedule 13 (*Labour and Collective Bargaining Agreements*).

(b) The Borrower knows of no pending, threatened or contemplated strikes, work stoppage or other collective labour disputes involving its employees or those of its Subsidiaries that could reasonably be expected to have a Material Adverse Effect.

18.14 Burdensome Provisions

No Subsidiary is party to any agreement or instrument or otherwise subject to any restriction or encumbrance that restricts or limits its ability to make dividend payments or other distributions in respect of its Capital Stock to the Borrower or any Subsidiary or to transfer any of its assets or properties to the Borrower or any other Subsidiary in each case other than existing under or by reason of the Finance Documents or Applicable Law.

18.15 Financial Statements

(a) The audited and unaudited financial statements most recently delivered pursuant to Clause 19 (*Information Undertakings*) are complete and correct and fairly present in all material respects on a Consolidated basis the assets, liabilities and financial position of the Borrower and its Subsidiaries as at such dates, and the results of the operations and changes of financial position for the periods that ended (other than the absence of footnotes and customary year-end adjustments for unaudited financial statements).

(b) All such financial statements, including the related schedules and notes thereto, have been prepared in accordance with GAAP.

(c) Such financial statements show all material indebtedness and other material liabilities, direct or contingent, of the Borrower and its Subsidiaries as of the dates thereof, including

material liabilities for taxes, material commitments, and Financial Indebtedness, in each case, to the extent required to be disclosed under GAAP.

18.16 No Material Adverse Change

Since 30 June 2017, there has been no material adverse change in the properties, business, operations, prospects or condition (financial or otherwise) of the Borrower and its Subsidiaries taken as a whole and no event has occurred or condition arisen that could reasonably be expected to have a Material Adverse Effect.

18.17 Solvency

As of the Fourth Effective Date and after giving effect to each Loan, each Obligor (other than Globalstar Leasing LLC) will be Solvent.

18.18 Titles to Properties

Each of the Borrower and its Subsidiaries has such title to the real property owned or leased by it as necessary to the conduct of its business as currently conducted and valid and legal title to all of its personal property and assets, including, but not limited to, those reflected on the most recently delivered Consolidated balance sheets of the Borrower and its Subsidiaries delivered pursuant to Clause 19 (*Information Undertakings*), except those which have been disposed of by the Borrower or its Subsidiaries subsequent to the dates of such balance sheets which dispositions have been in the ordinary course of trading or as otherwise expressly permitted under this Agreement.

18.19 Insurance

The properties of the Borrower and its Subsidiaries are insured with financially sound and reputable insurance companies which are not Affiliates of the Borrower, in such amounts, with such deductibles and covering such risks as required by this Agreement.

18.20 Liens

From Financial Close:

(a) none of the properties and assets of the Borrower or any Subsidiary thereof is subject to any Lien, except Permitted Liens; and

(b) neither the Borrower nor any Subsidiary thereof has signed any financing statement or any security agreement authorising any secured party thereunder to file any financing statements, except to perfect Permitted Liens.

18.21 Financial Indebtedness and Guarantee Obligations

(a) Schedule 14 (*Financial Indebtedness and Guarantee Obligations*) is a complete and correct listing of all Financial Indebtedness of the Borrower and its Subsidiaries as of the Fourth Effective Date in excess of US$1,000,000.

(b) As of the Fourth Effective Date, the amount of all Financial Indebtedness of the Borrower and its Subsidiaries (and not set out in Schedule 14 (*Financial Indebtedness and Guarantee Obligations*)) is no greater than US$1,000,000.

(c) The Borrower and its Subsidiaries have performed and are in compliance with all of the material terms of such Financial Indebtedness and all instruments and agreements relating thereto, and no default or event of default, or event or condition which with notice or lapse of time or both would constitute such a default or event of default on the part of the Borrower or any of its Subsidiaries exists with respect to any such Financial Indebtedness.

18.22 Communication Licences

(a) Schedule 15 (*Communication Licences*) accurately and completely lists, as of the Fourth Effective Date, for the Borrower and each of its Subsidiaries, all Material Communications Licences (and the expiration dates thereof) granted or assigned to the Borrower or any Subsidiary, including, without limitation for:

(i) each Satellite owned by the Borrower or any of its Subsidiaries, all space station licences or authorisations, including placement on the FCC's "*Permitted Space Station List*" for operation of Satellites with C-band links issued or granted by the FCC or the ANFR to the Borrower or any of its Subsidiaries; and

(ii) for each Earth Station of the Borrower and its Subsidiaries.

(b) The Communications Licences set out in Schedule 15 (*Communication Licences*) include all material authorisations, licences and permits issued by the FCC, the ANFR or any other Governmental Authority that are required or necessary for the operation and the conduct of the business of the Borrower and its Subsidiaries, as conducted as of the Fourth Effective Date.

(c) Each Communications Licence is expected to be renewed and the Borrower knows of no reason why such Communications Licence would not be renewed.

(d) The Borrower and its Subsidiaries have filed all material applications with the FCC or the ANFR necessary for the Launch and operation of the Borrower's second-generation satellite constellation and the Borrower is not aware of any reason why such applications should not be granted.

(e) Each Communications Licence set out in Schedule 15 (*Communication Licences*) is issued in the name of the Subsidiary indicated on such schedule.

(f) Each Material Communications Licence is in full force and effect.

(g) The Borrower has no knowledge of any condition imposed by the FCC, the ANFR or any other Governmental Authority as part of any Communications Licence which is neither set forth on the face thereof as issued by the FCC, the ANFR or any other Governmental Authority nor contained in the rules and regulations of the FCC, the ANFR or any other Governmental Authority applicable generally to telecommunications activities of the type, nature, class or location of the activities in question.

(h) Each applicable location of the Borrower or any of its Subsidiaries has been and is being operated in all material respects in accordance with the terms and conditions of the

Communications Licence applicable to it and Applicable Law, including but not limited to the Communications Act and the rules and regulations issues thereunder.

(i) No proceedings are pending or, to the Borrower's knowledge are, threatened which may result in the loss, revocation, modification, non-renewal, suspension or termination of any Communications Licence, the issuance of any cease and desist order or the imposition of any fines, forfeitures or other administrative actions by the FCC, the ANFR or any other Governmental Authority with respect to any operations of the Borrower and its Subsidiaries, which in any case could reasonably be expected to have a Material Adverse Effect.

18.23 Satellites

(a) All Satellites are owned by the Borrower or a Subsidiary that is an Obligor.

(b) Schedule 16 (*Satellites*) accurately and completely lists as of the Fourth Effective Date, the flight model number of each of the Satellites owned by the Borrower and its Subsidiaries, and for each Satellite whether it is operational in-orbit or spare in-orbit.

18.24 Permitted Peruvian Acquisition

(a) The Acquisition Document contains all the terms of the Permitted Peruvian Acquisition.

(b) Peruvian TargetCo has no material liabilities and has not engaged in any business operations prior to the date of the Acquisition Document.

18.25 Pari Passu Ranking

Each Obligor's payment obligations under the Finance Documents rank at least *pari passu* with the claims of all its unsecured and unsubordinated creditors, except for obligations mandatorily preferred by law applying to companies generally.

18.26 Anti-bribery, Anti-corruption and Anti-money Laundering

None of the Obligors nor any of their Subsidiaries, directors or officers, or, to the best knowledge of each Obligor, any affiliate, agent or employee of it, has engaged in any activity or conduct which would violate any anti-bribery, anti-corruption or anti-money laundering laws, regulations or rules that are applicable to it in any applicable jurisdiction and each Obligor has instituted and maintains policies and procedures designed to prevent violation of such laws, regulations and rules.

18.27 Sanctions

None of the Obligors, any of their Subsidiaries, directors or officers, or, to the best knowledge of each Obligor, any affiliate, agent or employee each Obligor, is an individual or entity (a "**Person**"), that is, or is owned or controlled by Persons that are:

(a) the target of any Sanctions (a "**Sanctioned Person**"); or

(b) located, organised or resident in a country or territory that is, or whose government is, the subject of Sanctions broadly prohibiting dealings with such government, country or territory (a "**Sanctioned Country**").

18.28 Governing Law and Enforcement

(a) Subject to the Reservations, the choice of governing law of the Finance Documents will be recognised and enforced in its jurisdiction of incorporation.

(b) Subject to the Reservations, any judgment obtained in relation to a Finance Document in the jurisdiction of the governing law of that Finance Document will be recognised and enforced in its jurisdiction of incorporation.

18.29 No Filing or Stamp Taxes

Under:

(a) the laws of the Borrower's or any of its Subsidiaries' jurisdiction of incorporation; and

(b) the federal laws of the United States,

it is not necessary that the Finance Documents be filed, recorded or enrolled with any court or other authority in that jurisdiction or that any stamp, registration, notarial or similar Taxes or fees be paid on or in relation to the Finance Documents or the transactions contemplated by the Finance Documents other than:

(i) delivery of proper financing statements (Form UCC-1 or such other financing statements or similar notices as shall be required by Applicable Law) fully executed for filing under the UCC or other appropriate filing offices of each jurisdiction as may be necessary to perfect a Lien purported to be created by a Security Document; and

(ii) any recording with the United States Patent and Trademark Office and/or Copyright Office to perfect the Liens on intellectual property created by the Collateral Agreement,

which registrations, filings and fees will be made and paid promptly after the date of the relevant Finance Document.

18.30 Deduction of Tax

It is not required to make any deduction for or on account of Tax from any payment it may make under any Finance Document.

18.31 No Default

(a) No Event of Default and, on the Fourth Effective Date, no Default is continuing or is reasonably likely to result from the making of any Loan or the entry into, the performance of, or any transaction contemplated by, any Transaction Document.

(b) No other event or circumstance is outstanding which constitutes (or, with the expiry of a grace period, the giving of notice, the making of any determination or any combination of any of the foregoing, would constitute) a default or termination event (however described) under the Transaction Documents, which has not been waived by the relevant parties hereto.

(c) No other event or circumstance is outstanding which constitutes (or, with the expiry of a grace period, the giving of notice, the making of any determination or any combination of any of the foregoing, would constitute) a default or termination event (however described) under any other agreement or instrument which is binding on it or any of its Subsidiaries or to which its (or any of its Subsidiaries) assets are subject which has or is reasonably likely to have a Material Adverse Effect.

18.32 No Misleading Information

(a) All factual information provided in writing by it to the Lenders was true, complete and accurate in all material respects to the best of its knowledge and belief as at the date it was provided or as at the date (if any) at which it is stated.

(b) All financial projections provided by it have been prepared on the basis of recent historical information and on the basis of reasonable assumptions (in the case of projections made by third parties, to the best of its knowledge and belief).

(c) To the best of its knowledge and belief, no material information has been given or withheld by it that results in any information provided to the Lenders by it being incomplete, untrue or misleading in any material respect.

18.33 Group Structure Chart

The Group Structure Chart set out at Schedule 23 (*Group Structure Chart*) is true, complete and accurate in all material respects.

18.34 No Immunity

None of the members of the Group or any of their assets is entitled to immunity from suit, execution, attachment or other legal process.

18.35 Tax Returns and Payments

(a) Each of the Borrower and its Subsidiaries has timely filed with the appropriate taxing authority, all returns, statements, forms and reports for taxes (the "**Returns**") required to be filed by or with respect to the income, properties or operations of the Borrower and/or any of its Subsidiaries.

(b) The Returns accurately reflect in all material respects all liability for taxes of the Borrower and its Subsidiaries as a whole for the periods covered thereby.

(c) The Borrower and each of its Subsidiaries have paid all taxes payable by them other than those contested in good faith and adequately disclosed and for which adequate reserves have been established in accordance with generally accepted accounting principles.

(d) There is no action, suit, proceeding, investigation, audit, or claim now pending or, to the best knowledge of the Borrower or any of its Subsidiaries, threatened by any authority regarding any taxes relating to the Borrower or any of its Subsidiaries which, if adversely determined, could reasonably be expected to have a Material Adverse Effect.

(e) Neither the Borrower nor any of its Subsidiaries has entered into an agreement or waiver or been requested to enter into an agreement or waiver extending any statute of limitations relating to the payment or collection of taxes of the Borrower or any of its Subsidiaries, or is aware of any circumstances that would cause the taxable years or other taxable periods of the Borrower or any of its Subsidiaries not to be subject to the normally applicable statute of limitations.

18.36 Commercial Contracts

As of the Fourth Effective Date, the Borrower has not exercised the "*Optional Launches*" (as such term is defined in the Launch Services Contract) pursuant to the Launch Services Contract.

18.37 Notes and First Terrapin Purchase Agreement

(a) All obligations owed to the holders of the 8% Old Notes or the 5% Notes:

(i) are, subject to the Reservations, the legal, valid, binding and enforceable obligations of the Borrower; and

(ii) are and shall remain fully subordinated to the repayment in full of the indebtedness under this Agreement on the terms set out in the relevant documentation (irrespective of whether the maturity date of the relevant notes has occurred and irrespective of whether the Final Maturity Date is amended from time to time) and such obligations have not been terminated or otherwise cancelled by the relevant holders of such notes.

(b) The obligations of the Borrower and Terrapin under the First Terrapin Purchase Agreement:

(i) are, subject to the Reservations, the legal, valid, binding and enforceable obligations of the Borrower, and, to the best of the Borrower's knowledge, Terrapin; and

(ii) have not been repudiated, terminated or otherwise cancelled by the Borrower or Terrapin and there is no breach thereunder by either party thereto.

(c) The Borrower represents that, to the best of its knowledge, the amount of notes held by each of the Borrower, Thermo, any Subsidiary Guarantor and James Monroe III in respect of the 8% Old Notes and the 5% Notes has not changed since the date of the First Global Deed of Amendment and Restatement, and that no such party has entered into any written agreement, side letter, undertaking or understanding relating to such person's ownership of or control of any voting or economic rights associated with the 8% Old Notes or the 5% Notes since the date of the First Global Deed of Amendment and Restatement.

18.38 Repetition

(a) The Repeating Representations are made by the Borrower by reference to the facts and circumstances then existing on:

(i) the date of each Utilisation Request;

(ii) each Utilisation Date; and

(iii) the first day of each Interest Period.

(b) The representation in Clause 18.32 (*No Misleading Information*) shall be deemed to be repeated by the Borrower by reference to the facts and circumstances then existing on each date any information is delivered to the BPIFAE Agent pursuant to Clause 19.3 (*Annual Business Plan and Financial Projections*), Clause 19.5(d) (*Other Reports*) and Clause 19.14 (*Spectrum Plan*).

19. Information Undertakings

The undertakings in this Clause 19 (*Information Undertakings*) remain in force from the date of this Agreement for so long as any amount is outstanding under the Finance Documents or any Commitment is in force. The Borrower will furnish, or cause to be furnished, to the BPIFAE Agent the information required by this Clause 19 (*Information Undertakings*) in sufficient copies for all the Lenders.

19.1 Quarterly Financial Statements

(a) As soon as practicable and in any event within forty five (45) days after the end of each of the first three (3) fiscal quarters of each Fiscal Year (and in the case of paragraph (v) only, after the end of each fiscal quarter of each Fiscal Year) (or, if the date of any required public filing is earlier, no later than the date that is the fifth Business Day immediately following the date of any required public filing thereof after giving effect to any extensions granted with respect to such date):

(i) Form 10-Q;

(ii) an unaudited Consolidated balance sheet of the Borrower and its Subsidiaries as of the close of such fiscal quarter;

(iii) the notes (if any) relating to any of the financial statements delivered under this Clause 19.1;

(iv) unaudited Consolidated statements of income, retained earnings and cash flows;

(v) a report with respect to the Borrower's key performance indicators in substantially the same form as Schedule 19 (*Key Performance Indicators*); and

(vi) a report containing management's discussion and analysis of such financial statements for the fiscal quarter then ended and that portion of the Fiscal Year then ended,

all in reasonable detail setting forth in comparative form the corresponding figures as of the end of and for the corresponding period in the preceding Fiscal Year and prepared by the Borrower in accordance with GAAP and, if applicable, containing disclosure of the effect on the financial position or results of operations of any change in the application of accounting principles and practices during the period, and certified by the chief financial officer of the Borrower to present fairly in all material respects the financial condition of the Borrower and its Subsidiaries on a Consolidated basis as of their

respective dates and the results of operations of the Borrower and its Subsidiaries for the respective periods then ended, subject to normal year-end adjustments.

(b) Upon request by the BPIFAE Agent and at the cost of the Borrower, the Borrower shall procure that the Group's management shall meet in person or by telephone (as the Lenders shall require) with the Lenders on a quarterly basis in order to discuss key strategic, operational, Capital Expenditure, market pricing, customer, distributor and regulatory issues.

19.2 Annual Financial Statements

(a) As soon as practicable and in any event within ninety (90) days after the end of each Fiscal Year (or, if the date of any required public filing is earlier, the date that is no later than the fifth Business Day immediately following the date of any required public filing thereof after giving effect to any extensions granted with respect to such date):

(i) Form 10-K;

(ii) an audited Consolidated balance sheet of the Borrower and its Subsidiaries as of the close of such Fiscal Year;

(iii) the notes (if any) relating to any of the financial statements delivered under this Clause 19.2;

(iv) audited Consolidated statements of income, retained earnings and cash flows; and

(v) a report containing management's discussion and analysis of such financial statements for the Fiscal Year then ended,

all in reasonable detail setting forth in comparative form the corresponding figures as of the end of and for the preceding Fiscal Year and prepared in accordance with GAAP and, if applicable, containing disclosure of the effect on the financial position or results of operations of any change in the application of accounting principles and practices during the year.

(b) Such annual financial statements shall be audited by the independent certified public accounting firm separately notified to the BPIFAE Agent prior to the date of this Agreement or such other firm notified to the BPIFAE Agent (and acceptable to the BPIFAE Agent), and accompanied by a report thereon by such certified public accountants that is not qualified with respect to scope limitations imposed by the Borrower or any of its Subsidiaries or with respect to accounting principles followed by the Borrower or any of its Subsidiaries not in accordance with GAAP.

19.3 Annual Business Plan and Financial Projections

(a) As soon as practicable and in any event no later than 31 March in any calendar year, a draft updated business plan of the Borrower and its Subsidiaries for the ensuing four (4) fiscal quarters ("**Draft Business Plan**"), such Draft Business Plan to be in substantially the same form as the Agreed Business Plan delivered to the BPIFAE Agent

on or prior to the First Effective Date and prepared, to the extent applicable, in accordance with GAAP and to include, on a quarterly basis, the following:

(i) information relating to the amounts outstanding under the Convertible Notes;

(ii) an operating and capital budget in respect of the next three (3) succeeding Fiscal Years;

(iii) a projected income statement;

(iv) a statement of cash flows on a three (3) year projected basis (including, calculations (in reasonable detail) demonstrating compliance with each of the financial covenants set out in Clause 20 (*Financial Covenants*)) and balance sheet; and

(v) a report setting forth management's operating and financial assumptions underlying such projections.

(b) The BPIFAE Agent shall no later than twenty (20) Business Days after receipt of the Draft Business Plan provide to the Borrower:

(i) any comments and/or proposed amendments to the Draft Business Plan; or

(ii) a confirmation that the Draft Business Plan is the Agreed Business Plan.

(c) Subject to paragraph (e) below, in the case of paragraph (b)(i) above, the Borrower shall, in good faith, consider any such comments and/or proposed amendments to the Draft Business Plan and, within five (5) Business Days, confirm to the BPIFAE Agent whether or not the comments and/or amendments proposed by the BPIFAE Agent have been accepted by the Borrower. If such comments and/or proposed amendments are:

(i) agreed by the Borrower, the Draft Business Plan shall constitute the then current Agreed Business Plan; and

(ii) not agreed by the Borrower, then the Borrower, the Lenders and, to the extent applicable, any Financial Advisor, shall consult, for a period not exceeding five (5) Business Days (the "**Consultation Period**"), in good faith in order to agree the Draft Business Plan.

(d) Subject to paragraph (e) below, in the case of paragraph (c)(ii) above, following the end of the Consultation Period the Draft Business Plan agreed to by the Borrower shall constitute the then current Agreed Business Plan.

(e) Any:

(i) projections contained in the Draft Business Plan and referred to in the definition of "*Adjusted Consolidated EBITDA*";

(ii) level of Permitted Vendor Indebtedness and cash paying Subordinated Indebtedness referred to in Clause 20.5 (*Net Debt to Adjusted Consolidated EBITDA*) and contained in the Draft Business Plan;

(iii) material known contingent liability related to any litigation, arbitration, administrative, governmental, regulatory or other investigations, proceedings or disputes referred to in Clause 23.13(b) (*Litigation*) contemplated by the Draft Business Plan; and

(iv) change in a Draft Business Plan to the amount of Financial Indebtedness that may be incurred by the Borrower in connection with cash paying Subordinated Indebtedness above the amounts set out in the Agreed Business Plan delivered on or prior to the First Effective Date,

must be satisfactory in all respects to the BPIFAE Agent. Notwithstanding the foregoing, if following the end of the Consultation Period the Borrower and the BPIFAE Agent are unable to agree on any of the items in the Draft Business Plan referred to in this paragraph (e) then the matter shall be referred to a Financial Advisor in accordance with paragraph (f).

(f) If a dispute exists pursuant to paragraph (e) above then the outstanding issue will be resolved by the Financial Advisor which shall:

(i) act as an expert and not as an arbitrator; and

(ii) be required to determine the matter referred to them within fifteen (15) Business Days of the referral having been made.

(g) Upon the decision of a Financial Advisor, the Draft Business Plan shall be updated by the Borrower to reflect such determination, and the revised Draft Business Plan shall constitute the Agreed Business Plan.

(h) Following the Draft Business Plan becoming the Agreed Business Plan, the Borrower shall deliver promptly to the BPIFAE Agent the Agreed Business Plan accompanied by a certificate from a Responsible Officer of the Borrower to the effect that, to the best of such officer's knowledge, such projections are estimates made in good faith (based on reasonable assumptions) of the financial condition and operations of the Borrower and its Subsidiaries for such four (4) fiscal quarter period and in relation to the operating and capital budget, in respect of the next three (3) succeeding Fiscal Years.

19.4 Compliance Certificate

At each time:

(a) financial statements are delivered pursuant to Clause 19.1 (*Quarterly Financial Statements*) or Clause 19.2 (*Annual Financial Statements*);

(b) the information and other documentation is delivered pursuant to Clause 19.3(h) (*Annual Business Plan and Financial Projections*); and

(c) at such other times as the BPIFAE Agent shall reasonably request,

a Compliance Certificate signed by a Responsible Officer and, solely in the case of paragraph (a) above, accompanied by a report from the auditors of the Borrower in substantially the form set out in Schedule 32 (*Form of Auditors Report*) or such other form as shall be acceptable to

the BPIFAE Agent, confirming compliance by the Borrower with each of the financial covenants set out in Clause 20 (*Financial Covenants*) together with, for the fiscal period covered by such financial statements or information (as the case may be):

(i) an Adjusted Consolidated EBITDA Reconciliation;

(ii) a reconciliation of the Excess Cash Flow;

(iii) details of all Spectrum Cash Flow and Spectrum Sales;

(iv) details of all relevant amounts for the purposes of the calculation of the cash sweeps set out in Clauses 7.3 (*Mandatory Prepayment – Cash Sweep of Spectrum Cash Flow*), 7.4 (*Mandatory Prepayment – Excess Cash Flow*) 7.8 (*Mandatory Prepayment – Cash Sweep Following Spectrum Sale*) and 7.9 (*Mandatory Prepayment – Cash Sweep Following Equity Issuance and Debt Issuance*); and

(v) details of the shareholders of record of the Borrower.

19.5 Other Reports

(a) Upon request by the BPIFAE Agent, copies of all relevant public documents required by its independent public accountants in connection with their auditing function, including, without limitation, any management report and any management responses thereto.

(b) As soon as practicable and in any event no later than 31 March in any calendar year, and at any time upon the reasonable request of the BPIFAE Agent, a Satellite health report prepared by the Borrower and certified by a Responsible Officer setting forth the operational status of each Satellite (other than Satellites yet to be launched) based on reasonable assumptions of the Borrower made in good faith and including such information with respect to the projected solar array life based on the total Satellite power requirements, projected battery life based on total Satellite power requirements, projected Satellite life, information concerning the availability of spare Satellites and such other information pertinent to the operation of such Satellite as the BPIFAE Agent may reasonably request, it being understood that to the extent that any such Satellite health report contains any forward looking statements, estimates or projections, such statements, estimates or projections are subject to significant uncertainties and contingencies, many of which are beyond the Borrower's control, and no assurance can be given that such forward looking statements, estimates or projections will be realised, *provided that* nothing in this paragraph (b) shall require the Borrower to deliver any information to any Lender to the extent delivery of such information is restricted by applicable law or regulation.

(c) No less than quarterly, a Satellite health report prepared by the Borrower and certified by a Responsible Officer including the following:

(i) details of the operational status of each Satellite (other than Satellites yet to be launched) based on reasonable assumptions of the Borrower made in good faith

and in substantially the same form contained in Schedule 30 (*Form of Quarterly Health Report*); and

(ii) a letter providing details of any material or unusual events that have occurred with respect to the Satellites since the delivery to the BPIFAE Agent of the last quarterly report.

(d) No later than the Reporting Date, a report prepared by the Borrower and certified by a Responsible Officer with respect to the business of the Group including (but not limited to) details of the following matters:

(i) network service levels;

(ii) the status of all material processes and negotiations with the FCC and/or ANFR (as the case may be) relating to terrestrial Authorisations;

(iii) any Asset Dispositions (*but excluding* any Spectrum Sale and any disposal of inventory in the ordinary course of trading (but including any disposal of obsolete, damaged, worn-out or surplus assets)) from the previous month;

(iv) an update to the then applicable Spectrum Plan including any Spectrum Sale or proposed monetisation of the Group's Spectrum rights (including an update and commentary on any relevant process and any key events that have either occurred or are scheduled to occur) together with updated detail on any Spectrum expenditure (both Capital Expenditure and Operating Expenditure) incurred to date, or forecast to be incurred, including a reconciliation of such expenditure against the then applicable Spectrum Plan and compliance with Clause 22.19 (*Expenditure on Group Spectrum Rights*);

(v) any Equity Issuances, any Debt Issuances or any issuances of Subordinated Indebtedness;

(vi) any update on the status of any negotiations with the Supplier in connection with any material dispute between the Borrower and the Supplier;

(vii) any planned new gateway or Earth Station developments;

(viii) further material expansion into the Latin American market;

(ix) updates with respect to any material new products;

(x) compliance with the Agreed Business Plan (as updated on an annual basis in accordance with Clause 19.3 (*Annual Business Plan and Financial Projections*));

(xi) any Material Contract that the Borrower has entered into (together with a copy thereof);

(xii) progress reports in respect of the Hughes and Ericsson ground station upgrades;

(xiii) prior to 30 November 2020, an update as to the status of the 2021 Equity Issuance (including an update and commentary on any relevant process and any key events that have either occurred or are scheduled to occur);

(xiv) solely in relation to the Monthly Report that relates to January 2021, the Borrower shall include all relevant material information (including potential equity subscribers) that evidences, and pertains to, the proposed 2021 Equity Issuance;

(xv) a Cash Movements Summary Report together with a certificate from a Responsible Officer of the Borrower confirming that the Borrower has complied with the terms of the Accounts Agreement;

(xvi) solely in relation to the Monthly Report that relates to September 2020, any such Monthly Report shall contain a summary (together with supporting information) of the Borrower's plans to ensure no Default arises pursuant to Clause 23.28 (*2021 Equity Issuance*) in form and substance satisfactory to the BPIFAE Agent (acting reasonably);

(xvii) solely in relation to the Monthly Report that relates to January 2021, such Monthly Report shall contain, in sufficient detail (as determined by the BPIFAE Agent (acting reasonably), the amount, form and proposed participants of the 2021 Equity Issuance (and, if it is reasonably likely that the 2021 Equity Issuance will occur on a date falling prior to 30 March 2021, the Borrower shall provide the information referred to in paragraphs (d)(xvi) and (xvii) in such earlier Monthly Reports as the BPIFAE Agent many request);

(xviii) confirmation of the identity of any advisor appointed to assist the Borrower in the 2021 Equity Issuance and delivery in sufficient detail (as determined by the BPIFAE Agent (acting reasonably), of the amount, form and the identity of the proposed participants of the 2021 Equity Issuance (and, if it is reasonably likely that the 2021 Equity Issuance will occur on a date falling prior to 30 March 2021, the Borrower shall provide the information referred to in this paragraph (d)(xvi) and paragraph (d)(xvii) in such earlier Monthly Reports as the BPIFAE Agent may request);

(xix) the amount of any cash payments made pursuant to the Relevant EIPs in the Month to which the Monthly Report relates (together with a confirmation as to the amounts in aggregate paid pursuant to the Relevant EIPs in the then current Financial Year); and

(xx) any other matters or events which are likely to have a material effect (positive or negative) on the Group's operations, prospects and results of operations *provided that* a failure to report on a matter pursuant to this paragraph (d)(xx) shall not constitute an Event of Default if such failure does not have, or could not reasonably be expected to have, a Material Adverse Effect,

(the "**Monthly Report**").

(e) Such other information regarding the operations, business affairs and financial condition of the Borrower or any of its Subsidiaries as the BPIFAE Agent or any Lender may reasonably request, including, to the extent not already provided, delivery by the Borrower of certified copies of all agreements, instruments, filings and other documents necessary, or otherwise reasonably requested by the BPIFAE Agent, in order to effect the Equity Commitments in accordance with the provisions of the First Global Deed of Amendment and Restatement, the Second Global Amendment and Restatement Agreement or the Third Global Amendment and Restatement Agreement, as applicable.

19.6 Notice of Litigation and Other Matters

Promptly (but in no event later than ten (10) Business Days after any Responsible Officer of the Borrower obtains knowledge thereof) written notice of:

(a) all documents dispatched by the Borrower to all of its stockholders (or any class thereof) or its creditors generally at the same time as they are dispatched;

(b) the commencement of all proceedings and investigations by or before any Governmental Authority and all actions and proceedings in any court or before any arbitrator against or involving the Borrower or any Subsidiary thereof or any of their respective properties, assets or businesses that if adversely determined could reasonably be expected to result in a Material Adverse Effect;

(c) any notice of any violation received by the Borrower or any Subsidiary thereof from any Governmental Authority including, without limitation:

(i) any notice of violation of any Environmental Law and the details of any environmental claim, litigation, arbitration or administrative proceedings which are current, threatened or pending against any member of the Group; and

(ii) any other notice of violation which in each case could reasonably be expected to have a Material Adverse Effect;

(d) any labour controversy that has resulted in a strike or other work action against the Borrower or any Subsidiary thereof which in each case could reasonably be expected to have a Material Adverse Effect;

(e) any attachment, judgment, lien, levy or order exceeding US$1,000,000 that has been assessed against the Borrower or any Subsidiary thereof;

(f) any claim for *force majeure* (howsoever described) by a party under a Commercial Contract;

(g) details of:

(i) any delay which has a duration exceeding three (3) Months, to the construction and scheduled delivery dates of the Satellites under the Satellite Construction Contract (as delivered pursuant to Schedule 2 (*Conditions Precedent*));

(ii) any event which could reasonably be expected to result in the last Launch occurring later than the fourth fiscal quarter of 2010; and

(iii) suspension, interruption, cancellation or termination of a Commercial Contract;

(h) any amendments or modifications to a Commercial Contract, together with a copy of such amendment;

(i) any Default or Event of Default;

(j) any event which constitutes or which with the passage of time or giving of notice or both would constitute a default or event of default under any Material Contract to which the Borrower or any of its Subsidiaries is a party or by which the Borrower or any Subsidiary thereof or any of their respective properties may be bound which could reasonably be expected to have a Material Adverse Effect;

(k) any unfavourable determination letter from the US Internal Revenue Service regarding the qualification of an Employee Benefit Plan under Section 401(a) of the Code (along with a copy thereof);

(l) a copy of each Internal Revenue Service Form 5500 (including the Schedule B or such other schedule as contains actuarial information) filed in respect of a Pension Plan with Unfunded Pension Liabilities;

(m) any Obligor or ERISA Affiliate obtaining knowledge or a reason to know that any ERISA Termination Event has occurred or is reasonably expected to occur, a certificate of any Responsible Officer of the Borrower describing such ERISA Termination Event and the action, if any, proposed to be taken with respect to such ERISA Termination Event and a copy of any notice filed with the PBGC or the Internal Revenue Service pertaining to such ERISA Termination Event and any notices received by such Obligor or ERISA Affiliate from the PBGC, any other governmental agency or any Multiemployer Plan sponsor with respect thereto; provided that in the case of ERISA Termination Events under paragraph (c) of the definition thereof, in no event shall notice be given later than the occurrence of the ERISA Termination Event;

(n) any Obligor or ERISA Affiliate obtaining knowledge or a reason to know of:

(i) a material increase in Unfunded Pension Liabilities (taking into account only Pension Plans with positive Unfunded Pension Liabilities) since the date the representations hereunder are given or deemed given, or from any prior notice, as applicable;

(ii) the existence of potential withdrawal liability under Section 4201 of ERISA, if each Obligor and ERISA Affiliate were to withdraw completely from any and all Multiemployer Plans;

(iii) the adoption of, or the commencement of contributions to, any Pension Plan or Multiemployer Plan by any Obligor or ERISA Affiliate, or

(iv) the adoption or amendment of any Pension Plan which results in a material increase in contribution obligations of any Obligor or any ERISA Affiliate, a detailed written description thereof from any Responsible Officer of the Borrower;

(o) if, at any time after the date of this Agreement, any Obligor or any ERISA Affiliate maintains, or contributes to (or incurs an obligation to contribute to), an Employee Benefit Plan or Multiemployer Plan which is not set forth in Schedule 9 (*ERISA Plans*), then the Borrower shall deliver to the BPIFAE Agent an updated Schedule 9 as soon as practicable, and in any event within ten (10) days after such Obligor or ERISA Affiliate maintains or contributes (or incurs an obligation to contribute) thereto; and

(p) if, after the date of the First Global Deed of Amendment and Restatement, and other than with respect to any PIK Interest paid in compliance with the terms of this Agreement, James Monroe III, Thermo, the Borrower, any Subsidiary Guarantor or any of such parties' respective Affiliates (directly, indirectly or beneficially):

(i) acquires ownership or control of any of the 8% New Notes, the 8% Old Notes or the 5% Notes; or

(ii) becomes a party to any written agreement, side-letter, undertaking or understanding relating to such person's ownership of or control of any voting or economic rights associated with the 8% New Notes, the 8% Old Notes or the 5% Notes.

19.7 Notices Concerning Communications Licences

Promptly (but in no event later than ten (10) Business Days after any Responsible Officer of the Borrower obtains knowledge thereof) written notice of:

(a) (i) any citation, notice of violation or order to show cause issued by the FCC, the ANFR or any Governmental Authority with respect to any Material Communications Licence; (ii) if applicable, a copy of any notice or application by the Borrower requesting authority to or notifying the FCC, or the ANFR of its intent to cease telecommunications operations for any period in excess of ten (10) days; or (iii) notice of any other action, proceeding or other dispute, which, if adversely determined, could reasonably be expected to result in the loss or revocation of any Material Communications Licence; and

(b) any lapse, loss, modification, suspension, termination or relinquishment of any Material Communications Licence, permit or other authorisation from the FCC, the ANFR or other Governmental Authority held by the Borrower or any Subsidiary thereof or any failure of the FCC, the ANFR or other Governmental Authority to renew or extend any such Material Communications Licence, permit or other authorisation for the usual period thereof and of any complaint against the Borrower or any of its Subsidiaries or other matter filed with or communicated to the FCC, the ANFR or other Governmental Authority.

19.8 Convertible Notes

The Borrower shall:

(a) provide to the BPIFAE Agent upon its request information relating to the amounts outstanding under any Convertible Notes issued by the Borrower; and

(b) promptly on request, supply to the BPIFAE Agent such further information regarding the Convertible Notes as any Finance Party through the BPIFAE Agent may reasonably request.

19.9 Final In-Orbit Acceptance

The Borrower shall:

(a) provide to the BPIFAE Agent a certificate signed by a Responsible Officer confirming that Final In-Orbit Acceptance has occurred (such certificate to be in form and substance satisfactory to the BPIFAE Agent) within five (5) Business Days following Final In-Orbit Acceptance; and

(b) promptly on request, supply to the BPIFAE Agent such further information regarding Final In-Orbit Acceptance as any Finance Party through the BPIFAE Agent may reasonably request.

19.10 Individual In-Orbit Acceptance

The Borrower shall provide to the BPIFAE Agent a certificate signed by a Responsible Officer confirming that, in respect of the relevant Satellite:

(a) the testing of such Satellite has been completed and the Satellite Performance Criteria has been successfully met in respect of the relevant Satellite, promptly after the completion of such tests; and

(b) Individual In-Orbit Acceptance has occurred not later than five (5) days after achieving Individual In-Orbit Acceptance.

19.11 Equity Cure Contribution

The Borrower shall promptly inform the BPIFAE Agent when an Equity Cure Contribution is to be made (including the details of any Equity Issuance or Subordinated Indebtedness being applied for such purpose).

19.12 Use of Websites

(a) The Borrower may satisfy its obligation under this Agreement to deliver any information in relation to those Lenders (the "**Website Lenders**") who accept this method of communication by posting this information onto an electronic website designated by the Borrower and the BPIFAE Agent (the "**Designated Website**") if:

(i) the BPIFAE Agent expressly agrees (after consultation with each of the Lenders) that it will accept communication of the information by this method;

(ii) both the Borrower and the BPIFAE Agent are aware of the address of and any relevant password specifications for the Designated Website; and

(iii) the information is in a format previously agreed between the Borrower and the BPIFAE Agent.

If any Lender (a "**Paper Form Lender**") does not agree to the delivery of information electronically then the BPIFAE Agent shall notify the Borrower accordingly and the Borrower shall supply the information to the BPIFAE Agent (in sufficient copies for each Paper Form Lender) in paper form. In any event the Borrower shall supply the BPIFAE Agent with at least one (1) copy in paper form of any information required to be provided by it.

(b) The BPIFAE Agent shall supply each Website Lender with the address of and any relevant password specifications for the Designated Website following designation of that website by the Borrower and the BPIFAE Agent.

(c) The Borrower shall promptly upon becoming aware of its occurrence notify the BPIFAE Agent if:

(i) the Designated Website cannot be accessed due to technical failure;

(ii) the password specifications for the Designated Website change;

(iii) any new information which is required to be provided under this Agreement is posted onto the Designated Website;

(iv) any existing information which has been provided under this Agreement and posted onto the Designated Website is amended; or

(v) the Borrower becomes aware that the Designated Website or any information posted onto the Designated Website is or has been infected by any electronic virus or similar software.

If the Borrower notifies the BPIFAE Agent under paragraph (c)(i) or paragraph (c)(v) above, all information to be provided by the Borrower under this Agreement after the date of that notice shall be supplied in paper form unless and until the BPIFAE Agent and each Website Lender is satisfied that the circumstances giving rise to the notification are no longer continuing.

(d) Any Website Lender may request, through the BPIFAE Agent, one (1) paper copy of any information required to be provided under this Agreement which is posted onto the Designated Website. The Borrower shall comply with any such request within ten (10) Business Days.

19.13 "*Know your Customer*" Checks

(a) If:

(i) the introduction of or any change in (or in the interpretation, administration or application of) any Applicable Law made after the date of this Agreement;

(ii) any change in the status of any Obligor after the date of this Agreement; or

(iii) a proposed assignment or transfer by a Lender of any of its rights and obligations under this Agreement to a party that is not a Lender prior to such assignment or transfer,

obliges the BPIFAE Agent or any Lender (or, in the case of paragraph (iii) above, any prospective new Lender) to comply with "*know your customer*" or similar identification procedures in circumstances where the necessary information is not already available to it, the Borrower shall procure that each Obligor shall promptly upon the request of the BPIFAE Agent or any Lender supply, or procure the supply of, such documentation and other evidence as is reasonably requested by the BPIFAE Agent (for itself or on behalf of any Lender) or any Lender (for itself or, in the case of the event described in paragraph (iii) above, on behalf of any prospective new Lender) in order for the BPIFAE Agent, such Lender or, in the case of the event described in paragraph (iii) above, any prospective new Lender to carry out and be satisfied it has complied with all necessary "*know your customer*" or other similar checks under all Applicable Laws pursuant to the transactions contemplated in the Finance Documents.

(b) Each Lender shall promptly upon the request of the BPIFAE Agent supply, or procure the supply of, such documentation and other evidence as is reasonably requested by the BPIFAE Agent (for itself) in order for the BPIFAE Agent to carry out and be satisfied it has complied with all necessary "*know your customer*" or other similar checks under all Applicable Laws pursuant to the transactions contemplated in the Finance Documents.

(c) The Borrower shall:

(i) on and from 1 January 2021 to the date that is 3 Business Days prior to the 2021 Equity Issuance, promptly notify the BPIFAE Agent of any change to the identity of a proposed participant in the 2021 Equity Issuance promptly upon the Borrower becoming aware of the same; and

(ii) confirm at least 3 Business Days prior to the 2021 Equity Issuance, the identity of the actual participants in the 2021 Equity Issuance.

19.14 Spectrum Plan

(a) As soon as practicable and in any event no later than 30 June 2017, the Borrower shall deliver to the BPIFAE Agent the Spectrum Plan (in a form pre-agreed with the BPIFAE Agent (acting reasonably)) setting out in reasonable detail its plan to monetise its Spectrum rights, such Spectrum Plan to include:

(i) details of the expenditure (including both Capital Expenditure and Operating Expenditure) it forecasts to incur in connection with the Group's Spectrum rights, and the source of funds that it proposes to apply towards payment of such expenditure; and

(ii) details regarding its process for engaging with potential strategic partners.

(b) The Spectrum Plan delivered pursuant to paragraph (a) above shall be updated each Month by the Monthly Report in accordance with Clause 19.5(d)(iv) (*Other Reports*).

(c) If requested by the BPIFAE Agent following the delivery of a Monthly Report, the Borrower shall make itself available promptly to discuss with the Finance Parties and

the Financial Advisor the contents of the Spectrum Plan (as updated by the Monthly Report) together with any other issues relating thereto.

(d) The Borrower shall, in good faith, consider any comments and/or proposed amendments to the Spectrum Plan (as updated by a Monthly Report) made by a Finance Party or the Financial Advisor and, to the extent that any such comments and/or amendments are agreed by the Borrower (acting reasonably), it shall update the Spectrum Plan to reflect such comments and/or amendments.

20. Financial Covenants

20.1 Maximum Covenant Capital Expenditures

(a) Subject to paragraph (b) below, the Borrower (and its Subsidiaries on a Consolidated basis) will not permit the aggregate amount of all Covenant Capital Expenditures in any Relevant Period to exceed the amount set out in column 4 entitled "*Maximum Capex Covenant D*" in the table contained in Part A (*Maximum Covenant Capital Expenditures*) of Schedule 4 (*Maximum Covenant Capital Expenditures*).

(b) If, in any Relevant Period, the Covenant Capital Expenditures referred to in paragraph (a) above are less than the permitted Covenant Capital Expenditures in that Relevant Period, any excess of the permitted amount over the actual amount may be added to the maximum amount of permitted Covenant Capital Expenditures for the next (and subsequent) Relevant Periods *provided that* the Borrower (and its Subsidiaries on a Consolidated basis) shall not, in any one year, rollover an amount in excess of the amount set out in column 6 entitled "*Capex Available for Rollover F*" in the table contained in Part A (*Maximum Covenant Capital Expenditures*) of Schedule 4 (*Maximum Covenant Capital Expenditures*) or, for successive rollovers until 2017, shall not rollover a cumulative amount in excess of the amount set out in column 7 entitled "*Cumulative Rollover C+F*" in the table set out in Part A (*Maximum Covenant Capital Expenditures*) of Schedule 4 (*Maximum Covenant Capital Expenditure*).

(c) Notwithstanding anything in this Agreement to the contrary, up to US$15,516,236 in Capital Stock of the Borrower that has been or will be issued to Hughes during the Fiscal Year of 2015 shall be excluded from any calculation of Covenant Capital Expenditures for the purpose of calculating compliance with this Clause 20.1 (*Maximum Covenant Capital Expenditures*).

20.2 Minimum Liquidity

(a) The Borrower shall at all times maintain a minimum Liquidity of US$4,000,000.

(b) At the end of each Month, the Borrower shall provide to the BPIFAE Agent a report detailing the daily Liquidity amounts for such Month, which daily Liquidity amounts shall be not less than the minimum Liquidity set out in paragraph (a) above.

(c) For the avoidance of doubt, if the Borrower fails to comply with paragraph (a) above it shall deliver a notice to the BPIFAE Agent in accordance with Clause 19.6(i) (*Notice of Litigation and Other Matters*).

20.3 Adjusted Consolidated EBITDA

The Borrower shall ensure that the Adjusted Consolidated EBITDA in respect of any Relevant Period (including (without double-counting) in the calculation of Adjusted Consolidated EBITDA any Equity Cure Contribution made in respect of such period and not including in such calculation any Equity Cure Contribution that was counted towards a calculation of any covenant for any prior Relevant Period) shall not be less than the amount set out in column 2 (*Column 2 – Amount*) below opposite that Relevant Period.

Column 1 – Relevant Period	Column 2 – Amount
Relevant Period commencing on 1 July 2018 and expiring 31 December 2018	US$47,694,042
Relevant Period commencing on 1 January 2019 and expiring 30 June 2019	US$45,509,317
Relevant Period commencing on 1 July 2019 and expiring 31 December 2019	US$21,174,000
Relevant Period commencing on 1 January 2020 and expiring 30 June 2020	US$18,245,000
Relevant Period commencing on 1 July 2020 and expiring 31 December 2020	US$23,755,000
Relevant Period commencing on 1 January 2021 and expiring 30 June 2021	US$20,524,000
Relevant Period commencing on 1 July 2021 and expiring 31 December 2021	US$26,780,000
Relevant Period commencing on 1 January 2022 and expiring 30 June 2022	US$23,417,000
Relevant Period commencing on 1 July 2022 and expiring 31 December 2022	US$30,152,000

20.4 Debt Service Coverage Ratio

The Borrower shall ensure that the Debt Service Coverage Ratio in respect of any Relevant Period (including (without double-counting) any Equity Cure Contribution made in accordance with Clause 23.2(c) (*Financial Covenants*) *provided that* any Equity Cure Contribution shall only be counted in the calculation of Liquidity for such purpose) specified in column 1 (*Column 1 – Relevant Period*) below shall not be less than the ratio set out in column 2 (*Column 2 – Ratio*) below opposite that Relevant Period.

Column 1 - Relevant Period	Column 2 - Ratio
Relevant Period commencing on 1 January 2018 and expiring 31 December 2018	1.00:1
Relevant Period commencing on 1 July 2018 and expiring 30 June 2019	1.00:1
Relevant Period commencing on 1 January 2019 and expiring 31 December 2019	1.00:1
Relevant Period commencing on 1 July 2019 and expiring 30 June 2020	1.00:1
Relevant Period commencing on 1 January 2020 and expiring 31 December 2020	1.00:1
Relevant Period commencing on 1 July 2020 and expiring 30 June 2021	1.00:1
Relevant Period commencing on 1 January 2021 and expiring 31 December 2021	1.00:1
Relevant Period commencing on 1 July 2021 and expiring 30 June 2022	1.00:1
Relevant Period commencing on 1 January 2022 and expiring 31 December 2022	1.00:1

20.5 Net Debt to Adjusted Consolidated EBITDA

The Borrower shall ensure that the ratio of Net Debt to Adjusted Consolidated EBITDA in respect of any Relevant Period (including (without double-counting) any Equity Cure Contribution made in accordance with Clause 23.2(c) (*Financial Covenants*) *provided that* any Equity Cure Contribution shall only be counted in the calculation of Liquidity for such purpose) specified in column 1 (*Column 1 – Relevant Period*) below shall not be greater than the ratio set out in column 2 (*Column 2 – Ratio*) below opposite that Relevant Period.

Column 1 - Relevant Period	Column 2 - Ratio
Relevant Period commencing on 1 January 2018 and expiring 31 December 2018	5.00:1
Relevant Period commencing on 1 July 2018 and expiring 30 June 2019	4.25:1
Relevant Period commencing on 1 January 2019 and expiring 31 December 2019	4.90:1
Relevant Period commencing on 1 July 2019 and expiring 30 June 2020	4.47:1
Relevant Period commencing on 1 January 2020 and expiring 31 December 2020	3.96:1
Relevant Period commencing on 1 July 2020 and expiring 30 June 2021	2.50:1
Relevant Period commencing on 1 January 2021 and expiring 31 December 2021	2.50:1
Relevant Period commencing on 1 July 2021 and expiring 30 June 2022	2.50:1
Relevant Period commencing on 1 January 2022 and expiring 31 December 2022	2.50:1

20.6 Interest Coverage Ratio

The Borrower shall ensure that the ratio of Adjusted Consolidated EBITDA to Consolidated Interest Expense in respect of any Relevant Period (including within Adjusted Consolidated EBITDA (without double counting) any Equity Cure Contribution made in accordance with Clause 23.2 (*Financial Covenants*) in respect of such period and not including any Equity Cure Contribution that was counted towards a calculation of any covenant for any prior Relevant Period) specified in column 1 (*Column 1 – Relevant Period*) below shall not be less than the ratio set out in column 2 (*Column 2 – Ratio*) below opposite that Relevant Period.

Column 1 - Relevant Period	Column 2 - Ratio
Relevant Period commencing on 1 January 2018 and expiring 31 December 2018	3.50:1
Relevant Period commencing on 1 July 2018 and expiring 30 June 2019	3.75:1
Relevant Period commencing on 1 January 2019 and expiring 31 December 2019	1.50:1
Relevant Period commencing on 1 July 2019 and expiring 30 June 2020	2.35:1
Relevant Period commencing on 1 January 2020 and expiring 31 December 2020	3.63:1
Relevant Period commencing on 1 July 2020 and expiring 30 June 2021	3.82:1
Relevant Period commencing on 1 January 2021 and expiring 31 December 2021	4.38:1
Relevant Period commencing on 1 July 2021 and expiring 30 June 2022	5.25:1
Relevant Period commencing on 1 January 2022 and expiring 31 December 2022	5.25:1

20.7 Financial Testing

The financial covenants set out in this Clause 20 (*Financial Covenants*) shall be tested by reference to the most recent set of financial statements delivered for the Relevant Period pursuant to Clause 19 (*Information Undertakings*).

21. Positive Undertakings

The undertakings in this Clause 21 (*Positive Undertakings*) remain in force from the date of this Agreement for so long as any amount is outstanding under the Finance Documents or any Commitment is in force. The Borrower shall, and shall cause each of its Subsidiaries, to comply with the undertakings contained in this Clause 21 (*Positive Undertakings*).

21.1 Compliance with Laws

(a) Observe and remain in compliance in all material respects with all Applicable Laws and maintain in full force and effect all Authorisations, in each case applicable to the conduct of its business except where the failure to do so could not reasonably be expected to have a Material Adverse Effect.

(b) Without limiting the foregoing, the Borrower shall, and shall cause each of its Subsidiaries to, comply in all material respects with all terms and conditions of all Communications Licences and all federal, state and local laws, all rules, regulations and administrative orders of the FCC, state and local commissions or authorities, the ANFR or any other Governmental Authority that are applicable to the Borrower and its Subsidiaries or the telecommunications operations thereof; *provided that* the Borrower or any Subsidiary may dispute in good faith the applicability or requirements of any such matter so long as such dispute could not reasonably be expected to have a Material Adverse Effect.

21.2 Environmental Laws

In addition to and without limiting the generality of Clause 21.1 (*Compliance with Laws*):

(a) comply with, and use reasonable endeavours to ensure such compliance by all tenants and sub-tenants with all applicable Environmental Laws and obtain, comply with and maintain, and use reasonable endeavours to ensure that all tenants and subtenants, obtain, comply with and maintain, any and all Environmental Permits;

(b) conduct and complete all investigations, studies, sampling and testing, and all remedial, removal and other actions required under Environmental Laws, and promptly comply with all lawful orders and directives of any Governmental Authority regarding Environmental Laws; and

(c) defend, indemnify and hold harmless the Finance Parties, and their respective parents, Subsidiaries, Affiliates, employees, agents, officers and directors, from and against any claims, demands, penalties, fines, liabilities, settlements, judgments, damages, costs and expenses of whatever kind or nature known or unknown, contingent or otherwise, arising out of, or in any way relating to the presence of Hazardous Materials, or the violation of, non-compliance with or liability under any Environmental Laws by the Borrower or any such Subsidiary, or any orders, requirements or demands of Governmental Authorities related thereto, including, without limitation, reasonable attorneys' and consultants' fees, investigation and laboratory fees, response costs, court costs and litigation expenses, except to the extent that any of the foregoing directly result from the gross negligence or wilful misconduct of the party seeking indemnification therefor, as determined by a court of competent jurisdiction by final non-appealable judgment.

21.3 Compliance with ERISA

In addition to and without limiting the generality of Clause 21.1 (*Compliance with Laws*) except where the failure to comply could not, individually or in aggregate, reasonably be expected to have a Material Adverse Effect:

(a) comply with all material applicable provisions of ERISA and the Code (including Code provisions compliance with which is necessary for any intended favourable tax treatment) and the regulations and published interpretations respectively thereunder with respect to all Employee Benefit Plans;

(b) not take any action or fail to take action the result of which could be a liability to the PBGC or to a Multiemployer Plan *provided that* this does not require funding of the pension liabilities at a time or in an amount other than as required by Applicable Law;

(c) not participate in any prohibited transaction that could result in any civil penalty under ERISA or tax under the Code;

(d) operate each Employee Benefit Plan in such a manner that will not incur any tax liability under Section 4980B of the Code or any liability to any qualified beneficiary as defined in Section 4980B of the Code; and

(e) furnish to the BPIFAE Agent upon the BPIFAE Agent's request such additional information about any Employee Benefit Plan as may be reasonably requested by the BPIFAE Agent.

21.4 Insurance

(a) Maintain insurance with insurance companies and/or underwriters rated by S&P or AM Best's Rating Agency at no lower than A- against such risks and in such amounts as are:

(i) maintained in accordance with prudent business practice and corporate governance; and

(ii) as may be required by Applicable Law with amounts and scope of coverage not less than those maintained by the Borrower and its Subsidiaries as of the date of this Agreement.

(b) On the date of this Agreement and from time to time thereafter the Borrower shall deliver to the BPIFAE Agent upon its request information in reasonable detail as to the insurance then in effect, stating the names of the insurance companies, the amounts and rates of the insurance, the dates of the expiration thereof and the properties and risks covered thereby, *provided that*, with respect to paragraph (a)(i) only, neither the Borrower nor any of its Subsidiaries shall be required to obtain any insurance against the risk of loss of any in-orbit Satellites or against business interruption risks in addition to or with a broader scope of coverage than is currently maintained by the Borrower and its Subsidiaries as at the date of this Agreement.

(c) In addition to, and without limiting the foregoing, the Borrower will, and will cause each of its Subsidiaries to, maintain insurance with respect to the Satellites as follows:

(i) ***Property All Risks Insurance***

The Borrower will procure or will cause the Supplier to procure at its own expense and maintain in full force and effect, at all times prior to the Launch of any Satellite purchased by the Borrower or any of its Subsidiaries pursuant to the terms of the Satellite Construction Contract, Property All Risks Insurance upon such terms and conditions satisfactory to the BPIFAE Agent and as are reasonably commercially available and customary in the industry which shall cover any loss of, or damage to, the Satellites and the Satellite and Launch specific ground components, including all components thereof, at all times during the manufacture, testing, storage and transportation of the Satellites and the Satellite and Launch specific ground components up to the time of Launch of the Satellites and until delivery to the Borrower of the Satellite and Launch specific ground components.

In no event shall the Borrower or the Supplier be required to maintain or procure Property All Risks Insurance to insure risks that may be required to be insured by, or that covers the same risk or period of coverage provided by the Supplier as the Launch Insurance (as defined below). The Borrower shall cause the Supplier to name BPIFAE, the BPIFAE Agent and the Lenders as additional insured but only to the extent of those persons' interests in such Satellites; and

(ii) ***Launch Insurance***

The Borrower will obtain, maintain and keep in full force and effect with respect to each Satellite that is to be launched, space risk insurance against loss of or damage to the Satellite (including any loss or damage which may occur to a Satellite during the period from Launch until Individual In-Orbit Acceptance) such space risk insurance (hereinafter in this Clause 21.4 "**Launch Insurance**"). Launch Insurance shall be bound no later than three (3) Months prior to the then scheduled Launch date of such Satellite.

The Launch Insurance shall include in-orbit cover providing for:

(x) in the case of the first successful Launch of six (6) Satellites, a six (6) Month stabilisation and performance test period for such six (6) Satellites; and

(y) in the case of each Launch following the first successful Launch, a three (3) Month stabilisation and performance test period for each Satellite remaining to be launched for the first twenty-four (24) Satellites.

Such Launch Insurance shall be in accordance with terms commercially available and reasonably acceptable to the BPIFAE Agent (acting on the instructions of the Majority Lenders) following consultation with the Insurance Consultant. The Borrower shall not be obliged to obtain, maintain or keep in force space risk insurance on any Satellite after termination for that Satellite under the relevant Launch Insurance policy. The Launch Insurance for each Satellite shall:

(A) commence from the time that is the earlier of (i) the time designated by the Launch Services Provider during the launch sequence when the command to ignite is intentionally sent to one of the motors of the Launch Vehicle (as such term is defined in the Launch Services Contract) for the purpose of Launch following a planned countdown; and (ii) the time that the cover with respect to the relevant Satellite being launched expires under the insurance procured by the Supplier;

(B) be denominated in Dollars for an amount not less than US$190,900,000 until the date of the first successful Launch, and thereafter, to be an amount equal to the higher of (i) the replacement cost of a Satellite (including, the purchase price, Launch and Insurances) and (ii) US$146,585,500;

(C) name the applicable Obligor purchasing the Satellite as the named insured and the Security Agent for and on behalf of the Lenders as additional insured and first loss payee in accordance with the Loss Payee Clause up to the amount specified in paragraph (B) above and provide that payments due thereunder

shall be payable directly to the Security Agent as first loss payee ("**Loss Payee**") who, prior to an Event of Default, shall transfer to the Collection Account, for and on behalf of the Lenders, who shall receive in full such payments to be applied in accordance with clause 11 (*Insurance Proceeds Account*) of the Accounts Agreement, including any accrued unpaid interest; provided that claims if any shall be adjusted with the named insured and paid to the Loss Payee; and

(D) provide that it will not be cancelled or reduced (other than a reduction from the payment of a claim) or amended without notice to the BPIFAE Agent. All such notices shall be sent by facsimile and e-mail to the BPIFAE Agent by the insurers at the same time such notices are sent to the Borrower and shall be effective as stated in such notices provided that, fifteen (15) days' advance written notice shall be given in the event of notice of cancellation for non-payment of premium.

The Borrower shall submit evidence of cover satisfactory to the BPIFAE Agent (acting in consultation with the Insurance Consultant), being either the broker's issued policy documentation cover note, binder or policy documents issued by the relevant Insurer (the "**Launch Insurance Documentation**") to the BPIFAE Agent at least ninety (90) days prior to the first scheduled Launch date or, upon written request from the Borrower and subject to the approval of the BPIFAE Agent, such later mutually agreed date based on prevailing market conditions.

The Borrower shall obtain from its insurer providing the Launch Insurance waivers of any subrogation rights against the Supplier (or its sub-contractors) and shall provide evidence of such waivers to the BPIFAE Agent sixty (60) days prior to the Launch of any Satellite and shall provide the BPIFAE Agent with a certificate of such insurance coverage (including the percentage of risks given to such insurer) at the BPIFAE Agent's request.

(iii) ***Third Party Liability Insurance***

The Borrower shall:

(A) cause the Supplier to subscribe before Launch and/or maintain in full force and effect a third party liability insurance for liabilities arising from bodily injury and loss or damage to third party property ("**Third Party Liability Insurance**");

(B) cause the Launch Services Provider to subscribe for and maintain Third Party Liability Insurance coverage for liabilities arising from bodily injury and loss or damage to third party property caused by Satellites after Launch in an amount on an annual basis of not less than an aggregate amount equal to:

(aa) €60,980,000 in respect of a Launch from the Kourou launch site;

(bb) US$100,000,000 in respect of the risks covered under article 15.2.1(ii) of the Launch Services Contract, for Launches from the Baïkonur launch site.

in each case, per occurrence, naming BPIFAE, the BPIFAE Agent and the Lenders as additional insured thereunder. In accordance with the Satellite Construction Contract, the Borrower shall use its best efforts to cause the Launch Services Provider to name the Supplier (and its sub-contractors) as additional insureds under the Launch Services Provider's Third Party Liability Insurance; and

(C) cause the Launch Services Provider to submit a copy of the Third Party Liability Insurance documentation to the BPIFAE Agent as soon as practicable and in any event no less than thirty (30) days prior to the scheduled Launch date for any Launch. Such insurance shall be in full force at the Launch date (as of Intentional Ignition (as such term is defined in the Launch Services Contract)) and shall be maintained for a period equal to the lesser of:

(aa) twelve (12) Months; or

(bb) so long as all or any part of the Launch Vehicle (as such term is defined in the Launch Services Contract), the Satellite(s) and/or their components remain in orbit.

(d) Each insurance policy shall comply with the Lenders' requirements set out in paragraph (e) below and shall be on reasonable terms and conditions and with acceptable exclusions and a reasonable level of deductible acceptable to the BPIFAE Agent (acting on the instructions of the Majority Lenders).

(e) ***General Insurance Provisions and Requirements***

The Borrower shall:

(i) provide, or as appropriate, request the Supplier and/or the Launch Services Provider to deliver to the BPIFAE Agent, promptly after issuance of each relevant Insurance, certificate(s) of internationally recognised insurance broker(s) usually involved in space risk insurance and approved by the Lenders, confirming that:

(A) the Property All Risks Insurance, the Launch Insurance and the Third Party Liability Insurance, as appropriate, are in full force and effect on the date they are respectively required to be entered into force,

(B) the names and percentages of the relevant insurance companies;

(C) the sums insured and expiration dates of such Insurances;

(D) the premia for the Property All Risks Insurance, Launch Insurance and the Third Party Liability Insurances shall be payable by the Borrower, the Supplier and the Launch Services Provider, as applicable, in accordance with the terms of credit agreed for each such Insurance; and

(E) all premia due at the date of such certificate have been paid in full.

(ii) use reasonable efforts (having regard to the terms which are reasonably commercially available in the insurance market) to obtain agreement to incorporate in the Insurances the following provisions or provisions substantially similar in content:

(A) the insurers, either directly or via the insurance broker, and the broker shall also advise the BPIFAE Agent (by facsimile and by e-mail) of any loss or of any default in the payment of any premium and of any event other act or omission on the part of the Borrower, the Supplier and/or the Launch Services Provider, as applicable, of which the broker or the insurers have knowledge and which might result in the invalidation, the lapse or the cancellation in whole or in part of such Insurance;

(B) the BPIFAE Agent and/or the Lenders shall have the right (without any obligation) to pay the insurance premia if the relevant party fails to or delays in making any such payment within the time periods specified in the relevant insurance policies. If any payment of the premia is effected by the BPIFAE Agent and/or the Lenders, the Borrower shall on demand reimburse the BPIFAE Agent and/or the Lenders the amount of any premia so paid and all related costs and expenses;

(C) if the Borrower, the Supplier and/or the Launch Services Provider (as applicable) fails or delays in filing any notice of proof of loss, the BPIFAE Agent shall have the right to join the Borrower, the Supplier and/or the Launch Services Provider (as applicable) in submitting a notice of proof of any loss within the time periods specified in the applicable insurance policies;

(D) the insurers waive:

(aa) all rights of set-off and counterclaim against BPIFAE, the BPIFAE Agent and the Lenders in connection with their rights to make payments under such insurance; and

(bb) all rights of subrogation to the rights of the BPIFAE Agent and the Lenders against the Borrower;

(E) the insurance be primary and not excess to or contributory to any insurance or self-insurance maintained by the Lenders;

(F) the Insurances shall not be permitted to lapse or to be cancelled, without written notice being given by facsimile and e-mail to the BPIFAE Agent at the same time such notices are sent to the Borrower and shall be

effective as stated in such notices *provided that*, fifteen (15) days' advance written notice shall be given by the Borrower in the event of notice of cancellation for non-payment of premium; and

(G) the insurers will undertake, not to make any material modification or amendment to the terms of such insurance policies without the prior written consent of the BPIFAE Agent (acting on the instructions of all the Lenders). For the purpose of this paragraph (G), material modification means a modification such that the insurance as modified would not meet any longer the terms and conditions set out in this Agreement.

21.5 Additional Domestic Subsidiaries

Notify the BPIFAE Agent of the creation or acquisition of any Domestic Subsidiary and promptly thereafter (and in any event within sixty (60) days), cause such person to:

(a) become a Subsidiary Guarantor by delivering to the BPIFAE Agent a duly executed Guarantee Agreement or such other document as the BPIFAE Agent shall deem appropriate for such purpose;

(b) accede to the Second Lien Intercreditor Agreement as a Debtor, a Subordinated Creditor and a Subordinated Debtor (as each such term is defined in the Second Lien Intercreditor Agreement) pursuant to, and in accordance with, the terms of the Second Lien Intercreditor Agreement;

(c) pledge a security interest in all Collateral owned by such Subsidiary (*provided that* if such Collateral consists of Capital Stock of a Foreign Subsidiary, such security interest will be limited to sixty-five *per cent.* (65%) of such Capital Stock (subject to the provisions of clause 3.6 (*Foreign Subsidiaries Security*) of the Stock Pledge Agreement)) by delivering to the BPIFAE Agent a duly executed supplement to each Security Document or such other document as the BPIFAE Agent shall deem appropriate for such purpose and comply with the terms of each Security Document;

(d) deliver to the BPIFAE Agent such documents and certificates referred to in Schedule 2 (*Conditions Precedent*) as may be reasonably requested by the BPIFAE Agent;

(e) deliver to the BPIFAE Agent such original Capital Stock or other certificates and stock or other transfer powers evidencing the Capital Stock of such person;

(f) deliver to the BPIFAE Agent such updated schedules to the Finance Documents as requested by the BPIFAE Agent with respect to such person; and

(g) deliver to the BPIFAE Agent such other documents as may be reasonably requested by the BPIFAE Agent (including, any "*know your customer*" information), all in form, content and scope reasonably satisfactory to the BPIFAE Agent.

21.6 Additional Foreign Subsidiaries

Notify the BPIFAE Agent at the time that any person becomes a Foreign Subsidiary of the Borrower or any Subsidiary, and promptly thereafter (and in any event within sixty (60) days after notification):

(a) with respect to any Subsidiary that is directly owned by an Obligor, cause the Borrower or the applicable Subsidiary to deliver to the BPIFAE Agent a Security Document pledging sixty five *per cent.* (65%) of the total outstanding Capital Stock of such new Foreign Subsidiary (subject to the provisions of clause 3.6 (*Foreign Subsidiaries Security*) of the Stock Pledge Agreement) and a consent thereto executed by such new Foreign Subsidiary (including, without limitation, if applicable, original stock certificates (or the equivalent thereof pursuant to the Applicable Laws and practices of any relevant foreign jurisdiction) evidencing that the Capital Stock of such new Foreign Subsidiary, together with an appropriate undated stock power for each certificate duly executed in blank by the registered owner thereof);

(b) cause such person to deliver to the BPIFAE Agent such documents and certificates referred to in Schedule 2 (*Conditions Precedent*) as may be reasonably requested by the BPIFAE Agent;

(c) cause the Borrower to deliver to the BPIFAE Agent such updated schedules to the Finance Documents as requested by the BPIFAE Agent with regard to such person; and

(d) cause such person to deliver to the BPIFAE Agent such other documents as may be reasonably requested by the BPIFAE Agent, all in form, content and scope reasonably satisfactory to the BPIFAE Agent.

21.7 Additional Communications Licences

Notify the BPIFAE Agent within thirty (30) days after the acquisition of any Material Communications Licence and cause any Communications Licence issued by the FCC or the ANFR that is acquired by the Borrower or any Subsidiary thereof after the date of this Agreement to be held by a Licence Subsidiary.

21.8 Owned Real Property

As soon as practical, and in any event within thirty (30) days following Financial Close (as such date may be extended by the BPIFAE Agent in its reasonable discretion), or at such later time as may be provided below, with respect to all owned real property (to the extent located in the United States) of the Borrower or any of the other Subsidiaries as of the date of this Agreement:

(a) ***Mortgages***

the BPIFAE Agent shall have received a duly authorised, executed and delivered Mortgage in form and substance reasonably satisfactory to the BPIFAE Agent;

(b) ***Title Insurance***

the BPIFAE Agent shall have received upon its written request therefor a marked-up commitment for a policy of title insurance, insuring the Finance Parties' first priority Liens and showing no Liens (other than those Liens set out in items 7 and 8 of Schedule 17 (*Existing Liens*)), prior to the Finance Parties' Liens other than for *ad valorem* taxes

not yet due and payable, with title insurance companies acceptable to the BPIFAE Agent on the property subject to a Mortgage with the final title insurance policy, being delivered within sixty (60) days after the date of this Agreement, as such date may be extended by the BPIFAE Agent in its reasonable discretion. Further, the Borrower agrees to provide or obtain any customary affidavits and indemnities as may be required or necessary to obtain title insurance satisfactory to the BPIFAE Agent;

(c) ***Title Exceptions***

the BPIFAE Agent shall have received upon its written request therefor copies of all recorded documents creating exceptions to the title policy referred to in Clause 21.8(a) (*Mortgages*);

(d) ***Matters Relating to Flood Hazard Properties***

the BPIFAE Agent shall have received upon its written request therefor a certification from the U.S. National Research Centre, or any successor agency thereto, regarding each parcel of real property subject to a Mortgage; and

(e) ***Other Real Property Information***

the BPIFAE Agent shall have received such other certificates, documents and information as are reasonably requested by the BPIFAE Agent, including, without limitation, engineering and structural reports, permanent certificates of occupancy and evidence of zoning compliance, each in form and substance satisfactory to the BPIFAE Agent.

21.9 Leased Real Property

The Borrower shall use reasonable efforts to cause within thirty (30) days following the written request therefor by the BPIFAE Agent (as such date may be extended by the BPIFAE Agent in its reasonable discretion), with respect to all leased real property (to the extent located in the United States) of the Borrower or any of its Subsidiaries as of the date of this Agreement, the BPIFAE Agent to have received a duly authorized, executed and delivered collateral assignment of lease and related landlord agreement, in each case, in form and substance satisfactory thereto.

21.10 After Acquired Real Property Collateral

Notify the BPIFAE Agent, within ten (10) Business Days after the acquisition of any owned or leased real property by any Obligor that is not subject to the existing Security Documents, and within ninety (90) days following request by the BPIFAE Agent, deliver or, in the case of leased real property, use reasonable efforts to deliver, the corresponding documents, instruments and information required to be delivered pursuant to:

(a) Clause 21.8 (*Owned Real Property*) if such real property is owned; or

(b) Clause 21.9 (*Leased Real Property*) if such real property is leased.

21.11 Hedging Agreements

Not later than ninety (90) days after the end of any fiscal quarter during which more than twenty five *per cent.* (25%) of revenues is originally denominated in a single currency other than Dollars

or Canadian Dollars, execute foreign currency exchange or swap Hedging Agreements with the Original Lenders for such currency on terms and conditions reasonably acceptable to the BPIFAE Agent.

21.12 Taxation

(a) Each Obligor shall (and the Borrower shall ensure that each member of the Group will) pay and discharge all Taxes imposed upon it or its assets within the time period allowed without incurring penalties unless and only to the extent that:

(i) such payment is being contested in good faith;

(ii) adequate reserves are being maintained for those Taxes and the costs required to contest them which have been disclosed in its latest financial statements delivered to the BPIFAE Agent under Clause 19 (*Information Undertakings*); and

(iii) such payment can be lawfully withheld and failure to pay those Taxes does not have or is not reasonably likely to have a Material Adverse Effect.

(b) No Obligor may change its residence for Tax purposes.

21.13 Preservation of Assets

The Borrower shall (and shall ensure that each member of the Group will) maintain in good working order and condition (ordinary wear and tear excepted) all of its assets necessary in the conduct of its business.

21.14 *Pari Passu* Ranking

The Borrower shall (and shall ensure that each Obligor will):

(a) procure that its obligations under the Finance Documents to which it is a party do and will rank at least *pari passu* with all its other present and future unsecured, unsubordinated obligations, save for obligations preferred by operation of Applicable Law; and

(b) ensure that at all times the claims of each Finance Party against it under the Finance Documents to which it is a party rank at least *pari passu* with the claims of all its unsecured creditors save those whose claims are preferred by any bankruptcy, insolvency, liquidation or similar Applicable Laws of general application.

21.15 Intellectual Property

The Borrower shall (and shall ensure that each member of the Group will):

(a) preserve and maintain the subsistence and validity of the Intellectual Property necessary for the business of the relevant Group member;

(b) use reasonable endeavours to prevent any infringement in any material respect of the Intellectual Property;

(c) make registrations and pay all registration fees and taxes necessary to maintain the Intellectual Property in full force and effect and record its interest in that Intellectual Property;

(d) not use or permit the Intellectual Property to be used in a way or take any step or omit to take any step in respect of that Intellectual Property which may materially and adversely affect the existence or value of the Intellectual Property or imperil the right of any member of the Group to use such property; and

(e) not discontinue the use of the Intellectual Property,

where failure to do so, in the case of paragraphs (a) and (b) above, or, in the case paragraphs (d) and (e) above, such use, permission to use, omission or discontinuation, is reasonably likely to have a Material Adverse Effect.

21.16 Access

If a Default is continuing or the BPIFAE Agent reasonably suspects a Default is continuing or may occur, each Obligor shall, and the Borrower shall ensure that each member of the Group will permit the BPIFAE Agent and/or the Security Agent and/or accountants or other professional advisers and contractors of the BPIFAE Agent or Security Agent free access at all reasonable times and on reasonable notice at the risk and cost of the Borrower to:

(a) the premises, assets, books, accounts and records of each member of the Group; and

(b) meet and discuss matters with management of the Group.

21.17 Further Assurance

(a) The Borrower shall (and shall procure that each member of the Group will) promptly do all such acts or execute all such documents (including assignments, transfers, mortgages, charges, notices and instructions) as the Security Agent may reasonably specify (and in such form as the Security Agent may reasonably require in favour of the Security Agent or its nominee(s)):

(i) to perfect a Lien created or intended to be created under or evidenced by the Security Documents (which may include the execution of a mortgage, charge, assignment or other Lien over all or any of the assets which are, or are intended to be, the subject of the Security Documents) or for the exercise of any rights, powers and remedies of the Security Agent or the Finance Parties provided by or pursuant to the Finance Documents or by Applicable Law;

(ii) to confer on the Security Agent or confer on the Finance Parties a Lien over any property and assets of the Group located in any jurisdiction equivalent or similar to a Lien intended to be conferred by or pursuant to the Security Documents; and

(iii) to facilitate the realisation of the assets which are, or are intended to be, the subject of a Lien.

(b) The Borrower shall (and shall procure that each member of the Group shall) take all such action as is available to it (including making all filings and registrations) as may be necessary for the purpose of the creation, perfection, protection or maintenance of any Lien conferred or intended to be conferred on the Security Agent or the Finance Parties by or pursuant to the Finance Documents.

(c) The Borrower will, and shall procure that any member of the Thermo Group will, in the case of any Subordinated Liabilities which are not evidenced by any instrument, upon the Security Agent's request, ensure that such Subordinated Liabilities shall be evidenced by an appropriate instrument or instruments.

(d) The Borrower shall, and shall procure that each of Thermo and the Subsidiary Guarantors shall, promptly upon the request of the Security Agent, at its own cost, do all such acts or execute all such documents reasonably deemed necessary or desirable by the Security Agent to confirm or establish the validity and enforceability of the subordination effected by, and the obligations of the Borrower and such party under, the Thermo Subordination Deed or the Subsidiary Guarantor Subordination Deed (as the case may be).

21.18 Payments under the Satellite Construction Contract

All payments to be made in accordance with Exhibit F of the Satellite Construction Contract for the balance of phase 1 and 2 after EDC2 (as such term is defined in the Satellite Construction Contract) shall be invoiced in Euros by the Supplier and paid in Dollars using the exchange rate set out in the Supplier Direct Agreement.

21.19 Equity Commitments

(a) The Borrower shall procure that each member of the Thermo Group complies with its obligations in respect of the provision of the Equity Commitments under and in accordance with the provisions of the First Global Deed of Amendment and Restatement, the First Thermo Group Undertaking Letter, the Second Global Amendment and Restatement Agreement, the Second Thermo Group Undertaking Letter, the Third Global Amendment and Restatement Agreement, the Third Thermo Group Undertaking Letter, as applicable.

(b) The Borrower shall procure that any third party (other than Thermo) providing funds to the Group for the purposes of satisfaction of all or a part of the Equity Commitments or pursuant to any other instrument of indebtedness (equity linked or otherwise) shall, to the extent the Equity Commitment (or any portion thereof) is evidenced by an instrument of indebtedness, enter into an Acceptable Intercreditor Agreement.

21.20 Key Agreements

The Borrower shall:

(a) duly and punctually perform and comply with its obligations under the Key Agreements, other than any such failure to perform or comply which does not have or could not reasonably be expected to have, a Material Adverse Effect; and

(b) take all commercially reasonable steps necessary or desirable to protect, maintain, exercise and enforce all its rights with respect to any Key Agreement and use all its commercially reasonable efforts to procure the due performance by each other party to such Key Agreements of such party's respective material obligations under each such Key Agreement.

21.21 New Subordinated Indebtedness

(a) The Borrower shall procure that any new Subordinated Indebtedness (other than the Second Lien Facility Agreement, in respect of which Clause 21.25 (*Second Lien Facility*) shall apply) entered into by the Borrower or any Subsidiary on or after the First Effective Date shall:

(i) have a maturity that extends beyond the date on which all principal, interest and other amounts due and owing under the Finance Documents have been paid in full; and

(ii) be subordinated to the rights of the Finance Parties pursuant to an Acceptable Intercreditor Agreement.

(b) The Borrower shall procure that upon the entry into any guarantee in respect of the 8% New Notes by the Subsidiary Guarantors pursuant to Clause 22.1(l) (*Limitations on Financial Indebtedness*), a copy of such guarantee is delivered to the BPIFAE Agent together with an opinion from Taft Stettinius & Hollister LLP (or such other law firm as may be acceptable to the BPIFAE Agent) (in substantially the same form as the opinion delivered by Taft Stettinius & Hollister LLP to the BPIFAE Agent as a condition precedent to the First Effective Date) confirming that the subordination arrangements contained therein are the legal, valid, binding and enforceable obligations of the parties to such guarantee. If any Subsidiary becomes a Subsidiary Guarantor or a guarantor of any other notes issued under the Original Indenture and any supplemental indenture relating thereto, such Subsidiary may execute a joinder to the document evidencing the Guarantee Obligations referred to in Clause 22.1(l) (*Limitations on Financial Indebtedness*), subject to the other provisions of such Clause 22.1(l) (*Limitations on Financial Indebtedness*).

21.22 Second Generation Ground Station

The Borrower shall procure that the second generation ground station updates are completed by Hughes and Ericsson no later than 31 December 2016.

21.23 The 2021 Equity Issuance

If by 30 January 2021 the 2021 Equity Issuance has not occurred, the Borrower shall promptly mandate an independent internationally recognised advisor (with the terms of such appointment and the identity of any such adviser being, in each case, satisfactory to the BPIFAE Agent (acting reasonably)) to assist the Borrower with the 2021 Equity Issuance.

21.24 Anti-bribery, Anti-corruption and Anti-money Laundering

Each Obligor shall:

(a) conduct its businesses in compliance with anti-corruption laws, anti-bribery or anti-money laundering laws, regulations or rules applicable to it in any applicable jurisdiction; and

(b) maintain policies and procedures designed to promote and achieve compliance with any such laws.

21.25 Second Lien Facility

(a) The Borrower shall enter into the Second Lien Facility Agreement on terms satisfactory to each Lender and which shall:

(i) be in an aggregate amount equal to, or greater than, the Second Lien Facility Minimum Commitment;

(ii) have a maturity that:

(A) extends beyond the date on which all principal, interest and other amounts due and owing under the Finance Documents have been paid in full; and

(B) is no less than six years from the signing date of the Second Lien Facility Agreement; and

(iii) be subordinated to the rights of the Finance Parties pursuant to the Second Lien Intercreditor Agreement.

(b) The Borrower shall ensure that on the Second Lien Utilisation Date, the Net Cash Proceeds of the Second Lien Facility are applied in:

(i) prepayment of the full amount outstanding under the 2019 Bridge Facility Agreement; and

(ii) mandatory prepayment of the Loans in accordance with Clause 7.15 (*Mandatory Prepayment – Second Lien Facility*) and Clause 7.13 (*Application of Mandatory Prepayments*).

22. Negative Undertakings

The undertakings in this Clause 22 (*Negative Undertakings*) remain in force from the date of this Agreement for so long as any amount is outstanding under the Finance Documents or any Commitment is in force. The Borrower shall, and shall cause each of its Subsidiaries to, comply with the undertakings contained in this Clause 22 (*Negative Undertakings*).

22.1 Limitations on Financial Indebtedness

Not create, incur, assume or suffer to exist any Financial Indebtedness except:

(a) the Obligations (excluding any Hedging Obligations permitted pursuant to Clause 22.1(c));

(b) Financial Indebtedness incurred in connection with the Interest Rate Cap Agreement;

(c) Financial Indebtedness incurred in connection with a Hedging Agreement required pursuant to Clause 21.11 (*Hedging Agreements*);

(d) Financial Indebtedness existing as at the First Effective Date and not otherwise permitted under this Clause 22.1 and set out in Schedule 14 (*Financial Indebtedness and Guarantee Obligations*);

(e) Guarantee Obligations in favour of the BPIFAE Agent for the benefit of the BPIFAE Agent and the Finance Parties;

(f) other than Financial Indebtedness incurred under the 2019 Bridge Facility Agreement, unsecured:

(i) Subordinated Indebtedness owed by any Obligor to another Obligor;

(ii) Subordinated Indebtedness owed by any Obligor to a Foreign Subsidiary;

(iii) Financial Indebtedness owed by a Foreign Subsidiary to any Obligor; *provided that* the aggregate amount of such Financial Indebtedness outstanding at any time pursuant to this paragraph (iii) shall not exceed the Foreign Investment Limitation (calculated without regard to paragraph (b) of the definition of Foreign Investment Limitation and excluding the Existing Canadian Note) as of any date of determination;

(iv) Financial Indebtedness owed by a Foreign Subsidiary to another Foreign Subsidiary; and

(v) Guarantee Obligations by the Borrower on behalf of any Obligor or Foreign Subsidiary not to exceed US$1,000,000 in aggregate;

(g) Financial Indebtedness pursuant to the following paragraphs (i) to (v) (and any extension, renewal, replacement or refinancing thereof, but not to increase the aggregate principal amount), *provided that* at the time such Financial Indebtedness is incurred, the BPIFAE Agent and the Lenders shall have received from the Borrower a Compliance Certificate in form and substance satisfactory to the BPIFAE Agent (including an Adjusted Consolidated EBITDA Reconciliation for the fiscal period covered by such Compliance Certificate), demonstrating that, after giving effect to the incurrence of any such Financial Indebtedness, the Borrower will be in *pro forma* compliance with the financial covenants set out in Clause 20 (*Financial Covenants*) applicable at such time:

(i) Financial Indebtedness of the Borrower and its Subsidiaries incurred in connection with Finance Leases and/or purchase money Financial Indebtedness of the Borrower and its Subsidiaries in an aggregate amount not to exceed US$25,000,000 on any date of determination;

(ii) Financial Indebtedness of a person existing at the time such person became a Subsidiary or assets were acquired from such person not exceeding US$10,000,000, to the extent such Financial Indebtedness was not incurred in connection with or in contemplation of, such person becoming a Subsidiary or

the acquisition of such assets, which transactions in aggregate since the date of this Agreement do not exceed at any time US$25,000,000;

(iii) subject to paragraph (l) below, Guarantee Obligations with respect to Financial Indebtedness permitted pursuant to paragraph (g) of this Clause 22.1;

(iv) Financial Indebtedness of Foreign Subsidiaries, not to exceed in the aggregate at any time outstanding US$2,000,000; and

(v) Subordinated Indebtedness not otherwise permitted pursuant to this Clause 22.1 in an aggregate amount outstanding not to exceed US$200,000,000 at any time, *provided that*, no Event of Default has occurred and is continuing and subject to the prior agreement of an Acceptable Intercreditor Agreement. For the avoidance of doubt, neither a Borrower nor a Subsidiary shall incur any Subordinated Indebtedness which permits any cash payment in respect of Subordinated Indebtedness prior to the Final Maturity Date without the prior written consent of the BPIFAE Agent;

(h) Financial Indebtedness incurred in respect of workers' compensation claims, self-insurance obligations, bankers' acceptances, performance, surety and similar bonds and completion guarantees provided by the Borrower or one of its Subsidiaries in the ordinary course of trading, not to exceed in the aggregate at any time outstanding US$10,000,000;

(i) Financial Indebtedness arising from the honouring by a bank or other financial institution of a cheque, draft or similar instrument in the ordinary course of trading inadvertently drawn against insufficient funds, *provided however*, *that* such Financial Indebtedness is extinguished within five (5) Business Days and does not exceed in the aggregate at any time outstanding US$10,000,000;

(j) Financial Indebtedness arising from any agreement by the Borrower or any of its Subsidiaries providing for indemnities, guarantees, purchase price adjustments, holdbacks, contingency payment obligations based on the performances of the acquired or disposed assets or similar obligations incurred by any person in connection with the acquisition or disposition of assets or Capital Stock as permitted by this Agreement *provided that* such Financial Indebtedness does not exceed in the aggregate at any time outstanding US$10,000,000;

(k) Financial Indebtedness incurred in connection with any Permitted Vendor Indebtedness;

(l) Guarantee Obligations of the Subsidiary Guarantors in connection with the 8% New Notes *provided that*:

(i) such Guarantee Obligations are subordinated to the provisions of the Finance Documents;

(ii) at the time that such Guarantee Obligations are entered into, no member of the Thermo Group is in breach of any of its obligations in respect of the Equity Commitments;

(iii) the Borrower shall have received the 2013 Closing Commitment and the 2013 Year-End Commitment;

(iv) no Event of Default has occurred which is continuing;

(v) the terms of such Guarantee Obligations shall be consistent with, and no less favourable to the Lenders than, the terms set out in the 5.75% Notes Term Sheet;

(vi) each Subsidiary Guarantor is a party to the Subsidiary Guarantor Subordination Deed; and

(vii) the Guarantee Obligations shall not be entered into prior to 26 December 2013;

(m) Financial Indebtedness incurred pursuant to the 2019 Bridge Facility Agreement prior to the first utilisation of the Second Lien Facility Agreement on the Second Lien Utilisation Date and, thereafter, only Financial Indebtedness in respect of capitalised interest not discharged in full at the Second Lien Utilisation Date;

(n) Financial Indebtedness incurred pursuant to the Second Lien Facility Agreement; and

(o) Financial Indebtedness otherwise approved by the BPIFAE Agent in writing.

22.2 Limitations on Liens

Not create, incur, assume or suffer to exist, any Lien on or with respect to any of its assets or properties (including, without limitation, shares of Capital Stock), real or personal, whether now owned or hereafter acquired, except:

(a) Liens of the Security Agent or the BPIFAE Agent (as the case may be) for the benefit of the Finance Parties under the Finance Documents;

(b) Liens not otherwise permitted by this Clause 22 (*Negative Undertakings*) and in existence on the date of this Agreement and described in Schedule 17 (*Existing Liens*);

(c) Liens for taxes, assessments and other governmental charges or levies not yet due or as to which the period of grace if any, related thereto has not expired or which are being contested in good faith and by appropriate proceedings if adequate reserves are maintained to the extent required by GAAP;

(d) the claims of material men, mechanics, carriers, warehousemen, processors or landlords for labour, materials, supplies or rentals incurred in the ordinary course of trading:

(i) which are not overdue for a period of more than ninety (90) days; or

(ii) which are being contested in good faith and by appropriate proceedings if adequate reserves are maintained to the extent required by GAAP;

(e) Liens consisting of deposits or pledges made in the ordinary course of trading in connection with, or to secure payment of, obligations under workers' compensation, unemployment insurance or similar legislation;

(f) Liens constituting encumbrances in the nature of zoning restrictions, easements and rights or restrictions of record on the use of real property, which in the aggregate are not

substantial in amount and which do not, in any case, detract from the value of such property or impair the use thereof in the ordinary conduct of trading;

(g) Liens existing on any asset of any person at the time such person becomes a Subsidiary or is merged or consolidated with or into a Subsidiary which:

(i) were not created in contemplation of or in connection with such event; and

(ii) do not extend to or cover any other property or assets of the Borrower or any Subsidiary, so long as any Financial Indebtedness related to any such Liens are permitted under Clause 22.1(g)(ii) (*Limitations on Financial Indebtedness*):

(h) Liens securing Financial Indebtedness permitted under Clause 22.1(g)(i) (*Limitations on Financial Indebtedness*) *provided that*:

(i) such Liens shall be created substantially simultaneously with the acquisition or lease of the related asset;

(ii) such Liens do not at any time encumber any property other than the property financed by such Financial Indebtedness;

(iii) the amount of Financial Indebtedness secured thereby is not increased; and

(iv) the principal amount of Financial Indebtedness secured by any such Lien shall at no time exceed one hundred *per cent.* (100%) of the original purchase price or lease payment amount of such property at the time it was acquired;

(i) Liens securing Financial Indebtedness permitted under Clause 22.1(g)(iv) (*Limitations on Financial Indebtedness*) *provided that* such liens do not at any time encumber any property other than that of the applicable Foreign Subsidiary obliged with respect to such Financial Indebtedness;

(j) Liens to secure the performance of statutory obligations, surety or appeal bonds, performance bonds or other obligations of a like nature incurred in the ordinary course of trading;

(k) Liens incurred or deposits made in the ordinary course of trading in connection with workers' compensation, unemployment insurance and other types of social security;

(l) rights of banks to set-off deposits against debts owed to such banks;

(m) Liens upon specific items of inventory or other goods and proceeds of the Borrower and its Subsidiaries securing their obligations in respect of bankers' acceptances issued or created for the account of any such person to facilitate the purchase, storage or shipment of such inventory or other goods;

(n) Liens in favour of customs and revenue authorities arising as a matter of law to secure payment of customs duties in connection with the importation of goods;

(o) Liens encumbering property or assets under construction arising from progress or partial payments by a customer of the Borrower or one of its Subsidiaries relating to such property or assets;

(p) Liens on assets that are the subject of a sale and leaseback transaction permitted by the provisions of this Agreement;

(q) Liens securing Permitted Vendor Indebtedness, *provided that* such Lien does not attach or encumber any asset or property of the Borrower or any Subsidiary thereof other than the asset or personal property which is the subject of such obligation;

(r) Liens securing Financial Indebtedness permitted by Clause 22.1(b) or (c) (*Limitations on Financial Indebtedness*);

(s) Liens not otherwise permitted under this Agreement securing obligations not at any time exceeding in aggregate US$5,000,000;

(t) Liens on the Collateral on a second ranking basis pursuant to the Second Lien Security Documents that:

(i) are subordinated in accordance with the Second Lien Intercreditor Agreement; and

(ii) secure the obligations of the Borrower under the Finance Documents and the Second Lien Finance Documents; and

(u) Liens otherwise approved by the BPIFAE Agent in writing.

22.3 Limitations on Loans, Investments and Acquisitions

Not purchase, own, invest in or otherwise acquire, directly or indirectly, any Capital Stock, interests in any partnership or joint venture (including, without limitation, the creation or capitalisation of any Subsidiary), evidence of Financial Indebtedness or other obligation or security, substantially all or a portion of the business or assets of any other person or any other investment or interest whatsoever in any other person, or make or permit to exist, directly or indirectly, any loans, advances or extensions of credit to, or any investment in cash or by delivery of property in, any person except:

(a) investments:

(i) existing on the date of this Agreement in Subsidiaries existing on the date of this Agreement;

(ii) after the date of this Agreement in:

(A) existing Subsidiaries; and/or

(B) Subsidiaries formed after the date of this Agreement, *provided that*, in each case:

(x) the Borrower and its Subsidiaries comply with the applicable provisions of Clause 21.5 (*Additional Domestic Subsidiaries*); and

(y) the amount of any such investments in a Foreign Subsidiary shall not exceed the Foreign Investment Limitation as of the date of such investment;

(iii) the other loans, advances and investments described on Schedule 21 (*Existing Loans, Investments and Advances*) existing on the date of this Agreement;

(iv) by any Subsidiary in the Borrower;

(v) in connection with the Permitted Peruvian Acquisition, *provided that*:

(A) the Borrower and its Subsidiaries comply with the applicable provisions of Clause 21.6 (*Additional Foreign Subsidiaries*); and

(B) the amount of any such investments in a Foreign Subsidiary shall not exceed the Foreign Investment Limitation as of the date of such investment;

(b) investments in:

(i) marketable direct obligations issued or unconditionally guaranteed by the United States or any agency thereof maturing within one hundred and twenty (120) days from the date of acquisition thereof;

(ii) commercial paper maturing no more than one hundred and twenty (120) days from the date of creation thereof and currently having the highest rating obtainable from either S&P or Moody's;

(iii) certificates of deposit maturing no more than one hundred and twenty (120) days from the date of creation thereof issued by commercial banks incorporated under the laws of the United States, each having combined capital, surplus and undivided profits of not less than US$500,000,000 and having a rating of "*A*" or better from either S&P or Moody's; *provided that* the aggregate amount invested in such certificates of deposit shall not at any time exceed US$5,000,000 for any one such certificate of deposit and US$10,000,000 for any one such bank;

(iv) time deposits maturing no more than thirty (30) days from the date of creation thereof with commercial banks or savings banks or savings and loan associations each having membership either in the FDIC or the deposits of which are insured by the FDIC and in amounts not exceeding the maximum amounts of insurance thereunder; and

(v) other investments permitted by the Borrower's investment policy as of the date hereof in the form attached at Schedule 27 (*Investment Policy*);

(c) investments by the Borrower or any of its Subsidiaries in the form of Permitted Joint Venture Investments or, with the prior written consent of the Lenders, Permitted Acquisitions;

(d) Hedging Agreements permitted pursuant to Clause 21.11 (*Hedging Agreements*) and any Interest Rate Cap Agreement and investments in collateral accounts securing any Hedging Agreements and Interest Rate Cap Agreement;

(e) purchases of assets in the ordinary course of trading;

(f) investments in the form of loans and advances to employees in the ordinary course of trading, which, in aggregate, do not exceed at any time US$500,000;

(g) intercompany Financial Indebtedness permitted pursuant to Clause 22.1(e) (*Limitations on Financial Indebtedness*);

(h) loans to one (1) or more officers or other employees of the Borrower or its Subsidiaries in connection with such officers' or employees' acquisition of Capital Stock of the Borrower in the ordinary course of trading, consistent with the Borrower's equity incentive plan, which, in aggregate, do not exceed at any time US$500,000;

(i) endorsement of cheques or bank drafts for deposit or collection in the ordinary course of trading;

(j) performance, surety and appeal bonds;

(k) investments consisting of non-cash consideration received by the Borrower or any of its Subsidiaries from the sale of assets or Capital Stock of a Subsidiary as permitted by this Agreement; and

(l) investments in Globaltouch (West Africa) Limited *provided that*:

(i) the amount of such investment does not exceed US$5,000,000 including any such investment made prior to the date of this Agreement;

(ii) the investment complies with paragraphs (b), (d) and (e) of the definition of Permitted Joint Venture Investments; and

(iii) the Borrower shall deliver such information relating to the investment as the BPIFAE Agent may reasonably request.

22.4 Limitations on Mergers and Liquidations

Not merge, consolidate or enter into any similar combination with any other person or liquidate, wind-up or dissolve itself (or suffer any liquidation or dissolution) except:

(a) any Wholly-Owned Subsidiary of the Borrower may be merged or consolidated with or into the Borrower (*provided that* the Borrower shall be the continuing or surviving person) or with or into any Subsidiary Guarantor (*provided that* the Subsidiary Guarantor shall be the continuing or surviving person);

(b) any Wholly-Owned Subsidiary may sell, lease, transfer or otherwise dispose of any or all of its assets (upon voluntary liquidation or otherwise) to the Borrower or any other Wholly-Owned Subsidiary; (*provided that* if the transferor in such a transaction is a Subsidiary Guarantor, then the transferee must either be the Borrower or a Subsidiary Guarantor);

(c) any Wholly-Owned Subsidiary of the Borrower may merge with or into the person such Wholly-Owned Subsidiary was formed to acquire in connection with a Permitted Acquisition; and

(d) any Subsidiary of the Borrower may wind-up into the Borrower or any Subsidiary Guarantor.

22.5 Limitations on Asset Dispositions

Not make any Asset Disposition (including, without limitation, the sale of any receivables and leasehold interests and any sale-leaseback or similar transaction) except:

(a) the sale of inventory in the ordinary course of trading;

(b) the sale of obsolete, damaged, worn-out or surplus assets no longer needed in the business of the Borrower or any of its Subsidiaries;

(c) any lease or sub-licence of spectrum subject to a Communications Licence *provided that* such lease or sub-licence is on *bona fide* arms' length terms at the time such agreement is entered into and does not have, and could not reasonably expected to have, a Material Adverse Effect;

(d) the transfer of assets to the Borrower or any Subsidiary Guarantor pursuant to Clause 22.4 (*Limitations on Mergers and Liquidations*); and

(e) the sale or discount without recourse of accounts receivable arising in the ordinary course of trading in connection with the compromise or collection thereof.

22.6 Limitations on Dividends and Distributions

(a) Subject to paragraphs (b) and (c) below, not (and shall procure that each member of the Group shall not) pay or make any Shareholder Distribution without the prior written consent of all the Lenders (including any repayment of the US$35,000,000 (or such higher amount to take into account accrued but unpaid interest) shareholder loan from Thermo to the Borrower and all other amounts owing to Thermo under the Thermo Loan Agreement).

(b) Following the making of prepayments required pursuant to Clause 7.15(a) (*Mandatory Prepayment - Second Lien Facility*), the Borrower shall be permitted to prepay on the Second Lien Utilisation Date, the full amount outstanding under the 2019 Bridge Facility Agreement, from the proceeds of the Second Lien Facility.

(c) The Borrower shall permit the conversion of all amounts outstanding under the Thermo Loan Agreement into Capital Stock of the Borrower by 30 June 2022.

22.7 Limitations on Exchange and Issuance of Capital Stock

Except as provided for in the Borrower's 2006 Equity Incentive Plan and the "*Designated Executive Incentive Award Agreement*", not issue, sell or otherwise dispose of any class or series of Capital Stock that, by its terms or by the terms of any security into which it is convertible or exchangeable, is, or upon the happening of an event or passage of time would be:

(a) convertible or exchangeable into Financial Indebtedness; or

(b) required to be redeemed or repurchased prior to the date that is six (6) Months after the Final Maturity Date, including at the option of the holder, in whole or in part, or has, or upon the happening of an event or passage of time would have, a redemption or similar payment due.

22.8 Transactions with Affiliates

Not directly or indirectly:

(a) make any loan or advance to, or purchase or assume any note or other obligation to or from, any of its officers, directors, shareholders or other Affiliates, or to or from any member of the immediate family of any of its officers, directors, shareholders or other Affiliates, or subcontract any operations to any of its Affiliates, unless otherwise expressly permitted under this Agreement; or

(b) enter into, or be a party to, any other transaction not described in clause (a) above with any of its Affiliates other than:

(i) transactions permitted by Clause 22.1 (*Limitations on Financial Indebtedness*), 22.3 (*Limitations on Loans, Investments and Acquisitions*), 22.4 (*Limitations on Mergers and Liquidations*) and 22.7 (*Limitations on Exchange and Issuance of Capital Stock*);

(ii) transactions existing on the date of this Agreement and described in Schedule 20 (*Transactions With Affiliates*);

(iii) normal compensation and reimbursement of reasonable expenses of officers and directors including adoption of a restricted stock bonus or purchase plan;

(iv) other transactions in the ordinary course of trading on terms as favourable as would be obtained by it on a comparable arms-length transaction with an independent, unrelated third party as determined in good faith by the board of directors of the Borrower;

(v) subject to the provisions of Clause 22.14 (*Employee Incentive Plans*), the Borrower's incentive compensation plan described in Schedule 22 (*Incentive Plan*); and

(vi) transactions pursuant to the Finance Documents.

22.9 Certain Accounting Changes; Organisational Documents

(a) Not change its Fiscal Year end, or make any change in its accounting treatment and reporting practices except as required by GAAP.

(b) Not amend, modify or change:

(i) its articles of incorporation (or corporate charter or other similar organizational documents); or

(ii) its bylaws (or other similar documents),

in any such case, in any manner adverse in any respect to the rights or interests of the Finance Parties.

22.10 Amendments; Payments and Prepayments of Subordinated Indebtedness

(a) Not amend or modify (or permit the modification or amendment of) any of the terms or provisions of any Subordinated Indebtedness without the consent of the BPIFAE Agent and the Lenders.

(b) Other than in respect of a Permitted Second Lien Payment (as such term is defined in the Second Lien Intercreditor Agreement), not cancel, forgive, make any payment or prepayment on, or redeem or acquire for value including, without limitation:

(i) by way of depositing with any trustee with respect thereto money or securities before due for the purpose of paving when due; and

(ii) at the maturity thereof any Subordinated Indebtedness, except refinancings, refundings, renewals, extensions or exchange of any Subordinated Indebtedness permitted by Clause 22.1 (*Limitations on Financial Indebtedness*).

22.11 Restrictive Agreements

Not enter into or permit to exist any agreement which impairs or limits the ability of any Subsidiary of the Borrower to pay dividends to the Borrower.

22.12 Nature of Business

Not alter in any material respect the character or conduct of the business conducted by the Borrower and its Subsidiaries as of the date of this Agreement. Without limiting the foregoing, the Borrower will not permit or cause any Licence Subsidiary to engage in any line of business or engage in any other activity (including without limitation incurring liabilities) other than the ownership of one or more Communications Licences; *provided that*, subject to any restrictions under Applicable Law with respect to Communications Licences, the Borrower shall cause each of the Licence Subsidiaries to execute and deliver a Guarantee Agreement and each other Finance Document to which such Licence Subsidiary is a party. In no event shall:

(a) any Licence Subsidiary own any assets other than one (1) or more Communications Licences (and assets reasonably related thereto to the extent necessary to comply with all Applicable Law); and

(b) neither the Borrower nor any Subsidiary other than a Licence Subsidiary shall hold any Communications Licence issued by the FCC or the ANFR.

22.13 Impairment of Liens

Not take or omit to take any action, which might or would have the result of materially impairing the security interests created in favour of the BPIFAE Agent with respect to the Collateral or grant to any person (other than the BPIFAE Agent for the benefit of itself and the Lenders pursuant to the Security Documents) any interest whatsoever in the Collateral, except for Financial Indebtedness permitted under Clause 22.1 (*Limitations on Financial Indebtedness*), Permitted Liens and Asset Dispositions permitted under Clause 22.5 (*Limitations on Asset Dispositions*).

22.14 Employee Incentive Plans

(a) Subject to paragraph (b) below, not (and shall procure that each member of the Group shall not) make any payment in cash under any employee incentive plan.

(b) The Borrower may make cash payments to its employees pursuant to the Relevant EIPs *provided that* it obtains the prior written consent of the Majority Lenders before making any such payment.

22.15 No Hedging

(a) Other than in accordance with Clause 21.11 (*Hedging Agreements*) or by way of the Interest Rate Cap Agreements, the Borrower shall not, without the consent of the BPIFAE Agent, enter into any Hedging Agreement.

(b) Hedging Agreements shall not be entered into with any parties other than the Original Lenders.

22.16 Commercial Contracts

(a) Not amend or grant any waiver:

(i) in respect of any provision of any Commercial Contract relating to the first twenty four (24) Satellites, if such amendment or waiver would or could reasonably be expected to adversely affect the Lenders; and

(ii) in respect of any other provision of any Commercial Contract not referred to in paragraph (a)(i) above, if such amendment or waiver would or could reasonably be expected to have a Material Adverse Effect.

(b) Not exercise the option to order from the Supplier up to eighteen (18) additional recurring Spacecraft (as such term is defined in the Satellite Construction Contract) pursuant to Article 29(B) (*Options*) of the Satellite Construction Contract without the prior written consent of the BPIFAE Agent.

22.17 No Amendments to Convertible Notes, First Terrapin Purchase Agreement or Second Terrapin Purchase Agreement

(a) Not amend, vary, modify, waive any provision of or agree to the amendment, variation, waiver or modification of any documents relating to any of the Convertible Notes, the First Terrapin Purchase Agreement or the Second Terrapin Purchase Agreement, in each case, without the prior written consent of all the Lenders, save for any amendment in respect of the extension of the redemption date in respect of any of the Convertible Notes.

(b) Not terminate (pursuant to a breach or default), or permit any termination of, such documents referred to in paragraph (a) above, in each case without the prior written consent of all the Lenders.

22.18 No Amendments to Key Agreements

Not amend, vary, modify, waive any provision of or agree to the amendment, variation, waiver or modification of any Key Agreement unless such action:

(a) is required by Applicable Law;

(b) has not, or could not reasonably be expected to have, a material adverse effect on the ability of the Borrower or relevant counterparty to such Key Agreement to perform its obligations under such Key Agreement or to comply with its obligations under the Finance Documents; or

(c) is permitted by the Finance Documents.

22.19 Expenditure on Group Spectrum Rights

Not, at any time, incur any expenditure relating to (either directly or indirectly) the Group's Spectrum rights:

(a) (either individually or in aggregate) in an amount that exceeds the lesser of:

(i) US$20,000,000; and

(ii) twenty *per cent.* (20%) of the aggregate of any Net Cash Proceeds raised pursuant to an Equity Issuance or any arrangements evidencing any Subordinated Indebtedness from 1 January 2017 through to 31 December 2019 (inclusive); and

(b) on and following 30 June 2017, other than in accordance with the then-applicable Spectrum Plan.

22.20 Anti-bribery, Anti-corruption and Anti-money Laundering

Not engage in any activity or conduct which would violate any applicable anti-bribery, anti-corruption or anti-money laundering laws, regulations or rules in any applicable jurisdiction.

22.21 Sanctions

Not, directly or indirectly, use the proceeds of any Utilisation or lend, contribute or otherwise make available such proceeds to any subsidiary, joint venture partner or any other Person (as such term is defined in Clause 18.27 (*Sanctions*)):

(a) to fund any activities or business of or with any Person, or in any country or territory, that, at the time of such funding, is, a Sanctioned Person (as such term is defined in Clause 18.27 (*Sanctions*)) or is in a Sanctioned Country (as such term is defined in Clause 18.27 (*Sanctions*)); or

(b) in any other manner that would result in a violation of Sanctions by any Person (including any Person participating in any Utilisation hereunder, whether as underwriter, advisor, investor, lender, hedge provider, facility or security trustee or otherwise).

23. Events of Default

Each of the events or circumstances set out in Clause 23 (*Events of Default*) is an Event of Default.

23.1 Non-Payment

An Obligor does not pay on the due date any amount payable pursuant to a Finance Document at the place and in the currency in which it is expressed to be payable unless:

(a) its failure to pay is caused by:

(i) administrative or technical error; or

(ii) a Disruption Event; and

(b) payment is made within:

(i) in the case of paragraph (a)(i) above:

(A) in the case of payments of principal and interest, within two (2) Business Days of its due date; or

(B) in the case of any other payment, within four (4) Business Days of its due date; and

(ii) in the case of paragraph (a)(ii) above:

(A) in the case of payments of principal and interest, within three (3) Business Days of the cessation (or reasonable avoidance) of such Disruption Event; or

(B) in the case of any other payment, within five (5) Business Days of the cessation (or reasonable avoidance) of such Disruption Event.

23.2 Financial Covenants

(a) Any requirement of Clause 20 (*Financial Covenants*) is not satisfied.

(b) No Event of Default under paragraph (a) above will occur if the failure to comply is capable of remedy and is remedied within thirty (30) days of the earlier of the BPIFAE Agent giving notice to the Borrower or the Borrower becoming aware of the failure to comply.

(c) No Event of Default under paragraph (a) above will occur if no later than the date that is thirty (30) days after the earlier of the BPIFAE Agent giving notice to the Borrower or the Borrower becoming aware of, in each case, the breach of the relevant covenant in respect of a Relevant Period, the Borrower has received an Equity Cure Contribution

in respect of that breach (a "**Relevant Contribution**") and the Borrower satisfies the relevant covenant recalculated to take into account such Relevant Contribution, *provided that* any such Equity Cure Contribution shall be in a minimum amount of US$10,000,000 (the "**Minimum Contribution Amount**") and the Borrower may not cure a breach of a relevant covenant as contemplated under this paragraph (c) where such breach is determined on any date falling after 30 June 2022 (unless such breach is for a Relevant Period ending on 30 June 2022).

(d) Notwithstanding anything in this Agreement to the contrary, if there is a breach of Clause 20.5 (*Net Debt to Adjusted Consolidated EBITDA*) for any Relevant Period commencing with the Relevant Period that begins on 1 January 2018 and expires on 31 December 2018 and ending with the Relevant Period that begins on 1 July 2021 and expires on 30 June 2022, then such breach may be cured pursuant to paragraph (c) above with the making of an Equity Cure Contribution in an amount equal to the lesser of:

(i) the amount required to ensure that the ratio of Net Debt to Adjusted Consolidated EBITDA is equal to or less than the ratio set out in column 2 (*Column 2 – Ratio*) opposite that Relevant Period; and

(ii) the amount required to cure any breach of Clause 20.3 (*Adjusted Consolidated EBITDA*) for such Relevant Period (before application of the Minimum Contribution Amount pursuant to paragraph (c) above) multiplied by a factor of 1.5,

provided that such amount, if less than the Minimum Contribution Amount, shall be increased to the Minimum Contribution Amount in order to comply with paragraph (c) above.

(e) Notwithstanding anything in this Agreement to the contrary, no portion of any Equity Cure Contribution made pursuant to paragraph (c) above on account of a breach of a covenant during a particular Relevant Period shall be applied to any breach of any covenant in any earlier or subsequent Relevant Periods.

23.3 Other Obligations

(a) An Obligor does not comply with any provision of the Finance Documents (other than those referred to in Clause 23.1 (*Non-Payment*), Clause 23.2 (*Financial Covenants*), Clause 21.19 (*Equity Commitments*), Clause 21.22 (*Second Generation Ground Station*), Clause 21.23 (*The 2021 Equity Issuance*), Clause 21.25 (*Second Lien Facility*), Clause 22.21 (*Sanctions*), Clause 23.23 (*Convertible Notes*), Clause 23.24 (*Termination of Trading*) or Clause 23.25 (*Purchase Notice*)).

(b) The Borrower does not comply with Clause 21.19 (*Equity Commitments*), Clause 21.22 (*Second Generation Ground Station*), Clause 21.23 (*The 2017 Equity Raise*), Clause 22.21 (*Sanctions*), Clause 23.23 (*Convertible Notes*), Clause 23.24 (*Termination of Trading*) or Clause 23.25 (*Purchase Notice*).

(c) No Event of Default under paragraph (a) above will occur if the failure to comply is capable of remedy and is remedied within ten (10) Business Days of the earlier of:

(i) the BPIFAE Agent giving notice to the Borrower; or

(ii) the Borrower becoming aware of the failure to comply.

23.4 Misrepresentation

Any representation or statement made by an Obligor in the Finance Documents or any other document delivered by or on behalf of an Obligor under or in connection with any Finance Document is or proves to have been incorrect or misleading when made or deemed to be made and, if capable of remedy, is not remedied within twenty (20) Business Days of the BPIFAE Agent giving notice to the Borrower or an Obligor becoming aware of such misrepresentation.

23.5 Cross Default

(a) Any Financial Indebtedness of any Material Subsidiary is not paid when due nor within any originally applicable grace period.

(b) Any Financial Indebtedness of any Material Subsidiary is declared to be or otherwise becomes due and payable prior to its specified maturity as a result of an event of default (however described).

(c) Any commitment for any Financial Indebtedness of any Material Subsidiary is cancelled or suspended by a creditor of any Material Subsidiary as a result of an event of default (however described).

(d) Any creditor of any Material Subsidiary becomes entitled to declare any Financial Indebtedness of any Material Subsidiary due and payable prior to its specified maturity as a result of an event of default (however described).

(e) No Event of Default will occur under this Clause 23.5 if the aggregate amount of Financial Indebtedness or commitment for Financial Indebtedness falling within paragraphs (a) to (d) above is less than US$5,000,000 (or its equivalent in any other currency or currencies).

23.6 Insolvency

Any Material Subsidiary shall:

(a) commence a voluntary case (or analogous motion) under the federal bankruptcy laws or under other laws, domestic or foreign, relating to bankruptcy, insolvency, reorganisation, winding-up or adjustment of debts or analogous proceedings;

(b) file a petition (or analogous motion) seeking to take advantage of any other laws, domestic or foreign, relating to bankruptcy, insolvency, reorganisation, winding-up, composition for adjustment of debts or analogous proceedings;

(c) consent to or fail to contest in a timely and appropriate manner any petition filed against it in an involuntary case under such bankruptcy laws or other laws;

(d) apply for or consent to, or fail to contest in a timely and appropriate manner, the appointment of, or the taking of possession by, a receiver, custodian, trustee or liquidator of itself or of a substantial part of its property, domestic or foreign;

(e) admit in writing its inability to pay its debts as they become due;

(f) make a general assignment for the benefit of creditors;

(g) take any corporate action for the purpose of authorising any of the foregoing; or

(h) suspend or threaten to suspend making payment on any of its debts or by reason of actual or anticipated financial difficulties commences negotiations with one (1) or more of its creditors with a view to rescheduling any of its indebtedness (other than the Finance Parties in connection with this Agreement).

23.7 Insolvency Proceedings

A case or other proceeding shall be commenced against a Material Subsidiary in any court of competent jurisdiction and such case or proceeding shall continue without dismissal or stay for a period of sixty (60) consecutive days, seeking:

(a) relief under the federal bankruptcy laws or under other laws, domestic or foreign, relating to bankruptcy, insolvency, reorganisation, winding-up or adjustment of debts or analogous proceedings; or

(b) the appointment of a trustee, receiver, custodian, liquidator or the like for a Material Subsidiary or for all or any substantial part of their respective assets, domestic or foreign, or an order granting the relief requested in such case or proceeding (including, but not limited to, an order for relief under such federal bankruptcy laws or under other laws, domestic or foreign, relating to bankruptcy, insolvency, reorganisation, winding-up or adjustment of debts or analogous proceedings) shall be entered.

23.8 Creditors' Process

Any attachment, sequestration, distress or execution or any analogous process in any jurisdiction affects any asset or assets of a Material Subsidiary having an aggregate value of US$1,000,000 and is not discharged within twenty (20) Business Days or such longer period of time if such Material Subsidiary is contesting such process in good faith *provided that*, such process:

(a) is in any event discharged within one hundred and eighty (180) days; and

(b) does not have or could not reasonably be likely to have a Material Adverse Effect.

23.9 Unlawfulness and Invalidity

(a) It is or becomes unlawful for an Obligor, or any other member of the Group or the Thermo Group party to an Acceptable Intercreditor Agreement or the Second Lien Intercreditor Agreement, to perform any of its obligations under the Transaction Documents or any Acceptable Intercreditor Agreement to which it is a party or any Lien created or expressed to be created or evidenced by a Security Document ceases to be effective or any subordination under the Second Lien Intercreditor Agreement or any Acceptable Intercreditor Agreement is or becomes unlawful.

(b) Any obligation or obligations of any Obligor under any Finance Document, or any other member of the Group or the Thermo Group under an Acceptable Intercreditor Agreement or the Second Lien Intercreditor Agreement, are not or cease to be legal, valid, binding

or enforceable and the cessation individually or cumulatively materially and adversely affects the interests of the Lenders under the Finance Documents or Acceptable Intercreditor Agreement.

(c) Any Transaction Document is terminated or ceases to be in full force and effect or any Lien or subordination created under a Security Document, the Second Lien Intercreditor Agreement or an Acceptable Intercreditor Agreement ceases to be legal, valid, binding, enforceable or effective or is alleged by a party to it (other than a Finance Party) to be ineffective.

(d) No Event of Default under paragraphs (b) and (c) above will occur in respect of a Finance Document (other than this Agreement, the Second Lien Intercreditor Agreement and an Acceptable Intercreditor Agreement) if the failure to comply is capable of remedy and is remedied within three (3) Business Days of the BPIFAE Agent giving notice to the Borrower or the Borrower becoming aware of the failure to comply.

23.10 Material Adverse Change

Any event or circumstance occurs which the Majority Lenders reasonably believe has or is reasonably likely to have a Material Adverse Effect *provided that*, no Event of Default shall occur under this Clause 23.10 if such event or circumstance is capable of being remedied and is remedied to the satisfaction of the BPIFAE Agent within thirty (30) days of the BPIFAE Agent giving notice to the Borrower or the Borrower the becoming aware of the occurrence of such event or circumstance.

23.11 Repudiation and Rescission of Agreements

An Obligor (or any other relevant party) rescinds or purports to rescind or repudiates or purports to repudiate a Transaction Document or evidences an intention to rescind or repudiate a Transaction Document, which has or is likely to have a Material Adverse Effect.

23.12 Expropriation

The authority or ability of a Material Subsidiary to conduct its business is limited or wholly or substantially curtailed by any seizure, expropriation, nationalisation, intervention, restriction or other action by or on behalf of any governmental, regulatory or other authority or other person in relation to any Material Subsidiary or any of its assets.

23.13 Litigation

(a) Any litigation, arbitration, administrative, governmental, regulatory or other investigations, proceedings or disputes are commenced, threatened or continued against any Material Subsidiary or its assets which has or is reasonably likely to have a Material Adverse Effect unless such action is frivolous or vexatious.

(b) Any material contingent liability known to the Borrower and related to any litigation, arbitration, administrative, governmental, regulatory or other investigations, proceedings or disputes exists (a "**Relevant Liability**") and:

(i) the Relevant Liability is reduced to final judgment or settlement and declared to be payable by the Borrower; and

(ii) the payment of such Relevant Liability:

(A) is not contemplated in the then current Agreed Business Plan (other than any Permitted Supplier Indebtedness that is Permitted Vendor Indebtedness or amounts that might become due and that are approved by the BPIFAE Agent (acting on the instructions of the Majority Lenders)); and

(B) would result in a material adverse change to the cash flows of the Borrower, save where appropriate reserves have been allocated to the Relevant Liability.

23.14 Audit Qualification

The auditors of the Group qualify the audited annual consolidated financial statements of the Group in respect of the calendar year ending 31 December 2013 and all subsequent audited annual consolidated financial statements, to an extent that has or could reasonably be expected to have a Material Adverse Effect.

23.15 ERISA Termination Event

The occurrence of any of the following events:

(a) any Obligor or any ERISA Affiliate fails to make full payment when due of all amounts which, under the provisions of any Pension Plan or Multiemployer Plan or Section 412 of the Code, or Section 302 of ERISA, such Obligor or ERISA Affiliate is required to pay as contributions thereto;

(b) the Borrower or any ERISA Affiliate as an employer under one (1) or more Multiemployer Plans makes a complete or partial withdrawal from any such Multiemployer Plan and the plan sponsor of such Multiemployer Plan notifies such withdrawing employer that such employer has incurred a withdrawal liability requiring payments in an amount exceeding US$2,500,000; or

(c) any

(i) ERISA Termination Event;

(ii) Unfunded Pension Liability (taking into account only Pension Plans with positive Unfunded Pension Liabilities); or

(iii) potential withdrawal liability under Section 4201 of ERISA, if any Obligor or ERISA Affiliate were to withdraw completely from any and all Multiemployer Plans,

and the events described in paragraphs (c)(i), (ii) and (iii), either individually or in the aggregate, have resulted, or would be reasonably expected to result, in a material liability of any Obligor or any ERISA Affiliate.

23.16 Environmental

Any one (1) or more Environmental Claims shall have been asserted against the Borrower or any of its Subsidiaries; the Borrower or any of its Subsidiaries would be reasonably likely to incur liability as a result thereof; and such liability would be reasonably likely, individually or in the aggregate, to have a Material Adverse Effect.

23.17 Failure to Bring Satellites in Service

The Borrower has failed to achieve Final In-Orbit Acceptance by 15 October 2013.

23.18 Debt Service Reserve Account

At any time the Debt Service Reserve Account is not fully funded with the DSRA Required Balance within five (5) Business Days of any drawdown of such Project Account.

23.19 [Intentionally Omitted]

23.20 BPIFAE Insurance Policy

The credit insurance cover under the BPIFAE Insurance Policy extended by BPIFAE in favour of the Lenders in respect of each Facility ceases to be in full force and effect for a reason attributable to the Borrower.

23.21 Breach of Subordination Arrangements

(a) The Borrower breaches or repudiates any document relating to any notes issued by the Borrower (including the Convertible Notes), including, but not limited to, any subordination arrangements relating to such notes.

(b) Any enforcement action is taken by any noteholder in violation of any subordination arrangement relating to any of the Convertible Notes (*but excluding* any action in which the Borrower diligently defends itself, each Finance Party and the subordination arrangement (as applicable) and which is dismissed within sixty (60) days or such longer period as the BPIFAE Agent may agree) or any noteholder obtains an adverse judgment by a court of relevant jurisdiction (whether or not subject to appeal) that has not been stayed as to the invalidity, unenforceability or other ineffectiveness of any subordination arrangement in respect of any of the Convertible Notes.

(c) Any:

(i) third party providing funds to the Group pursuant to an Equity Commitment;

(ii) party to an Acceptable Intercreditor Agreement (other than a Finance Party); or

(iii) other person providing Subordinated Indebtedness,

in each case, breaches or repudiates any subordination agreement entered into by such third party.

23.22 Equity Commitments

(a) Any member of the Thermo Group (or any relevant third party) fails to make available to the Borrower the Equity Commitments when required at the times and in the manner contemplated by the First Global Deed of Amendment and Restatement, the First Thermo

Group Undertaking Letter, the Second Global Amendment and Restatement Agreement, or the Second Thermo Group Undertaking Letter (as the case may be).

(b) Any member of the Thermo Group (or any relevant third party) terminates, breaches (other than a breach referred to in paragraph (a) above) or repudiates any document evidencing any Equity Commitment, *provided that* no Event of Default shall occur under this paragraph (b):

(i) in relation to any breach by a third party in circumstances where a member of the Thermo Group assumes such third party's obligations under such document within twenty (20) days and on no more onerous terms for the Borrower; or

(ii) once the Equity Commitment has been fulfilled.

23.23 Convertible Notes

(a) Other than as provided in paragraph (f) below, the Borrower or any Subsidiary makes a payment to or for the benefit of any holder of any of the Convertible Notes in cash (rather than equity) or the Borrower exercises the call right in respect of the 8% New Notes exercisable in December 2013 or in 2017, in each case, without the prior written consent of the Majority Lenders.

(b) Any Subsidiary enters into or delivers to the holders of the 8% New Notes a guarantee in a manner or in circumstances inconsistent with the provisions of Clause 22.1 (*Limitations on Financial Indebtedness*).

(c) Any of the 8% Old Notes or the 5% Notes are redeemed (in whole or in part) prior to the Final Discharge Date. For the avoidance of doubt, non-payment of the 8% Old Notes or the 5% Notes at maturity shall not constitute an Event of Default for the purposes of Clause 23.5 (*Cross Default*).

(d) James Monroe III, Thermo, the Borrower, any Subsidiary Guarantor or any of their respective Affiliates (directly, indirectly or beneficially) exercises any put option with respect to the 8% New Notes.

(e) Other than as provided in paragraph (f) below, any put option is exercised by the relevant noteholders under the 8% New Notes, the 8% Old Notes or the 5% Notes as a result of the occurrence of a "*Fundamental Change*" (as such term is defined in the Fourth Supplemental Indenture).

(f) For the avoidance of doubt, paragraphs (a) and (e) do not relate to the put options in respect of the 8% New Notes which may be exercised in April 2018 or April 2023.

23.24 Termination of Trading

The occurrence of any "*Termination of Trading*" (as such term is defined in the Fourth Supplemental Indenture).

23.25 Purchase Notice

Any Purchase Notice is delivered by James Monroe III, Thermo, any Subsidiary Guarantor or any of their respective Affiliates pursuant to the terms of the Fourth Supplemental Indenture without any waiver of this provision from the Majority Lenders.

23.26 Certification

Any certification by an Obligor under, or as required by, any of the Finance Documents is incorrect in any material respect when delivered.

23.27 [Intentionally Omitted]

23.28 2021 Equity Issuance

If:

(a) by no later than 30 March 2021, the Borrower has not received new cash contributions in the Collection Account pursuant to an Equity Issuance:

(i) in an amount at least equal to the 2021 Equity Issuance Amount; and

(ii) the terms of which do not require a member of the Group to make a Shareholder Distribution prior to the Final Discharge Date,

(the "**2021 Equity Issuance**"); and

(b) on 30 March 2021, the Borrower has failed to demonstrate to the BPIFAE Agent satisfaction of Clause 20.2(a) (*Minimum Liquidity*).

23.29 Thermo Loan Agreement

Any failure to convert all amounts outstanding under the Thermo Loan Agreement into Capital Stock consisting of common shares of the Borrower by 30 June 2022.

24. Remedies Upon an Event of Default

24.1 Acceleration

On and at any time after the occurrence of an Event of Default (other than an Event of Default as set out in Clauses 23.6(a), (b), (c), (d), (f) and (g) (*Insolvency*) and 23.7(a) (*Insolvency Proceedings*)) which is continuing, the BPIFAE Agent may, and it shall if so directed by the Majority Lenders:

(a) by notice to the Borrower:

(i) cancel the Total Commitments whereupon they shall immediately be cancelled and no further Utilisations shall be requested or made under a Facility; and/or

(ii) declare that all or part of the Loans, together with accrued interest, and all other amounts accrued or outstanding under the Finance Documents be immediately due and payable, whereupon the same shall become immediately due and payable; and/or

(iii) declare that all or part of the Loans are payable on demand, whereupon they shall become immediately due and payable; and/or

(b) without notice to the Borrower:

(i) exercise or direct the Security Agent or the Offshore Account Bank to exercise any or all of its rights, remedies, powers or discretions under the Finance Documents; and/or

(ii) exercise all other contractual and legal rights of the Finance Parties in respect of any Liens; and/or

(iii) take any other action and pursue any other remedies available under Applicable Law or under the Finance Documents.

24.2 Automatic Acceleration

Following the occurrence of an Event of Default as set out in Clauses 23.6(a), (b), (c), (d), (f) and (g) (*Insolvency*), 23.7(a) (*Insolvency Proceedings*) or upon the occurrence of a Change of Control, the obligations of the Borrower shall be automatically accelerated without any requirement for notice from the Finance Parties whereupon:

(a) the Total Commitments shall be immediately cancelled and no further Utilisations shall be requested or made under a Facility;

(b) the Loans, together with accrued interest and all other amounts accrued and outstanding under the Finance Documents (including the BPIFAE 2013 Deferred Fee Premium and the Restructuring Fee) shall become immediately due and payable;

(c) the Security Agent shall be entitled to exercise any or all of its right, remedies, powers or discretions under the Finance Documents;

(d) the Finance Parties shall be entitled to exercise all other contractual and legal rights of the Finance Parties in respect of any Liens; and

(e) the Finance Parties shall be entitled to take any other actions and pursue any other remedies available under Applicable Law or under the Finance Documents.

25. Security

Unless expressly provided to the contrary, the Security Agent holds any security created by a Security Document for the Finance Parties on the terms set out in Schedule 6 (*The Security Agent*).

26. Changes to the Lenders

26.1 Assignments and Transfers by the Lenders

Subject to this Clause 26 (*Changes to the Lenders*), a Lender (the "**Existing Lender**") shall be entitled to assign any of its rights or transfer any of its rights and obligations under the Finance Documents to any person (the "**New Lender**") with the prior written consent of:

(a) the Borrower (such consent not to be unreasonably withheld or delayed in excess of five (5) Business Days commencing on the day upon which the Existing Lender requests such consent, after which such consent shall be deemed to have been given); *provided that*, no such consent is required for an assignment or transfer:

(i) required by any Applicable Law;

(ii) to a Qualifying Lender or to an existing Lender (or any of its Affiliates);

(iii) to an Affiliate or other group member of that Lender;

(iv) to a trust, a special purpose securitisation vehicle or any other entity as part of a securitisation or covered bond transaction;

(v) to a fund, financial institution or insurance company which is regularly engaged in or established for the purpose of making, purchasing or investing in loans, securities or other financial assets;

(vi) while a Default is continuing;

(vii) to BPIFAE; or

(viii) made to a "*Second Lien Lender*" (as such term is defined in the Second Lien Intercreditor Agreement) pursuant to, and in accordance with, clause 4.10 (*Option to Purchase: Second Lien Lenders*) of the Second Lien Intercreditor Agreement; and

(b) other than in relation to a transfer or assignment made pursuant to clause 4.10(a)(ii)(B) (*Option to Purchase: Second Lien Lenders*) of the Second Lien Intercreditor Agreement, BPIFAE.

26.2 Conditions of Assignment or Transfer

(a) The consent of the Borrower to an assignment must not be withheld solely because the assignment or transfer may result in an increase to the Mandatory Cost.

(b) An assignment will only be effective on:

(i) receipt by the BPIFAE Agent (whether in the Assignment Agreement or otherwise) of written confirmation from the New Lender (in form and substance satisfactory to the BPIFAE Agent) that the New Lender will assume the same obligations to the other Finance Parties as it would have been under if it was an Original Lender;

(ii) performance by the BPIFAE Agent of all necessary "*know your customer*" or other similar checks under all applicable laws and regulations in relation to such assignment to a New Lender, the completion of which the BPIFAE Agent shall promptly notify to the Existing Lender and the New Lender;

(iii) when the BPIFAE Agent updates the Register (as defined in Clause 26.8 (*Register*) below) in accordance with the provisions of Clause 26.8 (*Register*) below; and

(iv) the New Lender entering into documentation required for it to accede as a party to the Second Lien Intercreditor Agreement; and

(c) A transfer will only be effective if the New Lender enters into the documentation required for it to accede as a party to the Second Lien Intercreditor Agreement and if the procedure set out in Clause 26.5 (*Procedure for Transfer or Assignment*) is complied with.

(d) If:

(i) a Lender assigns or transfers any of its rights or obligations under the Finance Documents or changes its Facility Office; and

(ii) as a result of circumstances existing at the date the assignment, transfer or change occurs, an Obligor would be obliged to make a payment to the New Lender or Lender acting through its new Facility Office under Clause 13 (*Tax gross-up and Indemnities*) or Clause 14 (*Increased Costs*),

then the New Lender or Lender acting through its new Facility Office is only entitled to receive payment under those Clauses to the same extent as the Existing Lender or Lender acting through its previous Facility Office would have been if the assignment, transfer or change had not occurred.

(e) Each New Lender, by executing the relevant Transfer Certificate or Assignment Agreement, confirms, for the avoidance of doubt, that the BPIFAE Agent has authority to execute on its behalf any amendment or waiver that has been approved by or on behalf of the requisite Lender or Lenders in accordance with this Agreement on or prior to the date on which the transfer or assignment becomes effective in accordance with this Agreement and that it is bound by that decision to the same extent as the Existing Lender would have been had it remained a Lender.

26.3 Assignment or Transfer Fee

The New Lender shall, on the date upon which an assignment or transfer takes effect, pay to the BPIFAE Agent (for its own account) a fee of US$2,000.

26.4 Limitation of Responsibility of Existing Lenders

(a) Unless expressly agreed to the contrary, an Existing Lender makes no representation or warranty and assumes no responsibility to a New Lender for:

(i) the legality, validity, effectiveness, adequacy or enforceability of the Finance Documents or any other documents;

(ii) the financial condition of the Borrower or the status of the Project;

(iii) the performance and observance by the Borrower of its obligations under the Finance Documents or any other documents; or

(iv) the accuracy of any statements (whether written or oral) made in or in connection with any Finance Document or any other document,

and any representations or warranties implied by law are excluded.

(b) Each New Lender confirms to the Existing Lender and the other Finance Parties that it:

(i) has made (and shall continue to make) its own independent investigation and assessment of the financial condition and affairs of each Obligor and its related entities in connection with its participation in this Agreement and has not relied exclusively on any information provided to it by the Existing Lender in connection with any Finance Document; and

(ii) will continue to make its own independent appraisal of the creditworthiness of each Obligor and its related entities whilst any amount is or may be outstanding under the Finance Documents or any Commitment is in force.

(c) Nothing in any Finance Document obliges an Existing Lender to:

(i) accept a re-transfer or reassignment from a New Lender of any of the rights and obligations assigned or transferred under this Clause 26 (*Changes to the Lenders*); or

(ii) support any losses directly or indirectly incurred by the New Lender by reason of the non-performance by any Obligor of its obligations under the Finance Documents or otherwise.

26.5 Procedure for Transfer or Assignment

(a) In respect of any transfer:

(i) subject to the conditions set out in Clause 26.2 (*Conditions of Assignment or Transfer*) a transfer is effected in accordance with paragraph (iii) below when the BPIFAE Agent executes an otherwise duly completed Transfer Certificate delivered to it by the Existing Lender and the New Lender and updates the Register (as defined in Clause 26.8 (*Register*) below) in accordance with the provisions of Clause 26.8 (*Register*) below. The BPIFAE Agent shall, subject to paragraph (ii) below, as soon as reasonably practicable after receipt by it of a duly completed Transfer Certificate appearing on its face to comply with the terms of this Agreement and delivered in accordance with the terms of this Agreement, execute that Transfer Certificate

(ii) The BPIFAE Agent shall only be obliged to execute a Transfer Certificate delivered to it by the Existing Lender and the New Lender once it is satisfied it has complied with all necessary "*know your customer*" or other similar checks under all applicable laws and regulations in relation to the transfer to such New Lender.

(iii) On the Transfer Date:

(A) to the extent that in the Transfer Certificate the Existing Lender seeks to transfer by novation its rights and obligations under the Finance Documents each of the Obligors and the Existing Lender shall be released from further obligations towards one another under the Finance Documents and their respective rights against one another under the Finance Documents shall be cancelled (being the "**Discharged Rights and Obligations**");

(B) the Borrower and the New Lender shall assume obligations towards one another and/or acquire rights against one another which differ from the Discharged Rights and Obligations only insofar as that Obligor and the New Lender have assumed and/or acquired the same in place of that Obligor and the Existing Lender;

(C) the BPIFAE Agent, the Security Agent, each Mandated Lead Arranger, the New Lender and other Lenders shall acquire the same rights and assume the same obligations between themselves as they would have acquired and assumed had the New Lender been an Original Lender with the rights and/or obligations acquired or assumed by it as a result of the transfer and to that extent the BPIFAE Agent, each Mandated Lead Arranger, the Security Agent and the Existing Lender shall each be released from further obligations to each other under the Finance Documents; and

(D) the New Lender shall become a Party as a "Lender".

(iv) For the avoidance of doubt, for the purposes of *article 1278* of the French Civil Code and only in relation to the Borrower Pledge of Bank Accounts, the Borrower Additional Pledge of Bank Accounts and the Holding Account Pledge Agreement it is expressly agreed that the Pledge of Bank Accounts shall be preserved for the benefit of the New Lender and all other Finance Parties.

(b) In respect of any assignment:

(i) subject to the conditions set out in Clause 26.2 (*Conditions of Assignment or Transfer*) an assignment may be effected in accordance with paragraph (iii) below when the BPIFAE Agent executes an otherwise duly completed Assignment Agreement delivered to it by the Existing Lender and the New Lender. The BPIFAE Agent shall, subject to paragraph (ii) below, as soon as reasonably practicable after receipt by it of a duly completed Assignment Agreement appearing on its face to comply with the terms of this Agreement and delivered in accordance with the terms of this Agreement, execute that Assignment Agreement.

(ii) The BPIFAE Agent shall only be obliged to execute an Assignment Agreement delivered to it by the Existing Lender and the New Lender once it is satisfied it has complied with all necessary "*know your customer*" or other similar checks under all applicable laws and regulations in relation to the assignment to such New Lender.

(iii) On the Transfer Date:

(A) the Existing Lender will assign absolutely to the New Lender the rights under the Finance Documents expressed to be the subject of the assignment in the Assignment Agreement;

(B) the Existing Lender will be released by each Obligor and the other Finance Parties from the obligations owed by it (the "**Relevant Obligations**") and expressed to be the subject of the release in the Assignment Agreement; and

(C) the New Lender shall become a Party as a "*Lender*" and will be bound by obligations equivalent to the Relevant Obligations.

(iv) Lenders may utilise procedures other than those set out in this Clause 26.5 to assign their rights under the Finance Documents (but not, without the consent of the relevant Obligor or unless in accordance with this Clause 26.5, to obtain a release by that Obligor from the obligations owed to that Obligor by the Lenders nor the assumption of equivalent obligations by a New Lender) *provided that* they comply with the conditions set out in Clause 26.2 (*Conditions of Assignment or Transfer*).

26.6 Copy of Transfer Certificate or Assignment Agreement to Borrower

The BPIFAE Agent shall, as soon as reasonably practicable after it has executed a Transfer Certificate or an Assignment Agreement, send to the Borrower a copy of that Transfer Certificate or Assignment Agreement.

26.7 Disclosure of Information

Any Lender may disclose to any of its Affiliates and any other person:

(a) to (or through) whom that Lender assigns or transfers (or may potentially assign or transfer) all or any of its rights and obligations under this Agreement;

(b) with (or through) whom that Lender enters into (or may potentially enter into) any sub-participation in relation to, or any other transaction under which payments are to be made by reference to, this Agreement or any Obligor; or

(c) to whom, and to the extent that, information is required to be disclosed by any applicable law or regulation,

any information about the Borrower, the Thermo Group, the Group and the Finance Documents as that Lender shall consider appropriate if, in relation to paragraphs (a) and (b) above, the person to whom the information is to be given has entered into a Confidentiality Undertaking.

26.8 Register

(a) The Borrower hereby designates the BPIFAE Agent, and the BPIFAE Agent agrees, to serve as the Borrower's agent, solely for purposes of this Clause 26.8, to maintain a register (the "**Register**") on which it will record the Commitments from time to time of

each of the Lenders and each repayment in respect of the principal amount of the Loans of each Lender.

(b) Failure to make any such recordation, or any error in such recordation shall not affect the Borrower's obligations in respect of such Loans.

(c) With respect to any Lender, the transfer or assignment of the Commitments of such Lender and the rights to the principal of, and interest on, any Loan made pursuant to such Commitments shall not be effective until:

(i) the Transfer Certificate has been executed by the BPIFAE Agent; and

(ii) such transfer is recorded on the Register maintained by the BPIFAE Agent with respect to ownership of such Commitments and Loans. Prior to such recordation all amounts owing to the transferor with respect to such Commitments and Loans shall remain owing to the transferor.

(d) The registration of an assignment or transfer of all or part of any Commitments and Loans shall be recorded by the BPIFAE Agent on the Register only upon the acceptance by the BPIFAE Agent of a properly executed and delivered Transfer Certificate pursuant to this Clause 26.8.

(e) The Borrower agrees to indemnify the BPIFAE Agent from and against any and all losses, claims, damages and liabilities of whatsoever nature which may be imposed upon, asserted against or incurred by the BPIFAE Agent in performing its duties under this Clause 26.8 except to the extent resulting from the gross negligence or wilful misconduct of the BPIFAE Agent (as determined by a court of competent jurisdiction in a final and non-appealable decision).

26.9 Liens over Lenders' rights

(a) In addition to the other rights provided to Lenders under this Clause 26 (*Changes to the Lenders*), each Lender may without consulting with or obtaining consent from the Borrower or the other Lenders, at any time charge, assign or otherwise create a Lien in or over (whether by way of collateral or otherwise) all or any of its rights under any Finance Document to secure obligations of that Lender including, without limitation:

(i) any charge, assignment or other Lien (including pursuant to Article L 211-38 et seq. of the French monetary and financial code and pursuant to the European Financial Collateral Directive) to secure obligations to a federal reserve or central bank, or to an Affiliate of a Lender or a special purpose vehicle or any entity set up in connection with a dedicated refinancing scheme for buyer credits in the country of any Lender or in connection with covered bonds programs or to a fund, financial institution or insurance company providing funds dedicated to export credits; and

(ii) in the case of any Lender which is a fund, any charge, assignment or other Lien granted to any holders (or trustee or representatives of holders) of obligations owed, or securities issued, by that Lender as security for those obligations or securities,

except that no such charge, assignment or Lien shall:

(A) release a Lender from any of its obligations under the Finance Documents or substitute the beneficiary of the relevant charge, assignment or Lien for the Lender as a party to any of the Finance Documents; or

(B) require any payments to be made by the Borrower or grant to any person any more extensive rights than those required to be made or granted to the relevant Lender under the Finance Documents; *provided that*, this sub-clause (ii) would not be applicable to any Borrower's grossing-up obligation arising whenever an Affiliate of a Lender which would be a "*société de crédit foncier*" would become a Lender further to the implementation of a security interest granted in or over all or any rights of such Lender under any Finance Document in favour of such Affiliate.

(b) The Borrower undertakes to comply with all necessary formalities, if any, and take all necessary steps in order for the assignment, charge or Lien over the relevant Lender's rights to be created

27. Changes to the Borrower

The Borrower may not assign any of its rights or transfer any of its rights or obligations under the Finance Documents.

28. Role of the BPIFAE Agent, the Security Agent and the Mandated Lead Arrangers

28.1 Appointment of the BPIFAE Agent and the Security Agent

(a) Each other Finance Party (other than the Security Agent) appoints the BPIFAE Agent to act as its agent under and in connection with the Finance Documents.

(b) Each other Finance Party (other than the BPIFAE Agent) appoints the Security Agent:

(i) to act as its security agent and security trustee under and in connection with the Finance Documents; and

(ii) to enforce any Security expressed to be created under the Security Documents as agent (or as otherwise provided) on its behalf, subject always to the terms of the Finance Documents.

(c) Each other Finance Party authorises the BPIFAE Agent and the Security Agent to exercise the rights, powers, authorities and discretions specifically given to the BPIFAE Agent and the Security Agent under or in connection with the Finance Documents together with any other incidental rights, powers, authorities and discretions.

28.2 Appointment of the Security Agent (France)

(a) Each Finance Party (other than the Security Agent) as "*mandants*" under French law irrevocably:

(i) appoints the Security Agent to act as agent (*mandataire*) pursuant to article 1984 of the French *Code Civil* for the purpose of executing any French Security Documents in its name, including, if required, the appointment of a custodian which shall hold assets on its behalf in custody under any French Security Documents, and the Security Agent accepts such appointment;

(ii) confirms its approval of the French Security Documents creating or expressed to create a Lien benefiting it and any Lien created or to be created pursuant thereto; and

(iii) irrevocably authorises, empowers and directs the Security Agent (by itself or by such person as it may nominate) on its behalf, to perform the duties and to exercise the rights, powers and discretions that are specifically delegated to it under or in connection with the French Security Documents, to take any action and exercise any right, power, authorities and discretion upon the terms and conditions set out in this Agreement under or in connection with the French Security Documents, in each case, together with any other rights, powers and discretions which are incidental thereto, it being understood that each Finance Party (other than the Security Agent) shall issue special powers of attorneys in all cases where the exercise of powers granted under this Agreement requires the issuance of any such special powers of attorney, and the Security Agent accepts such appointment.

(b) The Security Agent will act solely for itself and as agent for the other Finance Parties in carrying out its functions as agent under the French Security Documents.

(c) The Security Agent shall not have, nor be deemed to have, assumed any obligations to, or trust or fiduciary relationship with, any party to this Agreement other than those for which specific provision is made by the French Security Documents and, to the extent permissible under French law, the other provisions of this Agreement, which shall be deemed to be incorporated in this Clause 28.2, where reference is made to the French Security Documents.

(d) Notwithstanding Clause 39 (*Governing Law*), this Clause 28.2 shall be governed by, and construed in accordance with, French law. Notwithstanding Clause 40.1 (*Jurisdiction*), any dispute arising out of this Clause 28.2 shall be submitted to the *Tribunal de Commerce de Paris*.

(e) Each Finance Party, the Security Agent and the Borrower irrevocably acknowledge that the existence and extent of the Security Agent's authority resulting from this Clause 28.2 and the effects of the Security Agent's exercise of this authority shall be governed by French law.

28.3 Duties of the BPIFAE Agent and the Security Agent

(a) Each of the BPIFAE Agent and the Security Agent shall promptly forward to a Party the original or a copy of any document which is delivered to the BPIFAE Agent or the Security Agent for that Party by any other Party.

(b) Without prejudice to Clause 26.6 (*Copy of Transfer Certificate or Assignment Agreement to Borrower*), paragraph (a) shall not apply to any Transfer Certificate or to any Assignment Agreement.

(c) Except where a Finance Document specifically provides otherwise, neither the BPIFAE Agent nor the Security Agent is obliged to review or check the adequacy, accuracy or completeness of any document it forwards to another Party.

(d) If the BPIFAE Agent or the Security Agent receives notice from a Party referring to this Agreement, describing a Default and stating that the circumstance described is a Default, it shall promptly notify the Finance Parties.

(e) If the BPIFAE Agent is aware of the non-payment of any principal, interest, commitment fee or other fee payable to a Finance Party (other than the BPIFAE Agent, the Security Agent or a Mandated Lead Arranger) under this Agreement it shall promptly notify the other Finance Parties.

(f) The BPIFAE Agent's and the Security Agent's duties under the Finance Documents are solely mechanical and administrative in nature.

(g) The BPIFAE Agent and the Security Agent shall only have those duties, obligations and responsibilities specified in the Finance Documents to which it is expressed to be a party (and no other shall be implied).

28.4 Role of the Mandated Lead Arrangers

Except as specifically provided in the Finance Documents, no Mandated Lead Arranger has any obligations of any kind to any other Party under or in connection with any Finance Document.

28.5 No Fiduciary Duties

(a) Nothing in this Agreement constitutes the BPIFAE Agent, the Security Agent (except as expressly provided in the Finance Documents) or a Mandated Lead Arranger as a trustee or fiduciary of any other person.

(b) Neither the BPIFAE Agent, the Security Agent (except as expressly provided in the Finance Documents) nor the Mandated Lead Arrangers shall be bound to account to any Lender for any sum or the profit element of any sum received by it for its own account.

28.6 Business with the Group

The BPIFAE Agent, the Security Agent and the Mandated Lead Arrangers may accept deposits from, lend money to and generally engage in any kind of banking or other business with any member of the Group.

28.7 Rights and Discretions of the BPIFAE Agent and the Security Agent

(a) Each of the BPIFAE Agent and the Security Agent may rely on:

(i) any representation, communication, notice or document believed by it to be genuine, correct and appropriately authorised;

(ii) any statement made by a director, authorised signatory or employee of any person regarding any matters which may reasonably be assumed to be within his knowledge or within his power to verify;

(iii) assume that:

(A) any instructions received by it from the Majority Lenders, any Lenders or any group of Lenders are duly given in accordance with the terms of the Finance Documents; and

(B) unless it has received notice of revocation, that those instructions have not been revoked; and

(iv) rely on a certificate from any person:

(A) as to any matter of fact or circumstance which might reasonably be expected to be within the knowledge of that person; or

(B) to the effect that such person approves of any particular dealing, transaction, step, action or thing,

as sufficient evidence that that is the case and, in the case of paragraph (A) above, may assume the truth and accuracy of that certificate.

(b) Each of the BPIFAE Agent and the Security Agent may assume (unless it has received notice to the contrary in its capacity as agent for the Lenders) that:

(i) no Default has occurred (unless it has actual knowledge of a Default arising under Clause 23.1 (*Non-Payment*));

(ii) any right, power, authority or discretion vested in any Party or the Majority Lenders has not been exercised; and

(iii) any notice or request made by the Borrower (other than a Utilisation Request) is made on behalf of and with the consent and knowledge of the Borrower.

(c) Each of the BPIFAE Agent and the Security Agent may engage, pay for and rely on the advice or services of any lawyers, accountants, tax advisors, surveyors or other professional advisors or experts.

(d) Without prejudice to the generality of paragraph (c) above or paragraph (e) below, the BPIFAE Agent or Security Agent may at any time engage and pay for the services of any lawyers to act as independent counsel to the BPIFAE Agent or Security Agent (and so separate from any lawyers instructed by the Lenders) if the BPIFAE Agent or Security Agent in its reasonable opinion deems this to be necessary.

(e) The BPIFAE Agent or Security Agent may rely on the advice or services of any lawyers, accountants, tax advisers, surveyors or other professional advisers or experts (whether obtained by the BPIFAE Agent or Security Agent or by any other Party) and shall not be liable for any damages, costs or losses to any person, any diminution in value or any liability whatsoever arising as a result of its so relying.

(f) Each of the BPIFAE Agent and the Security Agent may act in relation to the Finance Documents through its personnel and agents and shall not:

(i) be liable for any error of judgment made by any such person; or

(ii) be bound to supervise, or be in any way responsible for, any loss incurred by reason of misconduct, omission or default on the part of any such person,

unless such error or such loss was directly caused by the BPIFAE Agent or the Security Agent's (as applicable) gross negligence or wilful misconduct

(g) Each of the BPIFAE Agent and the Security Agent may disclose to any other Party any information it reasonably believes it has received as agent under this Agreement.

(h) Notwithstanding any other provision of any Finance Document to the contrary, none of the BPIFAE Agent, the Security Agent nor a Mandated Lead Arranger is obliged to do or omit to do anything if it would or might in its reasonable opinion constitute a breach of any law, regulation or a breach of a fiduciary duty or duty of confidentiality.

(i) Notwithstanding any provision of any Finance Document to the contrary, neither the BPIFAE Agent or the Security Agent is not obliged to expend or risk its own funds or otherwise incur any financial liability in the performance of its duties, obligations or responsibilities or the exercise of any right, power, authority or discretion if it has grounds for believing the repayment of such funds or adequate indemnity against, or security for, such risk or liability is not reasonably assured to it.

(j) Save as expressly otherwise provided in any Finance Document, the Security Agent may exercise its trusts, powers and authorities under the Finance Documents in its absolute and unconditional discretion.

28.8 Majority Lenders' Instructions

(a) Unless a contrary indication appears in a Finance Document, each of the BPIFAE Agent and the Security Agent shall:

(i) exercise any right, power, authority or discretion vested in it in accordance with any instructions given to it by the Majority Lenders (or, if so instructed by the Majority Lenders, refrain from exercising any right, power, authority or discretion vested in it); and

(ii) not be liable for any act (or omission) if it acts (or refrains from taking any action) in accordance with an instruction of the Majority Lenders.

(b) Save in the case of decisions stipulated to be a matter for any other Lender or group of Lenders under the relevant Finance Document and unless a contrary indication appears

in a Finance Document, any instructions given to the BPIFAE Agent by the Majority Lenders shall override any conflicting instructions given by any other Parties and will be binding on all the Finance Parties, save for the Security Agent.

(c) Each of the BPIFAE Agent and the Security Agent may refrain from acting in accordance with the instructions of the Majority Lenders (or, if appropriate, the Lenders) until it has received such indemnification and/or security as it may in its sole discretion require for any cost, loss or liability (together with any associated VAT), and which may be greater in extent than that contained in the Finance Documents and which may include payment in advance) which it may incur in complying with those instructions.

(d) In the absence of instructions from the Majority Lenders, (or, if appropriate, the Lenders) each of the BPIFAE Agent and the Security Agent may act (or refrain from taking action) as it considers to be in the best interest of the Lenders.

(e) Each of the BPIFAE Agent and the Security Agent shall be entitled to request instructions, or clarification of any instruction, from the Majority Lenders (or, if the relevant Finance Document stipulates the matter is a decision for any other Lender or group of Lenders, from that Lender or group of Lenders) as to whether, and in what manner, it should exercise or refrain from exercising any right, power, authority or discretion and the BPIFAE Agent and the Security Agent may refrain from acting unless and until it receives any such instructions or clarification that it has requested.

(f) Neither the BPIFAE Agent nor the Security Agent is authorised to act on behalf of a Lender (without first obtaining that Lender's consent) in any legal or arbitration proceedings relating to any Finance Document. This paragraph (f) shall not apply to any legal or arbitration proceeding relating to the perfection, preservation or protection of rights under the Security Documents or enforcement of the security interests or the Security Documents.

(g) The Security Agent may assume (unless it has received notice to the contrary in its capacity as Security Agent) that all instructions given to it by the BPIFAE Agent, if required to be approved by the Majority Lenders, have been so approved.

28.9 Responsibility for Documentation

None of the BPIFAE Agent, the Security Agent nor a Mandated Lead Arranger:

(a) is responsible or liable for the adequacy, accuracy and/or completeness of any information (whether oral or written) supplied by the BPIFAE Agent, the Security Agent, a Mandated Lead Arranger, the Borrower or any other person given in or in connection with any Finance Document or the transactions contemplated in the Finance Documents or any other agreement, arrangement or document entered into, made or executed in anticipation of, under or in connection with any Finance Document; or

(b) is responsible for the legality, validity, effectiveness, adequacy or enforceability of any Finance Document or any other agreement, arrangement or document entered into, made or executed in anticipation of or in connection with any Finance Document.

28.10 No Duty to Monitor

Neither the BPIFAE Agent nor the Security Agent shall not be bound to enquire:

(a) whether or not any Default has occurred;

(b) as to the performance, default or any breach by any Party of its obligations under any Finance Document; or

(c) whether any other event specified in any Finance Document has occurred.

28.11 Exclusion of Liability

(a) Without limiting paragraph (b) below, neither the BPIFAE Agent nor the Security Agent will be liable (including, without limitation, for negligence or any other category of liability whatsoever) for:

(i) any damages, costs or losses to any person, any diminution in value, or any liability whatsoever arising as a result of taking or not taking any action under or in connection with any Finance Document, unless directly caused by its gross negligence or wilful misconduct;

(ii) exercising, or not exercising, any right, power, authority or discretion given to it by, or in connection with, any Finance Document or any other agreement, arrangement or document entered into, made or executed in anticipation of, under or in connection with, any Finance Document; or

(iii) without prejudice to the generality of paragraphs (i) and (ii) above, any damages, costs or losses to any person, any diminution in value or any liability whatsoever arising as a result of:

(A) any act, event or circumstance not reasonably within its control; or

(B) the general risks of investment in, or the holding of assets in, any jurisdiction,

including (in each case and without limitation) such damages, costs, losses, diminution in value or liability arising as a result of: nationalisation, expropriation or other governmental actions; any regulation, currency restriction, devaluation or fluctuation; market conditions affecting the execution or settlement of transactions or the value of assets (including any Disruption Event); breakdown, failure or malfunction of any third party transport, telecommunications, computer services or systems; natural disasters or acts of God; war, terrorism, insurrection or revolution; or strikes or industrial action.

(b) No Party (other than the BPIFAE Agent or the Security Agent) may take any proceedings against any officer, employee or agent of the BPIFAE Agent or the Security Agent in respect of any claim it might have against the BPIFAE Agent or the Security Agent or in respect of any act or omission of any kind by that officer, employee or agent in relation to any Finance Document and any officer, employee or agent of the BPIFAE Agent or the Security Agent may rely on this Clause 28.10 subject to Clause 1.5 (*Third Party Rights*) and the provisions of the Third Parties Act.

(c) Neither the BPIFAE Agent nor the Security Agent will be liable for any delay (or any related consequences) in crediting an account with an amount required under the Finance Documents to be paid by it if it has taken all necessary steps as soon as reasonably practicable to comply with the regulations or operating procedures of any recognised clearing or settlement system used by it for that purpose.

(d) Nothing in this Agreement shall oblige the BPIFAE Agent, the Security Agent or a Mandated Lead Arranger to carry out:

(i) any "*know your customer*" or other checks in relation to any person on behalf of any Lender; or

(ii) any check on the extent to which any transaction contemplated by this Agreement might be unlawful for any Lender, and

each Lender confirms to the BPIFAE Agent, the Security Agent and each Mandated Lead Arranger that it is solely responsible for any such checks it is required to carry out and that it may not rely on any statement in relation to such checks made by the BPIFAE Agent, the Security Agent and a Mandated Lead Arranger.

(e) Without prejudice to any provision of any Finance Document excluding or limiting the BPIFAE Agent's or the Security Agent's liability, any liability of the BPIFAE Agent or the Security Agent arising under or in connection with any Finance Document shall be limited to the amount of actual loss which has been finally judicially determined to have been suffered (as determined by reference to the date of default of the BPIFAE Agent or the Security Agent (as applicable) or, if later, the date on which the loss arises as a result of such default) but without reference to any special conditions or circumstances known to the BPIFAE Agent or the Security Agent (as applicable) at any time which increase the amount of that loss. In no event shall the BPIFAE Agent or the Security Agent be liable for any loss of profits, goodwill, reputation, business opportunity or anticipated saving, or for special, punitive, indirect or consequential damages, whether or not the BPIFAE Agent or the Security Agent (as applicable) has been advised of the possibility of such loss or damages.

28.12 Lenders' Indemnity to the BPIFAE Agent and the Security Agent

Each Lender shall (in proportion to its share of the Total Commitments or, if the Total Commitments are then zero, to its share of the Total Commitments immediately prior to their reduction to zero) indemnify each of the BPIFAE Agent and the Security Agent, within three (3) Business Days of demand, against any cost, loss or liability (including, without limitation, for negligence or any other category of liability whatsoever) incurred by the BPIFAE Agent and the Security Agent (otherwise than by reason of its gross negligence or wilful misconduct) notwithstanding its negligence, gross negligence or any other category of liability whatsoever but not including any claim based on the fraud of the BPIFAE Agent or the Security Agent in acting as BPIFAE Agent or the Security Agent under the Finance Documents (unless the BPIFAE Agent or the Security Agent has been reimbursed by the Borrower pursuant to a Finance Document).

28.13 Resignation of the BPIFAE Agent and the Security Agent

(a) Each of the BPIFAE Agent and the Security Agent may resign and appoint one of its Affiliates as successor by giving notice to the other Finance Parties and the Borrower.

(b) Alternatively each of the BPIFAE Agent and the Security Agent may resign by giving notice to the other Finance Parties and the Borrower, in which case the Majority Lenders (after consultation with the Borrower) may appoint a successor BPIFAE Agent or Security Agent (as the case may be).

(c) If the Majority Lenders have not appointed a successor BPIFAE Agent or Security Agent in accordance with Clause 28.12(b) within thirty (30) days after notice of resignation was given, the BPIFAE Agent or the Security Agent (after consultation with the Borrower) may appoint a successor BPIFAE Agent or Security Agent.

(d) If the BPIFAE Agent or Security Agent wishes to resign because (acting reasonably) it has concluded that it is no longer appropriate for it to remain as agent and the BPIFAE Agent or Security Agent (as applicable) is entitled to appoint a successor under paragraph (c) above, the BPIFAE Agent or Security Agent (applicable) may (if it concludes (acting reasonably) that it is necessary to do so in order to persuade the proposed successor BPIFAE Agent or Security Agent to become a party to this Agreement) agree with the proposed successor BPIFAE Agent or Security Agent (as applicable) amendments to this Clause 28 consistent with then current market practice for the appointment and protection of corporate trustees together with any reasonable amendments to the agency fees payable under this Agreement which are consistent with the successor BPIFAE Agent's or Security Agent's (as applicable) normal fee rates and those amendments will bind the Parties.

(e) The retiring BPIFAE Agent or Security Agent shall, at its own cost, make available to its successor such documents and records and provide such assistance as its successor may reasonably request for the purposes of performing its functions as BPIFAE Agent or Security Agent under the Finance Documents.

(f) The BPIFAE Agent's resignation notice shall only take effect upon the appointment of a successor.

(g) The Security Agent's resignation notice shall only take effect upon:

(i) the appointment of a successor; and

(ii) the transfer of all of any Lien expressed to be created under the Security Documents to that successor.

(h) Upon the appointment of a successor, the retiring BPIFAE Agent or Security Agent shall be discharged from any further obligation in respect of the Finance Documents but shall remain entitled to the benefit of this Clause 28.12 (and any agency fees for the account of the retiring BPIFAE Agent or Security Agent (as applicable) shall cease to accrue from (and shall be payable on) that date). Its successor and each of the other Parties shall have the same rights and obligations amongst themselves as they would have had if such successor had been an original Party.

(i) After consultation with the Borrower, the Majority Lenders may, by notice to the BPIFAE Agent or the Security Agent (as the case may be), require it to resign in accordance with Clause 28.12(a). In this event, the BPIFAE Agent or the Security Agent (as the case may be) shall resign in accordance with Clause 28.12(a).

(j) The BPIFAE Agent shall resign in accordance with paragraph (b) above (and, to the extent applicable, shall use reasonable endeavours to appoint a successor BPIFAE Agent pursuant to paragraph (c) above) if on or after the date which is three (3) months before the earliest FATCA Application Date relating to any payment to the BPIFAE Agent under the Finance Documents:

(i) the BPIFAE Agent fails to respond to a request under Clause 13.7 (*FATCA Information*) and a Lender reasonably believes that the BPIFAE Agent will not be (or will have ceased to be) a FATCA Exempt Party on or after that FATCA Application Date;

(ii) the information supplied by the BPIFAE Agent pursuant to Clause 13.7 (*FATCA Information*) indicates that the BPIFAE Agent will not be (or will have ceased to be) a FATCA Exempt Party on or after that FATCA Application Date; or

(iii) the BPIFAE Agent notifies the Borrower and the Lenders that the BPIFAE Agent will not be (or will have ceased to be) a FATCA Exempt Party on or after that FATCA Application Date,

and, in each case, a Lender reasonably believes that a Party will be required to make a FATCA Deduction that would not be required if the BPIFAE Agent were a FATCA Exempt Party, and that Lender, by written notice to the BPIFAE Agent, requires it to resign.

28.14 Confidentiality

(a) In acting as agent for the Finance Parties, each of the BPIFAE Agent and the Security Agent shall be regarded as acting through its agency division which shall be treated as a separate entity from any other of its divisions or departments.

(b) If information is received by another division or department of the BPIFAE Agent or the Security Agent, it may be treated as confidential to that division or department and neither the BPIFAE Agent nor the Security Agent shall be deemed to have notice of it.

28.15 Relationship with the Lenders

The BPIFAE Agent may treat each Lender as a Lender, entitled to payments under this Agreement and acting through its Facility Office unless it has received not less than five (5) Business Days prior notice from that Lender to the contrary in accordance with the terms of this Agreement.

28.16 Credit Appraisal by the Lenders

Without affecting the responsibility of the Borrower for information supplied by it or on its behalf in connection with any Finance Document, each Lender confirms to the BPIFAE Agent, the Security Agent and the Mandated Lead Arrangers that it has been, and will continue to be,

solely responsible for making its own independent appraisal and investigation of all risks arising under or in connection with any Finance Document including but not limited to:

(a) the financial condition, status and nature of the Group;

(b) the legality, validity, effectiveness, adequacy or enforceability of any Finance Document and any other agreement, arrangement or document entered into, made or executed in anticipation of, under or in connection with any Finance Document;

(c) whether that Lender has recourse, and the nature and extent of that recourse, against any Party or any of its respective assets under or in connection with any Finance Document, the transactions contemplated by the Finance Documents or any other agreement, arrangement or document entered into, made or executed in anticipation of, under or in connection with any Finance Document; and

(d) the adequacy, accuracy and/or completeness of any information provided by the BPIFAE Agent, the Security Agent, any Party or by any other person under or in connection with any Finance Document, the transactions contemplated by the Finance Documents or any other agreement, arrangement or document entered into, made or executed in anticipation of, under or in connection with any Finance Document.

28.17 Reference Banks

If a Reference Bank who is also a Lender (or, if a Reference Bank is not a Lender, the Lender of which it is an Affiliate) ceases to be a Lender, the BPIFAE Agent shall (in consultation with the Borrower) appoint another Lender or an Affiliate of a Lender to replace that Reference Bank.

28.18 BPIFAE Agent's and Security Agent's Management Time

Any amounts payable to the BPIFAE Agent or the Security Agent (as the case may be) under Clause 15.3 (*Indemnity to the BPIFAE Agent*), Clause 15.4 (*Indemnity to the Security Agent*) and Clause 17 (*Costs and Expenses*) shall include the cost of utilising the BPIFAE Agent's or the Security Agent's management time or other resources and will be calculated on the basis of such reasonable daily or hourly rates as the BPIFAE Agent or the Security Agent may notify to the Borrower and the Lenders, and is in addition to any fee paid or payable to the BPIFAE Agent and the Security Agent under Clause 11 (*Fees*).

28.19 Deduction from Amounts Payable by the BPIFAE Agent and the Security Agent

If any Party owes an amount to the BPIFAE Agent or the Security Agent under the Finance Documents, the BPIFAE Agent or the Security Agent (as the case may be) may, after giving notice to that Party and *provided that* this will not result in breach of any applicable currency control regulations by the Borrower, deduct an amount not exceeding that amount from any payment to that Party which the BPIFAE Agent or the Security Agent would otherwise be obliged to make under the Finance Documents and apply the amount deducted in or towards satisfaction of the amount owed. For the purposes of the Finance Documents, that Party shall be regarded as having received any amount so deducted.

28.20 Security Agent

(a) The provisions of Schedule 6 (*The Security Agent*) shall bind each Party.

(b) The Security Agent shall promptly transfer to the BPIFAE Agent any amounts received by it under the Finance Documents for application by the BPIFAE Agent in accordance with the order set out in Clause 31.6 (*Partial Payments*). The Security Agent shall be obliged to make such transfer only to the extent it has actually received such amount.

(c) At the request of the Security Agent, the BPIFAE Agent shall notify the Security Agent, and shall provide a copy of such notification to the Borrower, of amounts due to any Party under this Agreement, and the due date for such amounts. The Security Agent may accept such notifications as conclusive evidence of the matters to which they relate.

28.21 No Independent Power

(a) The Lenders shall not have any independent power to enforce, or have recourse to, any of the Liens expressed to be created under the Security Documents, or to exercise any rights or powers arising under the Security Documents except through the Security Agent.

(b) This Clause 28.20 is for the benefit of the Finance Parties only.

28.22 Role of Reference Banks

(a) No Reference Bank is under any obligation to provide a quotation or any other information to the BPIFAE Agent.

(b) No Reference Bank will be liable for any action taken by it under or in connection with any Finance Document, or for any Reference Bank Quotation, unless directly caused by its gross negligence or wilful misconduct.

(c) No Party (other than the relevant Reference Bank) may take any proceedings against any officer, employee or agent of any Reference Bank in respect of any claim it might have against that Reference Bank or in respect of any act or omission of any kind by that officer, employee or agent in relation to any Finance Document, or to any Reference Bank Quotation, and any officer, employee or agent of each Reference Bank may rely on this Clause 28.21 subject to Clause 1.5 (*Third Party Rights*) and the provisions of the Third Parties Act.

29. Conduct of Business by the Finance Parties

No provision of this Agreement will:

(a) interfere with the right of any Finance Party to arrange its affairs (tax or otherwise) in whatever manner it thinks fit;

(b) oblige any Finance Party to investigate or claim any credit, relief, remission or repayment available to it or the extent, order and manner of any claim; or

(c) oblige any Finance Party to disclose any information relating to its affairs (tax or otherwise) or any computations in respect of Tax.

30. Sharing among the Finance Parties

30.1 Payments to Finance Parties

If a Finance Party (a "**Recovering Finance Party**") receives or recovers any amount from an Obligor other than in accordance with Clause 31 (*Payment Mechanics*) and applies that amount to a payment due under the Finance Documents then:

(a) the Recovering Finance Party shall, within three (3) Business Days, notify details of the receipt or recovery, to the BPIFAE Agent;

(b) the BPIFAE Agent shall determine whether the receipt or recovery is in excess of the amount the Recovering Finance Party would have been paid had the receipt or recovery been received or made by the BPIFAE Agent and distributed in accordance with Clause 31 (*Payment Mechanics*), without taking account of any Tax which would be imposed on the BPIFAE Agent in relation to the receipt, recovery or distribution; and

(c) the Recovering Finance Party shall, within three (3) Business Days of demand by the BPIFAE Agent, pay to the BPIFAE Agent an amount (the "**Sharing Payment**") equal to such receipt or recovery less any amount which the BPIFAE Agent determines may be retained by the Recovering Finance Party as its share of any payment to be made, in accordance with Clause 31.6 (*Partial Payments*).

30.2 Redistribution of Payments

The BPIFAE Agent shall treat the Sharing Payment as if it had been paid by the relevant Obligor and distribute it between the Finance Parties (other than the Recovering Finance Party) (the "**Sharing Finance Parties**") in accordance with Clause 31.6 (*Partial Payments*) towards the obligations of that Obligor to the Sharing Finance Parties.

30.3 Recovering Finance Party's Rights

On a distribution by the BPIFAE Agent under Clause 30.2 (*Redistribution of Payments*), of a payment received by a Recovering Finance Party from an Obligor, as between the relevant Obligor and the Recovering Finance Party, an amount of the Recovered Amount equal to the Sharing Payment will be treated as not having been paid by that Obligor.

30.4 Reversal of Redistribution

If any part of the Sharing Payment received or recovered by a Recovering Finance Party becomes repayable and is repaid by that Recovering Finance Party, then:

(a) each Sharing Finance Party shall, upon request of the BPIFAE Agent, pay to the BPIFAE Agent for the account of that Recovering Finance Party an amount equal to the appropriate part of its share of the Sharing Payment (together with an amount as is necessary to reimburse that Recovering Finance Party for its proportion of any interest on the Sharing Payment which that Recovering Finance Party is required to pay) (the "**Redistributed Amount**"); and

(b) as between the relevant Obligor and each relevant Sharing Finance Party, an amount equal to the relevant Redistributed Amount will be treated as not having been paid by that Obligor.

30.5 Exceptions

(a) This Clause 30 shall not apply to the extent that the Recovering Finance Party would not, after making any payment pursuant to this Clause, have a valid and enforceable claim against the relevant Obligor.

(b) A Recovering Finance Party is not obliged to share with any other Finance Party any amount which the Recovering Finance Party has received or recovered as a result of taking legal or arbitration proceedings, if:

(i) it notified that other Finance Party of the legal or arbitration proceedings; and

(ii) that other Finance Party had an opportunity to participate in those legal or arbitration proceedings but did not do so as soon as reasonably practicable having received notice and did not take separate legal or arbitration proceedings.

31. Payment Mechanics

31.1 Payments to the BPIFAE Agent

(a) On each date on which the Borrower or a Lender is required to make a payment under a Finance Document (subject to Clause 31.12 (*Payments to the Security Agent*), the Borrower or Lender shall make the same available to the BPIFAE Agent (unless a contrary indication appears in a Finance Document) for value on the due date at the time and in such funds specified by the BPIFAE Agent as being customary at the time for settlement of transactions in the relevant currency in the place of payment.

(b) All payments to be made by the Borrower under this Agreement shall be made in Dollars in immediately available funds to the account of the BPIFAE Agent with account No. 0200.194.093.001.36 CHIPS ABA 026 007 689 of BNP Paribas Paris, The Equitable Building, 787 Seventh Avenue, New York, SWIFT code BNPAUS3NXXX, in favour of BNP PARIBAS BOCI-ITO-Paris, 35 rue de la Gare 75019 Paris- France, SWIFT code BNPAFRPPXXX, reference Globalstar USA or to such other account as the BPIFAE Agent may from time to time designate to the Borrower in writing.

(c) For any payment to be made by the Borrower, the Borrower shall ensure that the BPIFAE Agent receives a swift advice of such payment from the Borrower's bank no later than the Business Day immediately preceding the date of such payment. The swift message shall be sent to BNPAFRPPACH attention BOCI Buyers Credits with references USA/GLOBALSTAR/Loan Agreement dated 5 June 2009 or such other account in the principal financial centre of the country of that currency with such bank as the BPIFAE Agent specifies.

31.2 Evidence of Financial Indebtedness

(a) Each Loan made by a Lender shall be evidenced by one (1) or more accounts or records maintained by such Lender and by the BPIFAE Agent in the ordinary course of business. The accounts or records maintained by the BPIFAE Agent and each Lender shall be conclusive absent manifest error of the amount of any Loan made by the Lenders to the Borrower and the interest and payments thereon.

(b) Any failure to so record or any error in doing so shall not, however, limit or otherwise affect the obligation of the Borrower under this Agreement to pay any amount owing with respect to the Obligations. If there is any conflict between the accounts and records maintained by any Lender and the accounts and records of the BPIFAE Agent in respect of such matters, the accounts and records of the BPIFAE Agent shall prevail in the absence of manifest error.

(c) Upon the request of any Lender or BPIFAE made through the BPIFAE Agent, the Borrower shall immediately execute and deliver to the BPIFAE Agent Promissory Notes which shall be in accordance with the Repayment Schedule previously provided by the Borrower to the Lenders and shall evidence all outstanding Loans (including principal and interest). Each Promissory Note shall be denominated in Dollars and be payable in accordance with Clause 31 (*Payment Mechanics*). The Borrower shall ensure that each Promissory Note shall be governed by English or French law as selected by the BPIFAE Agent and the Borrower waives any right of protest under any Promissory Note to the extent possible under applicable law.

(d) Any payment which is due to be made under a Promissory Note that is not a Business Day shall be made on the next Business Day in the same calendar month (if there is one) or the preceding Business Day (if there is not).

(e) If paragraph (d) above applies, interest shall be payable on the principal up to the date of actual payment by the Borrower.

(f) Neither the payment date nor the amount of principal and interest specified in the relevant Promissory Note (if any) shall be modified. Notwithstanding that the Promissory Note shall not be modified, the Borrower shall be obliged to make payment in full (including principal and accrued interest) to the BPIFAE Agent in accordance with the provisions of this Clause 31 (*Payment Mechanics*). Notwithstanding the foregoing, the BPIFAE Agent and the Lenders hereby agree not to demand payment under any Promissory Note prior to exercising its rights pursuant to Clause 24 (*Remedies upon an Event of Default*).

(g) If paragraph (d) applies, at least thirty (30) days prior to any payment under a note the payment date of which has been extended in accordance with paragraph (d) above, the BPIFAE Agent shall send to the Borrower a written statement documenting the additional amount of interest owed by the Borrower at such payment date.

(h) Following the issue of Promissory Notes under this Clause 31.2, on or before each date on which the Borrower makes a repayment or prepayment of any outstanding Loan, it shall execute and deliver to the BPIFAE Agent replacement Promissory Notes. Each such replacement Promissory Note shall be issued on the terms as set out in paragraph (c) and shall, in aggregate, have a face value equal to the principal amount outstanding in respect of the outstanding Loans following such repayment or prepayment. Upon

receipt of such replacement Promissory Notes, the BPIFAE Agent shall cancel and return to the Borrower all the Promissory Notes held by it before such repayment or prepayment.

31.3 Distributions by the BPIFAE Agent

Each payment received by the BPIFAE Agent under the Finance Documents for another Party shall, subject to Clause 31.4 (*Distributions to the Borrower*) and Clause 31.5 (*Clawback*) and Clause 31.12 (*Payments to the Security Agent*), be made available by the BPIFAE Agent as soon as practicable after receipt to the Party entitled to receive payment in accordance with this Agreement (in the case of a Lender, for the account of its Facility Office), to such account as that Party may notify to the BPIFAE Agent by not less than five (5) Business Days' notice with a bank in the principal financial centre of the country of that currency.

31.4 Distributions to the Borrower

The BPIFAE Agent and the Security Agent may (with the consent of the Obligor or in accordance with Clause 32 (*Set-off*)) apply any amount received by it for that Obligor in or towards payment (on the date and in the currency and funds of receipt) of any amount due from that Obligor under the Finance Documents or in or towards purchase of any amount of any currency to be so applied.

31.5 Clawback

(a) Where a sum is to be paid to the BPIFAE Agent or the Security Agent under the Finance Documents for another Party, the BPIFAE Agent is not obliged to pay that sum to that other Party (or to enter into or perform any related exchange contract) until it has been able to establish to its satisfaction that it has actually received that sum.

(b) If the BPIFAE Agent or the Security Agent pays an amount to another Party and it proves to be the case that the BPIFAE Agent had not actually received that amount, then the Party to whom that amount (or the proceeds of any related exchange contract) was paid by the BPIFAE Agent or the Security Agent shall on demand refund the same to the BPIFAE Agent together with interest on that amount from the date of payment to the date of receipt by the BPIFAE Agent or the Security Agent, calculated by it to reflect its cost of funds.

31.6 Partial Payments

(a) If the BPIFAE Agent receives a payment that is insufficient to discharge all the amounts then due and payable by an Obligor under the Finance Documents, the BPIFAE Agent shall apply that payment towards the obligations of that Obligor under the Finance Documents in the following order:

(i) ***first***, in or towards payment *pro rata* of any unpaid fees, costs and expenses of the BPIFAE Agent, the Security Agent or the Mandated Lead Arrangers under the Finance Documents;

(ii) ***secondly***, in or towards payment *pro rata* of any accrued interest, fee or commission due to the Finance Parties but unpaid under this Agreement;

(iii) ***thirdly***, in or towards payment *pro rata* of any principal due but unpaid under this Agreement; and

(iv) ***fourthly***, in or towards payment *pro rata* of any other sum due but unpaid under the Finance Documents.

(b) The BPIFAE Agent shall, if so directed by the Majority Lenders, vary the order set out in paragraphs (a)(ii) to (iv) above.

(c) Paragraphs (a) and (b) above will override any appropriation made by an Obligor.

31.7 No set-off by the Borrower

All payments to be made by the Borrower under the Finance Documents shall be calculated and be made without (and free and clear of any deduction for) set-off or counterclaim.

31.8 Business Days

(a) Any payment which is due to be made on a day that is not a Business Day shall be made on the next Business Day in the same calendar month (if there is one) or the preceding Business Day (if there is not).

(b) During any extension of the due date for payment of any principal or Unpaid Sum under this Agreement interest is payable on the principal or Unpaid Sum at the rate payable on the original due date.

31.9 Currency of Account

(a) Subject to paragraphs (b) and (c) below, Dollars is the currency of account and payment for any sum due from the Borrower under any Finance Document.

(b) Each payment in respect of costs, expenses or Taxes shall be made in the currency in which the costs, expenses or Taxes are incurred.

(c) Any amount expressed to be payable in a currency other than Dollars shall be paid in that other currency.

31.10 Change of Currency

(a) Unless otherwise prohibited by law, if more than one currency or currency unit are at the same time recognised by the central bank of any country as the lawful currency of that country, then:

(i) any reference in the Finance Documents to, and any obligations arising under the Finance Documents in, the currency of that country shall be translated into, or paid in, the currency or currency unit of that country designated by the BPIFAE Agent (after consultation with the Borrower); and

(ii) any translation from one currency or currency unit to another shall be at the official rate of exchange recognised by the central bank for the conversion of that currency or currency unit into the other, rounded up or down by the BPIFAE Agent (acting reasonably).

(b) If a change in any currency of a country occurs, this Agreement will, to the extent the BPIFAE Agent (acting reasonably and after consultation with the Borrower) specifies

to be necessary, be amended to comply with any generally accepted conventions and market practice in the London interbank market and otherwise to reflect the change in currency.

31.11 Disruption to Payment Systems etc.

If either the BPIFAE Agent determines (in its discretion) that a Disruption Event has occurred or the BPIFAE Agent is notified by the Borrower that a Disruption Event has occurred:

(a) the BPIFAE Agent may, and shall if requested to do so by the Borrower, consult with the Borrower with a view to agreeing with the Borrower such changes to the operation or administration of the Facility as the BPIFAE Agent may deem necessary in the circumstances;

(b) the BPIFAE Agent shall not be obliged to consult with the Borrower in relation to any changes mentioned in paragraph (a) if, in its opinion, it is not practicable to do so in the circumstances and, in any event, shall have no obligation to agree to such changes;

(c) the BPIFAE Agent may consult with the Finance Parties in relation to any changes mentioned in paragraph (a) but shall not be obliged to do so if, in its opinion, it is not practicable to do so in the circumstances;

(d) any such changes agreed upon by the BPIFAE Agent and the Borrower shall (whether or not it is finally determined that a Disruption Event has occurred) be binding upon the Parties as an amendment to (or, as the case may be, waiver of) the terms of the Finance Documents notwithstanding the provisions of Clause 37 (*Amendments and Waivers*);

(e) the BPIFAE Agent shall not be liable for any damages, costs or losses whatsoever (including, without limitation for negligence, gross negligence or any other category of liability whatsoever but not including any claim based on the fraud of the BPIFAE Agent) arising as a result of its taking, or failing to take, any actions pursuant to or in connection with this Clause 31.11 (*Disruption to Payment Systems etc.*); and

(f) the BPIFAE Agent shall notify the Finance Parties of all changes agreed pursuant to paragraph (d) above.

31.12 Payments to the Security Agent

Notwithstanding any other provision of any Finance Document, after a notice has been given to the Borrower under Clause 24 (*Remedies Upon an Event of Default*), and at any time after any Liens created by or pursuant to any Security Document becomes enforceable, the Security Agent may require the Borrower to pay all sums due under any Finance Document as the Security Agent may direct for application in accordance with the terms of the Security Documents.

32. Set-off

If an Event of Default has occurred and is continuing, a Finance Party may set-off any matured obligation due from the Borrower under the Finance Documents (to the extent beneficially owned by that Finance Party) against any matured obligation owed by that Finance Party to the Borrower,

regardless of the place of payment, booking branch or currency of either obligation. If the obligations are in different currencies, the Finance Party may convert either obligation at a market rate of exchange in its usual course of business for the purpose of the set-off. Following the exercise of a right of set-off under this Agreement, the relevant Finance Party shall notify the Borrower.

33. Notices

33.1 Communications in Writing

Any communication to be made under or in connection with the Finance Documents shall be made in writing and, unless otherwise stated, may be made by fax or letter.

33.2 Addresses

The address and fax number (and the department or officer, if any, for whose attention the communication is to be made) of each Party for any communication or document to be made or delivered under or in connection with the Finance Documents is:

(a) in the case of the Borrower:

Address: Globalstar, Inc.
1351 Holiday Square Boulevard
Covington
LA 70433
United States of America

Attention: James Monroe III / Tim Taylor

Facsimile: +001 985 335-1900;

(b) in the case of each Lender, that notified in writing to the BPIFAE Agent on or prior to the date on which it becomes a Party; and

(c) in the case of the BPIFAE Agent and the Security Agent:

Address: BNP Paribas
CIB-Global Banking EMEA
Export Finance - CSLI
ACI: CVA05A1
35, rue de la Gare
75019 PARIS
France

Attention: Mrs Sylvie Caset-Carricaburu / Mrs. Béatrice Sohier

Telephone: + 33(0) 1 43 16 81 69 / +33(0) 1 43 16 81 74

Facsimile: + 33(0) 1 43 16 81 84

Email: Sylvie.CasetCarricaburu@bnpparibas.com Beatrice.sohier@bnpparibas.com

or any substitute address or fax number or department or officer as the Party may notify to the BPIFAE Agent (or the BPIFAE Agent may notify to the other Parties, if a change is made by the BPIFAE Agent) by not less than five (5) Business Days' notice.

33.3 Delivery

(a) Any communication or document made or delivered by one person to another under or in connection with the Finance Documents will only be effective:

(i) if by way of fax, when received in legible form; or

(ii) if by way of letter, when it has been left at the relevant address or five (5) Business Days after being deposited in the post postage prepaid in an envelope addressed to it at that address;

and, if a particular department or officer is specified as part of its address details provided under Clause 33.2 (*Addresses*), if addressed to that department or officer.

(b) Any communication or document to be made or delivered to the BPIFAE Agent, the Security Agent or the Mandated Lead Arrangers will be effective only when actually received by the BPIFAE Agent, the Security Agent or such Mandated Lead Arranger and then only if it is expressly marked for the attention of the department or officer identified with the BPIFAE Agent's, the Security Agent's or such Mandated Lead Arranger's signature below (or any substitute department or officer as the BPIFAE Agent, the Security Agent or such Mandated Lead Arranger shall specify for this purpose).

(c) All notices from or to an Obligor shall be sent through the BPIFAE Agent.

(d) Any communication or document made or delivered to the Borrower in accordance with this Clause 33 will be deemed to have been made or delivered to each of the Obligors.

(e) Any communications or document which becomes effective in accordance with paragraphs (a) to (d) above, after 5:00 p.m. in the place of receipt shall be deemed only to become effective on the following day.

33.4 Notification of Address and Fax Number

Promptly upon receipt of notification of an address or fax number or change of address or fax number pursuant to Clause 33.2 (*Addresses*) or changing its own address or fax number, the BPIFAE Agent shall notify the other Parties.

33.5 Electronic Communication

(a) Any communication to be made between any two Parties under or in connection with the Finance Documents may be made by electronic mail or other electronic means to the extent that these two Parties agree that, unless and until notified to the contrary, this is to be accepted form of communication and if those two parties:

(i) notify each other in writing of their electronic mail address and/or any other information required to enable the sending and receipt of information by that means; and

(ii) notify each other of any change to their address or any other such information supplied by them by no less than five (5) Business Days' notice.

(b) Any electronic communication made between those two Parties will be effective only when actually received in readable form and in the case of any electronic communication made by a Party to the BPIFAE Agent only if it is addressed in such a manner as the BPIFAE Agent shall specify for this purpose.

(c) Any electronic communication which becomes effective, in accordance with paragraph (b) above, after 5.00pm in the place of receipt shall be deemed only to become effective on the following day.

33.6 English Language

(a) Any notice given under or in connection with any Finance Document must be in English.

(b) All other documents provided under or in connection with any Finance Document must be:

(i) in English; or

(ii) if not in English, and if so required by the BPIFAE Agent, accompanied by a certified English translation and, in this case, the English translation will prevail unless the document is a constitutional, statutory or other official document.

34. Calculations and Certificates

34.1 Accounts

In any litigation or arbitration proceedings arising out of or in connection with a Finance Document, the entries made in the accounts maintained by a Finance Party are *prima facie* evidence of the matters to which they relate.

34.2 Certificates and Determinations

Any certification or determination by a Finance Party of a rate or amount under any Finance Document is, in the absence of manifest error, conclusive evidence of the matters to which it relates.

34.3 Day Count Convention

Any interest, commission or fee accruing under a Finance Document will accrue from day to day and is calculated on the basis of the actual number of days elapsed and a year of three hundred and sixty (360) days or, in any case where the practice in the London interbank market differs, in accordance with that market practice.

35. Partial Invalidity

If, at any time, any provision of the Finance Documents is or becomes illegal, invalid or unenforceable in any respect under any law of any jurisdiction, neither the legality, validity or enforceability of the remaining provisions nor the legality, validity or enforceability of such provision under the law of any other jurisdiction will in any way be affected or impaired.

36. Remedies and Waivers

No:

(a) failure to exercise, nor any delay in exercising, on the part of any Finance Party, any right or remedy under the Finance Documents shall operate as a waiver of any such right or remedy or constitute an election to affirm any of the Finance Documents; and

(b) election to affirm any of the Finance Documents on the part of any Finance Party shall be effective unless it is in writing. No single or partial exercise of any right or remedy shall prevent any further or other exercise or the exercise of any other right or remedy. The rights and remedies provided in this Agreement are cumulative and not exclusive of any rights or remedies provided by law.

37. Amendments and Waivers

37.1 Required Consents

(a) Subject to Clause 37.3 (*Exceptions*) any term of the Finance Documents may be amended or waived only with the consent of the Majority Lenders and the Obligors and following consultation by the BPIFAE Agent with BPIFAE. Any such amendment or waiver will be binding on all Parties.

(b) The BPIFAE Agent may effect, on behalf of any Finance Party, any amendment or waiver permitted by this Clause 37.

(c) Unless otherwise agreed, no amendment or waiver may be made before the date falling ten (10) Business Days after the terms of that amendment or waiver have been notified by the BPIFAE Agent to the Lenders. The BPIFAE Agent shall notify the Lenders reasonably promptly of any amendments or waivers proposed by the Borrower.

37.2 Replacement of Screen Rate

Subject to paragraph (a) of Clause 37.3 (*Exceptions*), if a Screen Rate Replacement Event has occurred, any amendment or waiver which relates to:

(a) providing for the use of a Replacement Benchmark in place of the Screen Rate; and

(b)

(i) aligning any provision of any Finance Document to the use of that Replacement Benchmark;

(ii) enabling that Replacement Benchmark to be used for the calculation of interest under this Agreement (including, without limitation, any consequential changes required to enable that Replacement Benchmark to be used for the purposes of this Agreement);

(iii) implementing market conventions applicable to that Replacement Benchmark;

(iv) providing for appropriate fallback (and market disruption) provisions for that Replacement Benchmark; or

(v) adjusting the pricing to reduce or eliminate, to the extent reasonably practicable, any transfer of economic value from one Party to another as a result of the application of that Replacement Benchmark (and if any adjustment or method for calculating any adjustment has been formally designated, nominated or recommended by the Relevant Nominating Body, the adjustment shall be determined on the basis of that designation, nomination or recommendation),

may be made with the consent of the Agent (acting on the instructions of the Majority Lenders) and the Borrower.

37.3 Exceptions

(a) An amendment or waiver that has the effect of changing or which relates to:

(i) the definition of "*Majority Lenders*" in Clause 1.1 (*Definitions*);

(ii) an extension to the date of payment of any amount under the Finance Documents;

(iii) a reduction in the Applicable Margin or a reduction in the amount of any payment of principal, interest, fees or commission payable;

(iv) an increase in or an extension of any Commitment or any requirement that a cancellation of Commitments reduces the Commitments of the Lenders rateably under the relevant Facility;

(v) a change to an Obligor;

(vi) any provision which expressly requires the consent of all the Lenders;

(vii) Clause 2.2 (*Finance Parties' Rights and Obligations*), Clause 18.26 (*Anti-bribery, Anti-corruption and Anti-money Laundering*), Clause 18.27 (*Sanctions*), Clause 21.24 (*Anti-bribery, Anti-corruption and Anti-money Laundering*), Clause 22.20 (*Anti-bribery, Anti-corruption and Anti-money Laundering*), Clause 22.21 (*Sanctions*), Clause 26 (*Changes to the Lenders*) or this Clause 37;

(viii) the nature or scope of the assets of the Borrower which from time to time are, or are expressed to be, the subject of a Lien under the Security Documents; or

(ix) the release of any Lien granted in accordance with the Security Documents or the granting of any Lien required under the terms of this Agreement,

shall not be made without the prior consent of all the Lenders.

(b) An amendment or waiver which relates to the rights or obligations of the BPIFAE Agent, the Security Agent, and/or a Mandated Lead Arranger may not be effected without the consent of the BPIFAE Agent, the Security Agent, and/or the Mandated Lead Arranger (as the case may be).

(c) If the BPIFAE Agent or a Lender reasonably believes that an amendment or waiver may constitute a "*material modification*" for the purposes of FATCA that may result (directly or indirectly) in a Party being required to make a FATCA Deduction and the BPIFAE Agent or that Lender (as the case may be) notifies the Borrower and the BPIFAE Agent accordingly, that amendment or waiver may not be effected without the consent of the BPIFAE Agent or that Lender (as the case may be).

37.4 Payment of Waiver or Amendment Fees

(a) Subject to paragraph (d) below, the Borrower shall pay to:

(i) the BPIFAE Agent (for the account of each Lender) a waiver fee in an amount equal to US$15,000 for each Lender; and

(ii) the BPIFAE Agent (for its own account) a waiver fee in an amount equal to US$10,000,

(each fee, a "**Waiver Fee**") if, following the First Effective Date any amendments or waivers (howsoever described) are required in respect of the Finance Documents.

(b) Each Waiver Fee shall be due from the date on which the Borrower delivers the waiver and/or amendment request to the BPIFAE Agent and is payable within thirty (30) days of such request.

(c) Each payment by the Borrower of a Waiver Fee shall be made in accordance with Clause 30 (*Payment Mechanics*) and the other provisions of the Finance Documents.

(d) No Waiver Fee shall be payable in respect of any amendment requested by the Borrower in connection with:

(i) the Third Global Amendment and Restatement Agreement (but without prejudice to the payment of the "*Amendment Fee*" as such term is defined therein);

(ii) the ability of the Borrower to incur additional Financial Indebtedness in connection with Permitted Vendor Financings in an aggregate amount above the threshold set out in Clause 22.1(k) (*Limitations on Financial Indebtedness*); or

(iii) the ability of the Borrower to incur additional Financial Indebtedness in connection with cash paying Subordinated Indebtedness above the amounts as set out in the then current Agreed Business Plan; or

(iv) any adjustment to the numerator of the financial covenant set out in Clause 20.5 (*Net Debt to Adjusted Consolidated EBITDA*) in order to take into account the revised levels of Financial Indebtedness permitted following any amendment requests of the types set out in paragraphs (a) and (b) above (for which separate amendment requests shall be required).

(e) In connection with any requested amendment under paragraph (d)(iv) above in accordance with the provisions of this Clause 37 (*Amendments and Waivers*), the Borrower shall provide to the BPIFAE Agent a substitute table for the purposes of Clause 20.5 (*Net Debt to Adjusted Consolidated EBITDA*) on the same basis as the existing table but reflecting the appropriate numerator for the financial covenant. Upon agreement by the Lenders and the Borrower with the substitute table, the substitute table will be deemed to replace the then existing table applicable for the purposes of Clause 20.5 (*Net Debt to Adjusted Consolidated EBITDA*) and all determinations in respect of compliance with such financial covenant shall be made in accordance with the substitute table.

37.5 Voting

(a) The Lenders hereby acknowledge that, pursuant to the terms of the BPIFAE Insurance Policy, BPIFAE shall be entitled to direct the manner in which voting rights or any other rights, powers, authorities and discretions held by the Lenders with respect to the Facilities are exercised.

(b) The BPIFAE Agent shall seek the instructions of BPIFAE with respect to any matter on which any Lender is entitled to vote or exercise any right, power, authority or discretion (whether under this Agreement, any other Finance Document or any related agreements). The BPIFAE Agent shall notify the Lenders of the instructions of BPIFAE in respect thereof.

37.6 Second Lien Intercreditor Agreement

This Clause 37 (*Amendments and Waivers*) is subject to the terms of the Second Lien Intercreditor Agreement.

38. Counterparts

Each Finance Document may be executed in any number of counterparts, and this has the same effect as if the signatures on the counterparts were on a single copy of the Finance Document.

39. Governing Law

Other than Clause 28.2 (*Appointment of Security Agent (France)*), this Agreement and any non-contractual obligations arising out of or in connection with it are governed by English law.

40. Enforcement

40.1 Jurisdiction

(a) The courts of England have exclusive jurisdiction to settle any dispute arising out of or in connection with this Agreement (including a dispute relating to the existence, validity or termination of this Agreement or any non-contractual obligation arising out of or in connection with this Agreement) (a "**Dispute**").

(b) The Parties agree that the courts of England are the most appropriate and convenient courts to settle Disputes and accordingly no Party will argue to the contrary.

(c) This Clause 40.1 (*Jurisdiction*) is for the benefit of the Finance Parties only. As a result, no Finance Party shall be prevented from taking proceedings relating to a Dispute in any other courts with jurisdiction. To the extent allowed by law, the Finance Parties may take concurrent proceedings in any number of jurisdictions.

(d) This Clause 40 does not apply to Clause 28.2 (*Appointment of Security Agent (France)*).

40.2 Service of Process

Without prejudice to any other mode of service allowed under any relevant law, the Borrower:

(a) irrevocably appoints WFW Legal Services Limited of 15 Appold Street, London EC2A 2HB as its agent for service of process in relation to any proceedings before the English courts in connection with any Finance Document; and

(b) agrees that failure by a process agent to notify the Borrower of the process will not invalidate the proceedings concerned.

40.3 Waiver of Immunity

To the extent that the Borrower may in any jurisdiction claim for itself or its assets or revenues immunity from suit, execution, attachment (whether in aid of execution, before judgment or otherwise) or other legal process and to the extent that in any such jurisdiction there may be attributed to itself, its assets or revenues such immunity (whether or not claimed), the Borrower irrevocably agrees not to claim, and irrevocably waives, such immunity to the full extent permitted by the laws of such jurisdiction.

41. Confidentiality

41.1 Confidential Information

Each Finance Party agrees to keep all Confidential Information confidential and not to disclose it to anyone, save to the extent permitted by Clause 41.2 (*Disclosure of Confidential Information*), and to ensure that all Confidential Information is protected with security measures and a degree of care that would apply to its own confidential information.

41.2 Disclosure of Confidential Information

Any Finance Party may disclose:

(a)to any of its Affiliates and any of its or their officers, directors, employees, professional advisers, auditors and partners such Confidential Information as that Finance Party shall consider appropriate if any person to whom the Confidential Information is to be given pursuant to this paragraph (a) is informed in writing of its confidential nature and that some or all of such Confidential Information may be price-sensitive information except that there shall be no such requirement to so inform if the recipient is subject to professional obligations to maintain the confidentiality of the information or is otherwise bound by requirements of confidentiality in relation to the Confidential Information;

(b)to any person:

(i)to (or through) whom it assigns or transfers (or may potentially assign or transfer) all or any of its rights and/or obligations under one or more Finance Documents and to any of that person's Affiliates and professional advisers;

(ii)with (or through) whom it enters into (or may potentially enter into), whether directly or indirectly, any sub-participation in relation to, or any other transaction under which payments are to be made or may be made by reference to, one or more Finance Documents and/or one or more Obligors and to any of that person's Affiliates and professional advisers;

(iii)appointed by any Finance Party or by a person to whom paragraph (b)(i) or (ii) above applies to receive communications, notices, information or documents delivered pursuant to the Finance Documents on its behalf;

(iv)who invests in or otherwise finances (or may potentially invest in or otherwise finance), directly or indirectly, any transaction referred to in paragraph (b)(i) or (b)(ii) above;

(v)to whom information is required or requested to be disclosed by any court of competent jurisdiction or any governmental, banking, taxation or other regulatory authority or similar body, the rules of any relevant stock exchange or pursuant to any applicable law or regulation;

(vi)to whom information is required to be disclosed in connection with, and for the purposes of, any litigation, arbitration, administrative or other investigations, proceedings or disputes;

(vii)who is a Party; or

(viii)with the consent of the Borrower;

in each case, such Confidential Information as that Finance Party shall consider appropriate if:

(A)in relation to paragraphs (b)(i), (b)(ii) and b(iii) above, the person to whom the Confidential Information is to be given has entered into a Confidentiality Undertaking except that there shall be no requirement for a Confidentiality Undertaking if the recipient is a professional

adviser and is subject to professional obligations to maintain the confidentiality of the Confidential Information;

(B) in relation to paragraph (b)(iv) above, the person to whom the Confidential Information is to be given has entered into a Confidentiality Undertaking or is otherwise bound by requirements of confidentiality in relation to the Confidential Information they receive and is informed that some or all of such Confidential Information may be price-sensitive information;

(C) in relation to paragraphs (b)(v) and (b)(vi) above, the person to whom the Confidential Information is to be given is informed of its confidential nature and that some or all of such Confidential Information may be price-sensitive information except that there shall be no requirement to so inform if, in the opinion of that Finance Party, it is not practicable so to do in the circumstances; and

(D) to any person appointed by that Finance Party or by a person to whom paragraph (b)(i) or (b)(ii) above applies to provide administration or settlement services in respect of one or more of the Finance Documents including without limitation, in relation to the trading of participations in respect of the Finance Documents, such Confidential Information as may be required to be disclosed to enable such service provider to provide any of the services referred to in this paragraph (c) if the service provider to whom the Confidential Information is to be given has entered into a confidentiality agreement substantially in the form of the LMA Master Confidentiality Undertaking for Use With Administration/Settlement Service Providers or such other form of confidentiality undertaking agreed between the Company and the relevant Finance Party.

41.3 Entire agreement

This Clause 41 (*Confidentiality*) constitutes the entire agreement between the Parties in relation to the obligations of the Finance Parties under the Finance Documents regarding Confidential Information and supersedes any previous agreement, whether express or implied, regarding Confidential Information.

41.4 Inside information

Each of the Finance Parties acknowledges that some or all of the Confidential Information is or may be price-sensitive information and that the use of such information may be regulated or prohibited by applicable legislation including securities law relating to insider dealing and market abuse and each of the Finance Parties undertakes not to use any Confidential Information for any unlawful purpose.

41.5 Notification of disclosure

Each of the Finance Parties agrees (to the extent permitted by law and regulation) to inform the Company:

(a) of the circumstances of any disclosure of Confidential Information made pursuant to paragraph (b)(v) of Clause 41.2 (*Disclosure of Confidential Information*) except where such disclosure is made to any of the persons referred to in that paragraph during the ordinary course of its supervisory or regulatory function; and

(b) upon becoming aware that Confidential Information has been disclosed in breach of this Clause 41 (*Confidentiality*).

41.6 Continuing obligations

The obligations in this Clause 41 (*Confidentiality*) are continuing and, in particular, shall survive and remain binding on each Finance Party for a period of twelve months from the earlier of:

(a) the date on which all amounts payable by the Obligors under or in connection with this Agreement have been paid in full and all Commitments have been cancelled or otherwise cease to be available; and

(b) the date on which such Finance Party otherwise ceases to be a Finance Party.

42. Confidentiality of Funding Rates and Reference Bank Quotations

42.1 Confidentiality and Disclosure

(a) The BPIFAE Agent and each Obligor agree to keep each Funding Rate (and, in the case of the BPIFAE Agent, each Reference Bank Quotation) confidential and not to disclose it to anyone, save to the extent permitted by paragraphs (b), (c) and (d) below.

(b) The BPIFAE Agent may disclose:

(i) any Funding Rate (but not, for the avoidance of doubt, any Reference Bank Quotation) to the Borrower pursuant to Clause 8.4 (*Notification of Rates of Interest*); and

(ii) any Funding Rate or any Reference Bank Quotation to any person appointed by it to provide administration services in respect of one or more of the Finance Documents to the extent necessary to enable such service provider to provide those services if the service provider to whom that information is to be given has entered into a confidentiality agreement in a form agreed between the BPIFAE Agent and the relevant Lender or Reference Bank, as the case may be.

(c) The BPIFAE Agent may disclose any Funding Rate or any Reference Bank Quotation, and each Obligor may disclose any Funding Rate, to:

(i) any of its Affiliates and any of its or their officers, directors, employees, professional advisers, auditors, partners and representatives if any person to whom that Funding Rate or Reference Bank Quotation is to be given pursuant to this paragraph is informed in writing of its confidential nature and that it may be price-sensitive information except that there shall be no such requirement to so inform if the recipient is subject to professional obligations to maintain the

confidentiality of that Funding Rate or Reference Bank Quotation or is otherwise bound by requirements of confidentiality in relation to it;

(ii) any person to whom information is required or requested to be disclosed by any court of competent jurisdiction or any governmental, banking, taxation or other regulatory authority or similar body, the rules of any relevant stock exchange or pursuant to any applicable law or regulation if the person to whom that Funding Rate or Reference Bank Quotation is to be given is informed in writing of its confidential nature and that it may be price-sensitive information except that there shall be no requirement to so inform if, in the opinion of the BPIFAE Agent or the relevant Obligor, as the case may be, it is not practicable to do so in the circumstances;

(iii) any person to whom information is required to be disclosed in connection with, and for the purposes of, any litigation, arbitration, administrative or other investigations, proceedings or disputes if the person to whom that Funding Rate or Reference Bank Quotation is to be given is informed in writing of its confidential nature and that it may be price-sensitive information except that there shall be no requirement to so inform if, in the opinion of the BPIFAE Agent or the relevant Obligor, as the case may be, it is not practicable to do so in the circumstances; and

(iv) any person with the consent of the relevant Lender or Reference Bank, as the case may be.

(d) The BPIFAE Agent's obligations in this Clause 42 relating to Reference Bank Quotations are without prejudice to its obligations to make notifications under Clause 8.4 (*Notification of rates of interest*) *provided that* (other than pursuant to paragraph (b)(i) above) the BPIFAE Agent shall not include the details of any individual Reference Bank Quotation as part of any such notification.

42.2 Related Obligations

(a) The BPIFAE Agent and each Obligor acknowledge that each Funding Rate (and, in the case of the BPIFAE Agent, each Reference Bank Quotation) is or may be price-sensitive information and that its use may be regulated or prohibited by applicable legislation including securities law relating to insider dealing and market abuse and the BPIFAE Agent and each Obligor undertake not to use any Funding Rate or, in the case of the BPIFAE Agent, any Reference Bank Quotation for any unlawful purpose.

(b) The BPIFAE Agent and each Obligor agree (to the extent permitted by law and regulation) to inform the relevant Lender or Reference Bank, as the case may be:

(i) of the circumstances of any disclosure made pursuant to paragraph (c)(ii) of Clause 42.1 (*Confidentiality and Disclosure*) except where such disclosure is made to any of the persons referred to in that paragraph during the ordinary course of its supervisory or regulatory function; and

(ii) upon becoming aware that any information has been disclosed in breach of this Clause 42.

42.3 No Event of Default

No Event of Default will occur under Clause 23.3 (*Other Obligations*) by reason only of an Obligor's failure to comply with this Clause 42.

43. Subrogation and Reimbursement

43.1 BPIFAE Insurance Policy – Subrogation

The Parties acknowledge and agree that:

(a) BPIFAE shall automatically be subrogated to the rights of the Lenders under this Agreement and each other Finance Document (including its rights with respect to voting) upon, and to the extent of, any payment made by it under or in respect of the BPIFAE Insurance Policy; and

(b) the Obligations in respect of which any such payment was made shall, notwithstanding such payment, be treated as being outstanding to BPIFAE for the purposes of the Finance Documents until such time as they would have been discharged had BPIFAE not made that payment.

43.2 Subrogation

(a) Without prejudice to Clause 42.3 (*Reimbursement*) and any right of indemnification or subrogation BPIFAE may have at law, in equity or otherwise, each Party agrees that BPIFAE will, subject to and in accordance with Clause 43.1 (*BPIFAE Insurance Policy - Subrogation*), be subrogated to the rights of the Lenders under this Agreement upon the making of any payment by, or on behalf of, BPIFAE under the BPIFAE Insurance Policy and the Lenders shall act in accordance with the instructions of BPIFAE in the enforcement of their rights under this Agreement and the other Finance Documents following such subrogation.

(b) The Parties agree that the right of subrogation under paragraph (a) above shall arise irrespective of, and prevail over, any inconsistency with any right of subrogation arising under the BPIFAE Insurance Policy, or under the laws of France, and notwithstanding any conduct on the part of BPIFAE or the Lenders.

43.3 Reimbursement

(a) Without prejudice to Clause 42.2 (*Subrogation*), the Borrower agrees that it will promptly upon receipt of notice thereof reimburse BPIFAE for any payment made by BPIFAE under the BPIFAE Insurance Policy, whether by direct payment or offset, in respect, and to the extent, of the Borrower's obligations to the Lenders under this Agreement (such amounts, the "**BPIFAE Insurance Policy Payments**").

(b) The obligations of the Borrower to reimburse BPIFAE will be due and payable in the currency of payment by BPIFAE within five (5) Business Days of written demand in an amount equal to (without double counting):

(i) the BPIFAE Insurance Policy Payments; and

(ii) all previously paid BPIFAE Insurance Policy Payments which remain unreimbursed, together with any commission on any and all amounts remaining unreimbursed from and including the date on which such amounts become due until and including the date on which such amounts are paid in full determined in accordance with Clause 8.3 (*Default Interest*).

44. Contractual recognition of bail-in

Notwithstanding any other term of any Finance Document or any other agreement, arrangement or understanding between the Parties, each Party acknowledges and accepts that any liability of any Party to any other Party under or in connection with the Finance Documents may be subject to Bail-In Action by the relevant Resolution Authority and acknowledges and accepts to be bound by the effect of:

(a) any Bail-In Action in relation to any such liability, including (without limitation):

(i) a reduction, in full or in part, in the principal amount, or outstanding amount due (including any accrued but unpaid interest) in respect of any such liability;

(ii) a conversion of all, or part of, any such liability into shares or other instruments of ownership that may be issued to, or conferred on, it; and

(iii) a cancellation of any such liability; and

(b) a variation of any term of any Finance Document to the extent necessary to give effect to any Bail-In Action in relation to any such liability.

45. GDPR

(a) Each Party shall comply with all applicable data protection legislation to the extent it receives any personal data.

(b) The terms of Schedule 34 (*Personal Data (Natixis)*) shall apply to the processing of any personal data collected in connection with this Agreement by Natixis.

This Agreement has been entered into on the date stated at the beginning of this Agreement.

Schedule 1

Lenders and Commitments

Part 1
Facility A

Facility A Original Lenders	Facility A Commitments US$
BNP Paribas	140,356,164
Société Générale	140,356,164
Natixis	116,963,470
Crédit Agricole Corporate and Investment Bank	93,570,776
Crédit Industriel et Commercial	72,052,546
Total:	**563,299,120**

Part 2
Facility B

Facility B Original Lenders	Facility B Commitments US$
BNP Paribas	5,741,550
Société Générale	5,741,550
Natixis	4,784,626
Crédit Agricole Corporate and Investment Bank	3,827,700
Crédit Industriel et Commercial	2,947,454
Total:	**23,042,880**

Schedule 2

Conditions Precedent

1. **Obligors**

(a) A copy of the constitutional documents of each Obligor.

(b) A copy of a resolution of the board of directors of each Obligor:

(i) approving the terms of, and the transactions contemplated by, the Transaction Documents to which it is a party and resolving that it execute the Transaction Documents to which it is a party;

(ii) authorising a specified person or persons to execute the Transaction Documents to which it is a party on its behalf; and

(iii) authorising a specified person or persons, on its behalf, to sign and/or despatch all documents and notices (including, if relevant, any Utilisation Request) to be signed and/or despatched by it under or in connection with the Transaction Documents to which it is a party.

(c) A specimen of the signature of each person authorised by the resolution referred to in paragraph (b) above.

(d) A certificate of each Obligor (other than Thermo) (signed by an authorised signatory) confirming that the borrowing or guaranteeing, as appropriate, contemplated by the Finance Documents would not cause any borrowing, guaranteeing or similar limit binding on any Obligor (other than Thermo) to be exceeded.

(e) A certificate from a Responsible Officer of the Borrower certifying that, as of Financial Close:

(i) each copy document relating to an Obligor specified in this Schedule 2 (*Conditions Precedent*) is correct, complete and in full force and effect as at a date no earlier than the date of Financial Close;

(ii) all representations and warranties of the Obligors contained in the Finance Documents are true, correct and complete in all material respects (*provided that*, any representation or warranty that is qualified by materiality or by reference to Material Adverse Effect shall be true, correct and complete in all respects);

(iii) none of the Obligors is in violation of any of the covenants contained in the Finance Documents;

(iv) after giving effect to the transactions contemplated by this Agreement, no Default or Event of Default has occurred and is continuing; and

(v) each of the Obligors has satisfied each of the conditions set out in this Schedule 2 (*Conditions Precedent*) and Clause 4.2 (*Further Conditions Precedent*).

(f) Certificates as of a recent date of the good standing of each Obligor under the laws of its jurisdiction of organisation and, to the extent requested by the BPIFAE Agent, each other jurisdiction where such Obligor is qualified to do business.

2. **Legal opinions**

(a) A legal opinion of White & Case LLP (advisers to the Lenders) as to matters of the laws of England and confirming, among other things, the validity and enforceability of the Finance Documents governed by English law).

(b) A legal opinion of White & Case LLP (advisers to the Lenders) as to matters of the laws of France and confirming, among other things, the validity and enforceability of the French Security Documents.

(c) A legal opinion of Taft Stettinius & Hollister LLP (advisers to the Borrower) confirming, among other things, the due authorisation of each Obligor, no conflict with the convertible notes, and confirming the validity and enforceability of those Security Documents governed by New York law.

(d) A legal opinion of Haynes & Boone (advisers to the Lenders) as to matters of the laws of Texas and confirming, among other things, the validity and enforceability of those Security Documents governed by Texas law.

(e) A legal opinion of K&L Gates (advisers to the Lenders) as to matters of the laws of Alaska and confirming, among other things, the validity and enforceability of those Security Documents governed by Alaska law.

(f) A legal opinion of Wilmer Cutler Pickering Hale and Dorr LLP in respect of each Obligor's FCC Communications Licences.

(g) A legal opinion of in-house counsel or external counsel of the Supplier confirming, among other things, that the Supplier has been duly authorised to enter into each of the Finance Documents to which it is a party.

(h) A legal opinion of in-house counsel or external counsel of the Launch Services Provider confirming, among other things, that the Launch Services Provider has been duly authorised to enter into each of the Finance Documents to which it is a party.

(i) Such other favourable legal opinions of counsel to the Obligors addressed to the BPIFAE Agent (for and on behalf of itself and the other Finance Parties) with respect to the Obligors, the Finance Documents and such other matters as the BPIFAE Agent shall reasonably request, including, without limitation, FCC matters.

3. **Finance documents**

An original (duly executed by each of the parties thereto) of:

(a) this Agreement; and

(b) each of the other Finance Documents (other than the Mortgages and each Landlord Waiver and Consent Agreement).

4. **Personal property collateral**

The BPIFAE Agent shall have received:

(a) original stock certificates and other certificates evidencing the Capital Stock pledged pursuant to the Security Documents, together with an undated stock power for each such certificate duly executed in blank by the registered owner thereof; and

(b) each original promissory note pledged pursuant to the Security Documents.

5. **Security matters**

(a) Certified copies of all notices of assignment and/or charge required to be delivered pursuant to the Security Documents.

(b) Each Obligor shall have duly authorised, executed and delivered:

(i) proper financing statements (Form UCC-1 or such other financing statements or similar notices as shall be required by local law) fully executed for filing under the UCC or other appropriate filing offices of each jurisdiction as may be necessary to perfect a Lien purported to be created by the Security Documents;

(ii) certified copies of requests for information or copies (Form UCC-11), or equivalent reports, listing all judgement liens, tax liens or effective financing statements that name the Obligors or any of their Subsidiaries, or a division or other operating unit of any such person, as debtor and that are filed in the jurisdictions referred to in paragraph (i) above, together with copies of such other financing statements evidencing any Lien permitted by Clause 22.2 (*Limitations on Liens*);

(iii) evidence of the completion of all other recordings and filings of, or with respect to, the Security Documents as may be necessary to perfect any Lien intended to be created by the Security Documents;

(iv) each irrevocable payment instruction (if any); and

(v) evidence that all other actions necessary to perfect and protect any Lien purported to be created by the Security Document have been taken.

6. **Governmental and other authorisations**

The Borrower has obtained, and provided to the BPIFAE Agent, certified copies of all Authorisations listed in Schedule 15 (*Communication Licences*) together with:

(a) in the case of paragraphs (i), (iii) and (iv) below, all other Authorisations; and

(b) in the case of paragraph (ii) below, all other material Authorisations,

in each case, not listed in those clauses that may become necessary for:

(i) each Loan;

(ii) the business of the Borrower as it is presently carried on and is contemplated to be carried out;

(iii) the due execution, delivery, validity and enforceability of, and performance by an Obligor of its obligations under this Agreement and each other Transaction Document to which it is a party, and any other documents necessary or desirable to the implementation of any of those agreements or documents; and

(iv) the remittance to any Finance Party (or its assigns) of all monies payable or owing to such Finance Party (or its assigns) under any Finance Document in the currencies specified in such Finance Document,

and all those Authorisations are in full force and effect.

7. **Commercial contracts**

The following documents shall have been delivered to the BPIFAE Agent:

(a) a copy, certified as true and complete by an Authorised Signatory of the Supplier and the Launch Services Provider, of each Commercial Contract;

(b) a certificate of incumbency and authority, signed by a director of the Supplier and the Launch Services Provider specifying the names and titles of each of the Authorised Signatories of the Supplier and the Launch Services Provider:

(i) whose signature(s) appear on each Commercial Contract and Transaction Document to which it is a party; and

(ii) who shall sign all other certificates (including each Qualifying Certificate), notices and documents referred to in this Agreement on behalf of the Supplier and the Launch Services Provider (as the case may be);

(c) a certificate, signed by an Authorised Signatory of the Supplier, certifying that the Satellite Construction Contract is in full force and effect, with the date of such entry into full force and effect, and has not been suspended, interrupted, cancelled or terminated, amended or modified and no arbitration or other legal proceedings have been initiated between the Borrower and the Supplier in respect of the Satellite Construction Contract;

(d) a certificate, signed by an Authorised Signatory of the Launch Services Provider, certifying that the Launch Services Contract is in full force and effect, with the date of such entry into full force and effect, and has not been suspended, interrupted, cancelled or terminated, amended or modified and no arbitration or other legal proceedings have been initiated between the Borrower and the Launch Services Provider in respect of the Launch Services Contract; and

(e) written evidence received from:

(i) the Supplier of the payment by the Borrower to the Supplier of the Advance Payment in respect of the Satellite Construction Contract; and

(ii) the Launch Services Provider of the payment by the Borrower to the Launch Services Provider of the Advance Payment in respect of the Launch Services Contract.

8. **BPIFAE insurance policy**

Each BPIFAE Insurance Policy is in full force and effect and is in form and substance satisfactory to the BPIFAE Agent (acting on the instructions of all the Lenders) and the BPIFAE Agent (acting on the instructions of all the Lenders) is satisfied that all conditions of each BPIFAE Insurance Policy are fulfilled and that all the requisite approvals of the French Authorities have been obtained.

9. **No material adverse effect**

Since the date of this Agreement nothing has occurred which has or could reasonably be expected to have a Material Adverse Effect.

10. **Equity / subordinated debt**

Evidence that Thermo has converted into share capital of the Borrower all of the Financial Indebtedness owed by the Borrower (including pursuant to the Thermo Facility Agreement), together with a pay off letter (in form and substance satisfactory to the BPIFAE Agent) evidencing the termination of all obligations under the Thermo Facility Agreement.

11. **Equity contribution**

Evidence that prior to Financial Close, Thermo (or any other third party) has contributed to the Borrower at least US$75,000,000 (in aggregate) of equity by way of share capital or subordinated shareholder loans, as follows:

(a) since the date of this Agreement, Thermo (or any other third party) has contributed to the Borrower at least US$45,000,000 of equity by way of share capital or subordinated shareholder loans (excluding the equity issued to Thermo as described in paragraph 10 (*Equity / Subordinated Debt*) above); and

(b) since 1 December 2008 to the date of Financial Close, Thermo has contributed to the Borrower US$30,000,000 of equity by way of share capital.

12. **Debt service reserve account**

Evidence that the Debt Service Reserve Account has been opened and is funded with the DSRA Required Balance.

13. **Insurances**

(a) A report from the Insurance Consultant.

(b) The insurance provisions in each of the Commercial Contracts have been amended in form and substance satisfactory to the BPIFAE Agent (acting in consultation with the Insurance Consultant).

(c) The BPIFAE Agent shall have received:

(i) evidence of payment of all insurance premiums (as required within the applicable credit terms agreed with insurers) for the current policy year of each Insurance (naming BPIFAE, the BPIFAE Agent and the Lenders as additional insured on all certificates for "*all risks property insurance*" and also the Security Agent as first Loss Payee on the Launch Insurance and as additional named insured on the Launch third party liability insurance);

(ii) in relation to the "*all risks property insurance*", a certified copy of the Insurance Documentation (including evidence of transit insurance), copies (certified by a Responsible Officer of the Supplier) in the form required under the Security Documents and otherwise in form and substance reasonably satisfactory to the BPIFAE Agent; and

(iii) a certified copy of a certificate from the Supplier in respect of its third party liability insurance in the same form to be provided pursuant to Article 31 of the Satellite Construction Contract.

14. **Know your customer requirements**

The BPIFAE Agent shall have received each of the documents referred to in Schedule 7 (*Know Your Customer Requirements*).

15. **No injunction, etc.**

(a) No action, proceeding, investigation, regulation or legislation shall have been instituted, threatened or proposed by any Governmental Authority to enjoin, restrain, or prohibit, or to obtain substantial damages in respect of, or which is related to or arises out of the Finance Documents or the consummation of the transactions contemplated thereby, or which, in the BPIFAE Agent's sole discretion, would make it inadvisable to consummate the transactions contemplated by the Finance Documents or the consummation of the transactions contemplated thereby.

(b) The BPIFAE Agent shall be reasonably satisfied that no proceeding shall be pending or threatened which may result in the loss, revocation, material modification, non-renewal, suspension or termination of any Material Communications Licence, the issuance of any cease or desist order or the imposition of any fines, forfeitures or other administrative actions by the FCC with respect to any operations of the Borrower and its Subsidiaries.

(c) The BPIFAE Agent shall be reasonably satisfied that no proceeding shall be pending or threatened which may result in the denial by the FCC of any pending material applications of the Borrower or any Subsidiary thereof, if such denial could reasonably be expected to have a Material Adverse Effect.

16. **Group structure chart**

A certified copy of the Group Structure Chart.

17. **Accounts**

Evidence that:

(a) the Project Accounts (other than the Collection Account) have each been opened and continue to be maintained with the Offshore Account Bank; and

(b) the Collection Account has been opened and continues to be maintained with the Onshore Account Bank.

18. **Other documents and evidence**

(a) Evidence that any process agent referred to in Clause 40.2 (*Service of Process*) (and any other equivalent provision in the other Finance Documents) has accepted its appointment.

(b) A copy of any other Authorisation or other document, opinion or assurance which the Lender considers to be necessary in connection with the entry into and performance of the transactions contemplated by any Finance Document or for the validity and enforceability of any Finance Document.

(c) Copies of the following financial statements:

(i) the annual audited financial statements issued by the Borrower for the financial year ended 31 December 2008; and

(ii) the unaudited financial statements issued by the Borrower for the period ended 31 March 2009.

(d) Evidence that fees, costs and expenses as at the date of the first Utilisation due from the Borrower pursuant to the Finance Documents have been paid or will be paid by the first Utilisation Date.

(e) Evidence that the Borrower has purchased the Interest Rate Cap Agreements with each Original Lender in proportion to its Commitment.

(f) Evidence of the conversion of not less than US$78,200,000 of the 5.75% Notes.

(g) [*Intentionally Omitted*].

(h) [*Intentionally Omitted*]

(i) [*Intentionally Omitted*].

Schedule 3

Utilisation Request

From: [*Borrower*]

To: [*BPIFAE Agent*]

Cc: [*the Supplier*] / [*the Launch Services Provider*]

Dated: [●]

Dear Sirs,

BPIFAE Facility Agreement dated 5 June 2009 (as amended and restated from time to time) (the "Agreement")

1. We refer to the Agreement. This is a Utilisation Request for a [*disbursement*] / [*reimbursement*]. Terms defined in the Agreement have the same meaning in this Utilisation Request unless given a different meaning in this Utilisation Request.

2. We wish to borrow a [*Facility A*] / [*Facility B*] Loan on the following terms:

Proposed Utilisation Date:	[●] (or, if that is not a Business Day, the next Business Day)
Amount:	[[●] [[*Dollars*] (*US$[●]*)] or, if less, the Available Facility
Interest Period:	Six (6) Months
Use of Proceeds:	[*US$*[●] *payable to Thales Alenia Space France for payment of the Invoice dated* [●] *in relation to the Satellite Construction Contract.*] [*US$*[●] *payable to Arianespace for payment of the Invoice dated* [●] *in relation to the Launch Services Contract.*] [*US$*[●] *payable to the Borrower as reimbursement for payment to the Supplier and to the Launch Services Provider in relation to part of the Eligible Amount according to the Invoices separately provided to the BPIFAE Agent.*] [[*Dollars*] (*US$[●]*) *payable to the BPIFAE Agent for payment of the BPIFAE Insurance Premia.*]

3. We confirm that each condition specified in Clause 4.2 (*Further Conditions Precedent*) [*and Clause 4.3 (Conditions Precedent to Certain Utilisations)*] [is] [are] satisfied on the date of this Utilisation Request.

4. The proceeds of this Loan should be credited to [*insert relevant bank account details*].

5. This Utilisation Request is irrevocable.

Yours faithfully

authorised signatory for
Globalstar, Inc.

Schedule 4

Maximum Covenant Capital Expenditure

Part A
Maximum Covenant Capital Expenditures

1	2	3	4	5	6	7	8
Relevant Period A	**Business Plan Capex B**	**10% Buffer A + B = C**	**Maximum Capex Covenant D**	**Minimum Capex – Not Available for Rollover C – D = E**	**Capex Available for Rollover F**	**Cumulative Rollover C + F**	**Maximum Cumulative Capex**
2H 2013	$31,305,815	$3,130,582	$34,436,397	$20,000,000	$14,436,397	$0	$34,436,397
2014	$38,466,992	$3,846,699	$42,313,691	$30,000,000	$12,313,691	$14,436,397	$56,750,088
2015	$17,090,846	$1,709,085	$18,799,931	$10,000,000	$8,799,931	$26,750,088	$45,550,018
2016	$12,000,000	$1,200,000	$13,200,000	$5,000,000	$8,200,000	$35,550,018	$48,750,018
2017	$2,400,000	N/A	$15,000,000	N/A	N/A	$43,750,018	$58,750,018
2018	$2,400,000	N/A	$15,000,000	N/A	N/A	N/A	$15,000,000
2019	$15,000,000	N/A	$15,000,000	N/A	N/A	N/A	$15,000,000
2020	$15,000,000	N/A	$15,000,000	N/A	N/A	N/A	$15,000,000
2021	$15,000,000	N/A	$15,000,000	N/A	N/A	N/A	$15,000,000
2022	$15,000,000	N/A	$15,000,000	N/A	N/A	N/A	$15,000,000

Part B
Maximum Covenant Capital Expenditures for Excess Cash Flow Calculation

Relevant Period	Maximum Covenant Capex for Excess Cash Flow Calculation
2H 2013	US$34,436,397
1H 2014	US$10,688,587
2H 2014	US$31,625,105
1H 2015	US$9,644,886
2H 2015	US$9,155.045
1H 2016	US$6,600.000
2H 2016	US$6,600.000
1H 2017	US$2,500.000
2H 2017	US$2,500.000
1H 2018	US$2,500.000
2H 2018	US$2,500.000
1H 2019	US$2,500.000
2H 2019	US$2,500.000
1H 2020	US$2,500.000
2H 2020	US$2,500.000
1H 2021	US$2,500.000
2H 2021	US$2,500.000
1H 2022	US$2,500.000
2H 2022	US$2,500.000

Schedule 5

Form of Transfer Certificate and Assignment Agreement

Part A
Form of Transfer Certificate

To: [●] as BPIFAE Agent, [●] as Security Agent

From: [*The Existing Lender*] (the "**Existing Lender**") and [*The New Lender*] (the "**New Lender**")

Dated: [●]

BPIFAE Facility Agreement dated 5 June 2009 (as amended and restated from time to time) (the "Agreement")

1. We refer to the Agreement and the Second Lien Intercreditor Agreement (as defined in the Agreement). This is a Transfer Certificate for the purposes of the Agreement and a [Creditor Accession Undertaking] for the purposes of the Second Lien Intercreditor Agreement. Terms defined in the Agreement have the same meaning in this Transfer Certificate unless given a different meaning in this Transfer Certificate.

2. We refer to clause 26.5 (*Procedure for Transfer or Assignment*) of the Agreement:

   (a) The Existing Lender and the New Lender agree to the Existing Lender transferring to the New Lender by novation, and in accordance with clause 26.5 (*Procedure for Transfer or Assignment*), all of the Existing Lender's rights and obligations under the Agreement and the other Finance Documents which relate to that portion of the Existing Lender's Commitment(s) and participation in Loans under the Agreement as specified in the Schedule.

   (b) The proposed Transfer Date is [●].

   (c) The Facility Office and address, fax number and attention details for notices of the New Lender for the purposes of clause 33.2 (*Addresses*) of the Agreement are set out in the Schedule.

3. The New Lender expressly acknowledges the limitations on the Existing Lender's obligations set out in paragraph (c) of clause 26.4 (*Limitation of Responsibility of Existing Lenders*) of the Agreement.

4. The New Lender confirms that the person beneficially entitled to interest payable to that Lender in respect of an advance under a Finance Document is a Qualifying Lender.

5. This Transfer Certificate may be executed in any number of counterparts and this has the same effect as if the signatures on the counterparts were on a single copy of this Transfer Certificate.

6. This Transfer Certificate and any non-contractual obligations arising out of or in connection with it are governed by English law.

7. For the purposes of *Article 1278* and *seq.* of the French Civil Code, it is agreed that the security interest created pursuant to the Borrower Pledge of Bank Accounts, the Borrower Additional Pledge of Bank Accounts and the Holding Account Pledge Agreement shall be preserved for the benefit of the New Lender and all other Finance Parties.

8. We refer to clause 20 (*Changes to the Parties*) of the Second Lien Intercreditor Agreement. In consideration of the New Lender being accepted as a Senior Lender (as defined in the Second Lien Intercreditor Agreement) for the purposes of the Second Lien Intercreditor Agreement. The New Lender confirms that, as from the Transfer Date, it intends to be party to the Second Lien Intercreditor Agreement as a Senior Lender, and undertakes to perform all the obligations expressed in the Second Lien Intercreditor Agreement to be assumed by a Senior Lender and agrees that it shall be bound by all the provisions of the Second Lien Intercreditor Agreement, as if it had been an original party to the Second Lien Intercreditor Agreement.

The Schedule

Commitment/rights and obligations to be transferred

[*insert relevant details*]
[*Facility Office address, fax number and attention details for notices and account details for payments,*]

[Existing Lender]	**[New Lender]**
By: [●]	By: [●]

This certificate is accepted as a Transfer Certificate for the purposes of the Agreement by the BPIFAE Agent, the Transfer Date is confirmed as [●].

[BPIFAE Agent]

By: [●]

[Security Agent]

By: [●]

Part B
Form of Assignment Agreement

To: [●] as BPIFAE Agent, [●] as Security Agent and [●] as Borrower, for and on behalf of each Obligor

From: [*the Existing Lender*] (the "**Existing Lender**") and [*the New Lender*] (the "**New Lender**")

Dated: [●]

[Borrower] - [●] Facility Agreement
dated [●] (the "Agreement")

1. We refer to the Agreement and the Second Lien Intercreditor Agreement (as defined in the Agreement). This is an Assignment Agreement for the purposes of the Agreement and a [Creditor Accession Undertaking] for the purposes of the Second Lien Intercreditor Agreement. Terms defined in the Agreement have the same meaning in this Assignment Agreement unless given a different meaning in this Assignment Agreement.

2. We refer to clause 26.5 (*Procedure for Transfer or Assignment*):

   (a) The Existing Lender assigns absolutely to the New Lender all the rights of the Existing Lender under the Agreement and the other Finance Documents which relate to that portion of the Existing Lender's Commitment(s) and participations in Loans under the Agreement as specified in the Schedule.

   (b) The Existing Lender is released from all the obligations of the Existing Lender which correspond to that portion of the Existing Lender's Commitment(s) and participations in Loans under the Agreement specified in the Schedule.

   (c) The New Lender becomes a Party as a Lender and is bound by obligations equivalent to those from which the Existing Lender is released under paragraph (b) above.

3. The proposed Transfer Date is [●].

4. On the Transfer Date the New Lender becomes:

   (a) Party to the Finance Documents (other than the Second Lien Intercreditor Agreement) as a Lender; and

   (b) Party to the Second Lien Intercreditor Agreement as a Senior Lender (as defined in the Second Lien Intercreditor Agreement).

5. The Facility Office and address, fax number and attention details for notices of the New Lender for the purposes of clause 33.2 (*Addresses*) are set out in the Schedule.

6. The New Lender expressly acknowledges the limitations on the Existing Lender's obligations set out in paragraph (c) of clause 26.4 (*Limitation of Responsibility of Existing Lenders*).

7. The New Lender confirms, for the benefit of the BPIFAE Agent and without liability to any Obligor, that it is:

   (a) [a Qualifying Lender;]

   (b) [not a Qualifying Lender].

8. This Assignment Agreement acts as notice to the COACE Agent (on behalf of each Finance Party) and, upon delivery in accordance with clause 26.6 (*Copy of Transfer Certificate or Assignment Agreement to Borrower*), to the Borrower (on behalf of each Obligor) of the assignment referred to in this Assignment Agreement.

9. We refer to clause [●] (*Change of Senior Lender*) of the Second Lien Intercreditor Agreement. In consideration of the New Lender being accepted as a Senior Lender Agreement (and as defined in the Second Lien Intercreditor Agreement) for the purposes of the Second Lien Intercreditor Agreement, the New Lender confirms that, as from the Transfer Date, it intends to be party to the Second Lien Intercreditor Agreement as a Senior Lender, and undertakes to perform all the obligations expressed in the Second Lien Intercreditor Agreement to be assumed by a Senior Lender and agrees that it shall be bound by all the provisions of the Second Lien Intercreditor Agreement, as if it had been an original party to the Second Lien Intercreditor Agreement.

10. This Assignment Agreement may be executed in any number of counterparts and this has the same effect as if the signatures on the counterparts were on a single copy of this Assignment Agreement.

11. This Assignment Agreement and any non-contractual obligations arising out of or in connection with it are governed by English law.

12. This Assignment Agreement has been entered into on the date stated at the beginning of this Assignment Agreement.

THE SCHEDULE
Rights to be assigned and obligations to be released and undertaken

[*insert relevant details*]
[*Facility office address, fax number and attention details for notices and account details for payments*]

[*Existing Lender*] [*New Lender*]

By: By:

This Assignment Agreement is accepted by the BPIFAE Agent and the Transfer Date is confirmed as [●].

Signature of this Assignment Agreement by the BPIFAE Agent constitutes confirmation by the BPIFAE Agent of receipt of notice of the assignment referred to herein, which notice the BPIFAE Agent receives on behalf of each Finance Party.

[*BPIFAE Agent*]

By:

Schedule 6

The Security Agent

1. **Security agent as holder of liens**

(a) In this Clause:

"**Finance Party Claim**" means any amount which an Obligor owes to a Finance Party under or in connection with the Finance Documents; and

"**Security Agent Claim**" means any amount which an Obligor owes to the Security Agent under this Clause.

(b) Unless expressly provided to the contrary in any Finance Document, the Security Agent holds:

(i) any security created by a Security Document governed by any relevant law;

(ii) the benefit of any Security Agent Claims; and

(iii) any proceeds of security,

for the benefit, and as the property, of the Finance Parties.

(c) The Security Agent will separately identify in its records the property rights referred to in paragraph (b) above.

(d) The Borrower must pay the Security Agent, as an independent and separate creditor, an amount equal to each Finance Party Claim on its due date.

(e) The Security Agent may enforce performance of any Security Agent Claim in its own name as an independent and separate right. This includes any suit, execution, enforcement of security, recovery of guarantees and applications for and voting in respect of any kind of insolvency proceeding.

(f) Each Finance Party must, at the request of the Security Agent, perform any act required in connection with the enforcement of any Security Agent Claim. This includes joining in any proceedings as co-claimant with the Security Agent.

(g) Unless the Security Agent fails to enforce a Security Agent Claim within a reasonable time after its due date, a Finance Party may not take any action to enforce the corresponding Finance Party Claim unless it is requested to do so by the Security Agent.

(h) The Borrower irrevocably and unconditionally waives any right it may have to require a Finance Party to join in any proceedings as co-claimant with the Security Agent in respect of any Security Agent Claim.

(i) (A) Discharge by the Borrower of a Finance Party Claim will discharge the corresponding Security Agent Claim in the same amount; and (B) Discharge by the

Borrower of a Security Agent Claim will discharge the corresponding Finance Party Claim in the same amount.

(j) The aggregate amount of the Security Agent Claims will never exceed the aggregate amount of Finance Party Claims.

(k) (A) A defect affecting a Security Agent Claim against the Borrower will not affect any Finance Party Claim; and (B) A defect affecting a Finance Party Claim against the Borrower will not affect any Security Agent Claim.

(l) If the Security Agent returns to the Borrower, whether in any kind of insolvency proceedings or otherwise, any recovery in respect of which it has made a payment to a Finance Party, that Finance Party must repay an amount equal to that recovery to the Security Agent.

2. **Responsibility**

(a) The Security Agent is not liable or responsible to any other Finance Party for:

(i) any failure in perfecting or protecting the security created by any Security Document; or

(ii) any other action taken or not taken by it in connection with any Security Document,

unless caused by its gross negligence or wilful misconduct.

(b) The Security Agent is not responsible for:

(i) the right or title of any person in or to, or the value of, or sufficiency of any part of the security created by the Security Documents;

(ii) the priority of any security created by the Security Documents; or

(iii) the existence of any other Lien affecting any asset secured under a Security Document.

3. **Title**

The Security Agent may accept, without enquiry, the title (if any) the Borrower may have to any asset over which security is intended to be created by any Security Document.

4. **Possession of documents**

The Security Agent is not obliged to hold in its own possession any Security Document, title deed or other document in connection with any asset over which security is intended to be created by a Security Document. Without prejudice to the above, the Security Agent may allow any bank providing safe custody services or any professional adviser to the Security Agent to retain any of those documents in its possession.

5. **Investments**

Except as otherwise provided in any Security Document, all moneys received by the Security Agent under a Security Document may be:

(a) invested in the name of, or under the control of, the Security Agent in any investment for the time being authorised by any relevant law for the investment by trustees of trust money or in any other investments which may be selected by the Security Agent with the consent of the Majority Lenders; or

(b) placed on deposit in the name of, or under the control of, the Security Agent at any bank or institution (including any Finance Party) and on such terms as the Security Agent may agree.

6. **Approval**

Each Finance Party:

(a) confirms its approval of each Security Document; and

(b) authorises and directs the Security Agent (by itself or by such person(s) as it may nominate) to enter into and enforce the Security Documents as trustee (or agent) or as otherwise provided (and whether or not expressly in the names of the Finance Parties) on its behalf.

7. **Conflict with security documents**

If there is any conflict between this Agreement and any Security Document with regard to instructions to, or other matters affecting, the Security Agent, this Agreement will prevail.

8. **Release of security**

(a) If a disposal of any asset subject to security created by a Security Document is made to a person (which is and will remain) outside the Group in the following circumstances:

(i) all the Lenders agree to the disposal;

(ii) the disposal is being made at the request of the Security Agent in circumstances where any security created by the Security Documents has become enforceable;

(iii) the disposal is allowed by the terms of the Finance Documents and will not result or could not reasonably be expected to result in any Default; and

(iv) the disposal is being effected by enforcement of a Security Document, the asset(s) being disposed of will be released from any security over it created by a Security Document.

(b) Any release under this Subclause will not become effective until the date of the relevant disposal or otherwise in accordance with the consent of all the Lenders.

(c) If a disposal is not made, then any release relating to that disposal will have no effect, and the obligations of the Borrower under the Finance Documents will continue in full force and effect.

(d) If the Security Agent so requests pursuant to a release under this Subclause, (at the request and expense of the Borrower) each Finance Party must enter into any document and do all such other things which are reasonably required to achieve that release. Each other Finance Party irrevocably authorises the Security Agent to enter into any such document.

9. **Co-security agent**

(a) The Security Agent may appoint a separate security agent or a co-security agent in any jurisdiction:

(i) if the Security Agent considers that without the appointment the interests of the Lenders under the Finance Documents might be materially and adversely affected;

(ii) for the purpose of complying with any law, regulation or other condition in any jurisdiction; or

(iii) for the purpose of obtaining or enforcing a judgment or enforcing any Finance Document in any jurisdiction.

(b) Any appointment under this Subclause will only be effective if the security agent or co-security agent confirms to the Security Agent and the Borrower in form and substance satisfactory to the Security Agent that it is bound by the terms of this Agreement as if it were the Security Agent.

(c) The Security Agent may remove any security agent or co-security agent appointed by it and may appoint a new security agent or co-security agent in its place.

10. **Information**

Each Finance Party and the Borrower must supply the Security Agent with any information that the Security Agent may reasonably specify as being necessary or desirable to enable it to perform its functions under this Clause.

11. **Perfection of security**

Borrower must (at its own cost) take any action and enter into and deliver any document which is required by the Security Agent so that a Security Document provides for effective and perfected security in favour of any successor Security Agent.

Schedule 7

Know Your Customer Requirements

The Borrower shall provide the following documents to the BPIFAE Agent, upon the request of a Finance Party, in original or certified copy form:

1. **Formation Documents**: original or certified copies of the certificate of commercial registration, memorandum of association or any other equivalent formation documents in English that have been filed with the relevant business registry in the jurisdiction of formation of the Borrower and any other trading names;

2. **List of Directors**: a certified list of all directors of the Borrower including:

   (a) names;

   (b) nationalities;

   (c) dates of birth; and

   (d) business addresses;

3. **Passports**: a certified copy of the passports of the persons signing each of the Finance Documents for and on behalf of the Borrower;

4. **Financials**: most recent annual audited financial reports (if any) and the latest unaudited statement of accounts; and

5. **Listing**: evidence that the Borrower is a listed entity.

Schedule 8

Form of Compliance Certificate

To: BNP Paribas as BPIFAE Agent

From: [*Borrower*]

Dated: [●]

Dear Sirs

Globalstar BPIFAE Facility Agreement dated 5 June 2009 (as amended and restated from time to time) (the "Agreement")

1. We refer to the Agreement. This is a Compliance Certificate. Terms defined in the Agreement have the same meaning in this Compliance Certificate unless given a different meaning in this Compliance Certificate.

2. We confirm that: [*Insert details of financial covenants in Clause 20 (Financial Covenants) to be certified*].

3. We confirm that the amounts as of the date of this Compliance Certificate in each of the Project Accounts are as follows:

   (a) the Collection Account – US$[●];

   (b) the Debt Service Account – US$[●];

   (c) the Debt Service Reserve Account – US$[●];

   (d) the Equity Proceeds Account – US$[●]; and

   (e) the Insurance Proceeds Account – US$[●].

4. We confirm that: [*insert details of any Spectrum Cash Flow and/or Spectrum Sale proceeds*].

5. We confirm that: [*insert detailed calculations for the purposes of calculating the amounts of the cash sweeps in Clause 7 (Prepayment and Cancellation)*].

6. We confirm that: [*insert detailed calculation of the Adjusted Consolidated EBITDA Reconciliation and the reconciliation of the Excess Cash Flow*].

7. We confirm that since the date of the last Compliance Certificate no new Subsidiaries have been created or equity interests issued other than as disclosed in writing to the BPIFAE Agent.

8. We confirm that the shareholders of record of the Borrower are as follows: [*insert list of current shareholders of record of the Borrower*].

9. We confirm that the Borrower has complied with the terms of the Accounts Agreement.

10. [We confirm that no Default is continuing.][*]

Signed:

Director	Director
Of	Of
[*Borrower*]	[*Borrower*]

Schedule 9

ERISA Plans

1. Globalstar, Inc. Savings Plan (401(k));
2. Globalstar, Inc. Pension Plan (Retirement); and
3. Globalstar, Inc. Comprehensive Welfare Benefits Plan document.

Schedule 10

Form of Confidentiality Undertaking

To:

[*insert name of Potential Lender*]

Re: The Facility

Borrower:
Amount:
BPIFAE Agent:

Dear Sirs,

We understand that you are considering participating in the Facility. In consideration of us agreeing to make available to you certain information, by your signature of a copy of this letter you agree as follows:

1. **Confidentiality Undertaking**

You undertake:

(a) to keep the Confidential Information confidential and not to disclose it to anyone except as provided for by paragraph 2 below and to ensure that the Confidential Information is protected with security measures and a degree of care that would apply to your own confidential information;

(b) to use the Confidential Information only for the Permitted Purpose; and

(c) to use all reasonable endeavours to ensure that any person to whom you pass any Confidential Information (unless disclosed under paragraph 2(b) below) acknowledges and complies with the provisions of this letter as if that Person were also a party to it.

2. **Permitted Disclosure**

We agree that you may disclose Confidential Information:

(a) to members of the Participant Group and their officers, directors, employees and professional advisers to the extent necessary for the Permitted Purpose and to any auditors of members of the Participant Group;

(b) (i) where requested or required by any court of competent jurisdiction or any competent judicial, governmental, supervisory or regulatory body, (ii) where required by the rules of any stock exchange on which the shares or other securities of any member of the Participant Group are listed or (iii) where required by the laws or regulations of any country with jurisdiction over the affairs of any member of the Participant Group; or

(c) with the prior written consent of us and the Borrower.

3. **Notification of Required or Unauthorised Disclosure**

You agree (to the extent permitted by law and except where disclosure is to be made to any competent supervisory or regulatory body during the ordinary course of its supervisory or regulatory function over you) to inform us of the full circumstances of any disclosure under paragraph 2(b) or upon becoming aware that Confidential Information has been disclosed in breach of this letter.

4. **Return of Copies**

If we so request in writing, you shall return all Confidential Information supplied to you by us and destroy or permanently erase (to the extent technically practicable) all copies of Confidential Information made by you and use all reasonable endeavours to ensure that anyone to whom you have supplied any Confidential Information destroys or permanently erases (to the extent technically practicable) such Confidential Information and any copies made by them, in each case save to the extent that you or the recipients are required to retain any such Confidential Information by any applicable law, rule or regulation or by any competent judicial, governmental, supervisory or regulatory body or in accordance with internal policy, or where the Confidential Information has been disclosed under paragraph 2(b) above.

5. **Continuing Obligations**

The obligations in this letter are continuing and, in particular, shall survive the termination of any discussions or negotiations between you and us. Notwithstanding the previous sentence, the obligations in this letter shall cease on the earlier of (a) the date you become a party to or otherwise acquire (by assignment, sub participation or otherwise) an interest, direct or indirect in the Facility and (b) twelve (12) Months after you have returned all Confidential Information supplied to you by us and destroyed or permanently erased (to the extent technically practicable) all copies of Confidential Information made by you (other than any such Confidential Information or copies which have been disclosed under paragraph 2 above (other than sub-paragraph 2(a)) or which, pursuant to paragraph 4 above, are not required to be returned or destroyed).

6. **No Representation; Consequences of Breach, etc**

You acknowledge and agree that:

(a) neither we, nor any member of the Group nor any of our or their respective officers, employees or advisers (each a "**Relevant Person**") (i) make any representation or warranty, express or implied, as to, or assume any responsibility for, the accuracy, reliability or completeness of any of the Confidential Information or any other information supplied by us or the assumptions on which it is based or (ii) shall be under any obligation to update or correct any inaccuracy in the Confidential Information or any other information supplied by us or be otherwise liable to you or any other Person in respect to the Confidential Information or any such information; and

(b) we or members of the Group may be irreparably harmed by the breach of the terms of this letter and damages may not be an adequate remedy; each Relevant Person may be

granted an injunction or specific performance for any threatened or actual breach of the provisions of this letter by you.

7. **No Waiver; Amendments, etc**

This letter sets out the full extent of your obligations of confidentiality owed to us in relation to the information the subject of this letter. No failure or delay in exercising any right, power or privilege under this letter will operate as a waiver thereof nor will any single or partial exercise of any right, power or privilege preclude any further exercise thereof or the exercise of any other right, power or privileges under this letter. The terms of this letter and your obligations under this letter may only be amended or modified by written agreement between us.

8. **Inside Information**

You acknowledge that some or all of the Confidential Information is or may be price-sensitive information and that the use of such information may be regulated or prohibited by applicable legislation including securities law relating to insider dealing and market abuse and you undertake not to use any Confidential Information for any unlawful purpose.

9. **Nature of Undertakings**

The undertakings given by you under this letter are given to us and (without implying any fiduciary obligations on our part) are also given for the benefit of the Borrower and each other member of the Group.

10. **Third Party Rights**

(a) Subject to this paragraph 10 and to paragraph 6 and paragraph 9, a person who is not a party to this letter has no right under the Contracts (Rights of Third Parties) Act 1999 (the "**Third Parties Act**") to enforce or enjoy the benefit of any term of this letter.

(b) The Relevant Persons may enjoy the benefit of paragraphs 6 and 9 subject to and in accordance with this paragraph 10 and the provisions of the Third Parties Act.

(c) The parties to this letter do not require the consent of any Relevant Person to rescind or vary this letter at any time.

11. **Governing Law and Jurisdiction**

This letter (including the agreement constituted by your acknowledgement of its terms) shall be governed by and construed in accordance with the laws of England and the parties submit to the non-exclusive jurisdiction of the English courts.

12. **Definitions**

In this letter (including the acknowledgement set out below) terms defined in the Facility shall, unless the context otherwise requires, have the same meaning and:

"**Confidential Information**" means any information relating to the Borrower, the Group, and the Finance Documents, provided to you by us or any of our affiliates or advisers, in whatever form, and includes information given orally and any document, electronic file or any other way of representing or recording information which contains or is derived or copied from such

information but excludes information that (a) is or becomes public knowledge other than as a direct or indirect result of any breach of this letter or (b) is known by you before the date the information is disclosed to you by us or any of our affiliates or advisers or is lawfully obtained by you after that date, other than from a source which is connected with the Group and which, in either case, as far as you are aware, has not been obtained in violation of, and is not otherwise subject to, any obligation of confidentiality;

"**Group**" means the Borrower and each of its holding companies and subsidiaries and each subsidiary of each of its holding companies (as each such term is defined in the Companies Act 1985);

"**Participant Group**" means you, each of your holding companies and subsidiaries and each subsidiary of each of your holding companies (as each such term is defined in the Companies Act 1985); and

"**Permitted Purpose**" means considering and evaluating whether to enter into the Facility.

Please acknowledge your agreement to the above by signing and returning the enclosed copy.

Yours faithfully

….....

For and on behalf of
Mandated Lead Arranger
To: [Mandated Lead Arranger]
The Borrower and each other member of the Group
We acknowledge and agree to the above:

….....
For and on behalf of
[Potential Lender]

Schedule 11

Payment Terms

Each payment under this Agreement shall be payable:

(a) to the Supplier and/or the Launch Services Provider, as the case may be; or

(b) in the case of a reimbursement to the Borrower, to the Borrower,

against presentation of:

(i) a copy of a duly certified Invoice and a Qualifying Certificate;

(ii) in the case of payments to the Supplier only, a certificate of completion, as provided for in the Satellite Construction Contract, duly signed by the Borrower;

(iii) a Utilisation Request; and

(iv) in relation to a reimbursement to the Borrower, a certificate signed by a Responsible Officer of the Borrower confirming to the BPIFAE Agent:

(A) that the Borrower has made the payment in respect of which the reimbursement is required; and

(B) the purpose for which the Loan shall be applied.

Schedule 12

Material Contracts

1. Radio Access Network and User Terminal Subsystem Contract between the Borrower and Hughes, effective as of 1 May 2008.

   (a) Amendment No. 1 to Radio Access Network and User Terminal Subsystem Contract, effective as of 16 June 2009.

   (b) Amendment No. 2 to Radio Access Network and User Terminal Subsystem Contract, effective as of 28 August 2009.

   (c) Amendment No. 3 to Radio Access Network and User Terminal Subsystem Contract, effective as of 21 September 2009.

   (d) Amendment No. 4 to Radio Access Network and User Terminal Subsystem Contract, effective as of 24 March 2010.

   (e) Amendment No. 5 to Radio Access Network and User Terminal Subsystem Contract, effective as of 5 April 2011.

   (f) Amendment No. 6 to Radio Access Network and User Terminal Subsystem Contract, effective as of 4 November 2011.

   (g) Amendment No. 7 to Radio Access Network and User Terminal Subsystem Contract, effective as of 1 February 2012.

   (h) Amendment No. 8 to Radio Access Network and User Terminal Subsystem Contract, effective as of 6 September 2012.

   (i) Letter Agreements for deferral of payment under the Radio Access Network and User Terminal Subsystem Contract, dated 30 March 2011 as further amended on 14 October 2011, 30 December 2011, 30 March 2012, 26 June 2012, 27 September 2012, 20 December 2012, 26 March 2013, 28 June 2013, 7 August 2013 and 30 May 2014.

   (j) Radio Access Network and User Terminal Subsystem Contract Exhibit A, dated 6 September 2012.

   (k) Radio Access Network and User Terminal Subsystem Contract Exhibit C, dated 6 September 2012.

   (l) Amendment No. 9 to Contract between Globalstar and Hughes Network Systems LLC, effective as of January 13, 2013.

   (m) Amendment No. 10 to Contract between Globalstar and Hughes Network Systems LLC, effective as of 7 August 2013.

   (n) Amendment No. 11 to Contract between Globalstar and Hughes Network Systems LLC, effective as of 17 December 2013.

(o) Letter Agreement regarding equity payment by and between Globalstar, Inc. and Hughes Network Systems, LLC, dated as of 30 May 2014, as further amended 3 December 2015, 7 March 2016, 14 June 2016, 21 September 2016 and 6 December 2016.

(p) Amendment No.12 to Contract between Globalstar, Inc. and Hughes Network Systems LLC, effective as of 16 October 2014.

(q) Amendment No.13 to Contract between Globalstar, Inc. and Hughes Network Systems LLC, effective as of 16 July 2015.

(r) Amendment No.14 to Contract between Globalstar, Inc. and Hughes Network Systems LLC, effective as of 16 December 2016.

(s) Amendment No. 15 to Contract between Globalstar, Inc. and Hughes Network Systems, LLC, effective as 1 June 2017.

2. Core Network Purchase Agreement between the Borrower and Ericsson, dated as of 22 July 2014.

(a) Amendment No.1 to Contract between Globalstar, Inc. and Ericsson Inc., effective as of 2 April 2015.

(b) Amendment No. 2 to Contract between Globalstar, Inc. and Ericsson Inc., effective as of 11 August 2015.

3. Senior Indenture between the Borrower and U.S. Bank, National Association, dated as of 15 April 2008.

(a) First Supplemental Indenture to Senior Indenture, dated as of 15 April 2008;

(b) Amendment to First Supplemental Indenture dated, as of 1 December 2008;

(c) Second Supplemental Indenture to Senior Indenture, dated as of 19 June 2009;

(d) Third Supplemental Indenture to Senior Indenture, dated as of 14 June 2011; and

(e) Fourth Supplemental Indenture to Senior Indenture, dated as of 20 May 2013.

4. The Finance Documents.

5. Master Manufacturing and Supply Agreement between the Borrower and BYD (Huizhou) Co., Ltd, effective as of 10 June 2011.

6. Manufacturing Agreement between the Borrower and Creation Technologies Texas, LLC effective as of 8 July 2019.

7. Gateway Operation and Maintenance Agreement between the Borrower and Singapore Telecommunications Limited, dated 7 May 2008.

(a) Supplemental Agreement to the Operation and Maintenance Agreement, dated 9 September 2009.

(b) Supplemental Agreement No.2 to the Operation and Maintenance Agreement, dated 1 September 2011.

(c) Supplemental Agreement No. 3 to the Operation and Maintenance Agreement, dated 6 May 2013.

(d) Supplemental Agreement No. 4 to the Operation and Maintenance Agreement, dated 23 September 2013.

(e) Supplemental Agreement No. 5 to the Operation and Maintenance Agreement, dated 24 January 2014.

(f) Supplemental Agreement No. 6 to the Operation and Maintenance Agreement, dated 1 April 2014.

(g) Supplemental Agreement No. 7 to the Operation and Maintenance Agreement, dated 1 July 2014.

(h) Supplemental Agreement No. 8 to the Operation and Maintenance Agreement, dated 16 December 2014.

(i) Supplemental Agreement No. 9 to the Operation and Maintenance Agreement, dated 10 May 2015.

(j) Supplemental Agreement No. 10 to the Operation and Maintenance Agreement, dated 1 August 2016.

(k) Supplemental Agreement No. 11 to the Operation and Maintenance Agreement, dated 1 February 2019.

8. Settlement Agreement between the Borrower, Thales Alenia Space France, Thermo Funding Company, dated 24 June 2012.

9. Lease Agreement between the Borrower and Thermo Covington, LLC, dated 1 February 2019.

10. Guaranty Agreement to Senior Indenture and Fourth Supplemental Indenture between the Borrower, certain subsidiaries of the Borrower, and U.S. Bank National Association, dated 27 December 2013.

11. Thermo Loan Agreement.

12. Second Lien Facility Agreement.

Schedule 13

Labour and Collective Bargaining Agreements

A labour and collective bargaining agreement dated 1 May 2019, and entered in between Sinttel/RJ (Sindicato dos Trabalhadores em Empresas de Telecomunicações, Transmissão de Dados e Correio Eletrônico, Telefonia Móvel Celular, Serviços Troncalizados de Comunicação, Rádiochamadas, Telemarketing, Projeto, Construção, Instalação e Operação de Mesas Telefônicas no Estado do Rio de Janeiro) and Globalstar do Brasil Ltda.

Schedule 14

Financial Indebtedness and Guarantee Obligations

1. Open end promissory note in the maximum principal amount of US$10,000,000, dated 23 March 2006 from Globalstar Canada Satellite Co. to Globalstar de Venezuela, C.A., having a balance outstanding of US$4,700,868.93 as of 30 September 2019.

2. Open end line of credit promissory note in the maximum principal amount of US$50,000,000, dated 30 June 2007 and amended 31 December 2008 from Globalstar Canada Satellite Co. to the Borrower, having a balance outstanding of US$0 as of 31 May 2017.

3. Fourth Supplemental Indenture in respect of 8.00% Convertible Senior Notes due 2028, dated as of 30 September 2019.

4. Thermo Loan Agreement.

5. The Second Lien Facility Agreement.

Schedule 15

Communication Licences

Licenses and Authorizations Regulated by the Federal Communications Commission
Held by Globalstar, Inc. and its Subsidiaries
Active as of October 2019

Licensee (Holder)	Call Sign	Expiration Date	Description and Authorizing Order(s) and/or File Number(s)
Globalstar Licensee LLC	S2115	10/04/2024	*NGSO Satellite Authorization*: Authority to Construct, Launch, and Operate Globalstar, a Low Earth Orbit Satellite System to Provide Mobile Satellite Services in the Big LEO Band at 1610-1618.725 MHz ("Lower Big LEO band," for uplink operations) and 2483.5-2500 MHz ("Upper Big LEO band," for downlink operations), per Order and Authorization, 10 FCC Rcd 2333 (IB 1995) (DA 95-128), and Second Order on Reconsideration, 22 FCC Rcd 19733 (2007) (FCC 07-194) (*see also* File Nos. SAT-A/O-19910603-00010, formerly 19-DSS-0-91(48); SAT- SAT-ASG-20060724-00078). Authority to operate space stations using transmitting frequencies for feeder downlinks at 6875-7055 MHz and for reception of feeder uplinks at 5091-5250 MHZ, per Order and Authorization, 11 FCC Rcd 16410 (IB 1996) (DA 98-1924). License term for first-generation U.S.-licensed space stations extended to Oct. 4 2024 by File No. SAT-MOD-20130314-00030 (granted Sept. 18, 2014); *see* Public Notice, Report No. SAT-01042 (DA 14-1355) (IB) 2014). Authority to operate Globalstar's second-generation NGSO MSS satellites licensed through the Republic of France (Globalstar 2.0, ITU Name HIBLEO-X) within the United States granted under File Nos. SAT-MOD-20080904-000165 and SAT-AMD-20091221-00147, per Order, 26 FCC Rcd 3948 (IB 2011) (DA 11-520). Modification of Globalstar's Ancillary Terrestrial Component (ATC) of its Mobile-Satellite Service (MSS) system operating in the Big LEO S-band, using Globalstar's licensed spectrum at 2483.5-2495 MHz to deploy a terrestrial low-power broadband network, enabled by Report and Order, 31 FCC Rcd 13801 (2016) (FCC 16-181); *see also* modification applications, File Nos. SAT-MOD-20170411-00061 and SES-MOD-20170412-00422, (granted August 2017); *see* Public Notice, DA 17-756, at 1 (Aug. 11 2017); Public Notice, Report No. SES-01982, at 5-7 (Aug. 16, 2017); Notice of Minor Modification, File No. SAT-MOD-20171020-00141 (accepted Oct. 31, 2017); Public Notice, Report No. SAT-02190, at 2 (Dec. 15, 2017).

GUSA Licensee LLC	E970381	10/04/2024	*Mobile Earth Terminals – Blanket License* Authority for mobile satellite service handsets / mobile earth terminals within 1610 – 1618.7250 MHz and 2483.5 – 2500 MHz – File No. SES-MOD-20160412-00344 granted July 5, 2016; *see* Public Notice, Report No. SES-01865. *See also* MSS Ancillary Terrestrial Component (ATC) Leasing Licence, granted Oct. 31, 2008.
GUSA Licensee LLC	E000342	03/22/2026	*Fixed Earth Station – Site ID*: CLFN-2 (Clifton, TX) Authority within 5091-5250 MHz and 6875-7055 MHz – File No. SES-MFS-20091221-01608 granted March 18, 2011; *see* Order, 26 FCC Rcd 3948 (2011) (DA 11-520).
GUSA Licensee LLC	E000343	03/22/2026	*Fixed Earth Station – Site ID*: CLFN-3 (Clifton, TX) Authority within 5091-5250 MHz and 6875-7055 MHz – File No. SES-MFS-20091221-01609 granted March 18, 2011; *see* Order, 26 FCC Rcd 3948 (2011) (DA 11-520).
GUSA Licensee LLC	E000344	03/22/2026	*Fixed Earth Station – Site ID*: CLFN-4 (Clifton, TX) Authority within 5091-5250 MHz and 6875-7055 MHz – File No. SES-MFS-20091221-01610 granted March 18, 2011; *see* Order, 26 FCC Rcd 3948 (2011) (DA 11-520).
GUSA Licensee LLC	E000345	03/22/2026	*Fixed Earth Station – Site ID*: CLFN-5 (Clifton, TX) Authority within 5091-5250 MHz and 6875-7055 MHz – File No. SES-MFS-20091221-01611 granted March 18, 2011; *see* Order, 26 FCC Rcd 3948 (2011) (DA 11-520).
GUSA Licensee LLC	E030266	10/14/2025	*Fixed Earth Station – Site ID*: CLFN-IOT (Clifton, TX) Authority within 1610-1618.725 MHz and 2483.5-2500 MHz – File No. SES-MOD-20120308-00251 granted May 7, 2012; *see* Public Notice, Report No. SES-01448.
GUSA Licensee LLC	E050097	01/04/2022	*Fixed Earth Station – Site ID*: SBRG-1 (Sebring, FL) Authority within 5091-5250 MHz and 6875-7055 MHz – File No. SES-MFS-20101108-01412 granted June 6, 2011; *see* Public Notices, Report Nos. SES-01354 and SES-01405.
GUSA Licensee LLC	E050098	01/04/2022	*Fixed Earth Station – Site ID*: SBRG-2 (Sebring, FL) Authority within 5091-5250 MHz and 6875-7055 MHz – File No. SES-MFS-20101108-01411 granted June 7, 2011; *see* Public Notices, Report Nos. SES-01354 and SES-01405.
GUSA Licensee LLC	E050099	01/04/2022	*Fixed Earth Station – Site ID*: SBRG-3 (Sebring, FL) Authority within 5091-5250 MHz and 6875-7055 MHz – File No. SES-MFS-20101108-01410 granted June 7, 2011; *see* Public Notices, Report Nos. SES-01354 and SES-01405.
GUSA Licensee LLC	E050100	01/04/2022	*Fixed Earth Station – Site ID*: SBRG-4 (Sebring, FL) Authority within 5091-5250 MHz and 6875-7055 MHz – File No. SES-MFS-20101108-01409 granted June 7, 2011; *see* Public Notices, Report Nos. SES-01354 and SES-01405.
GUSA Licensee LLC	E050345	01/04/2022	*Fixed Earth Station – Site ID*: WSLA-3 (Wasilla, AK) Authority within 5091-5250 MHz and 6875-7055 MHz – File No. SES-MFS-20101108-01413 granted June 7, 2011; *see* Public Notices, Report Nos. SES-01354 and SES-01405.
GUSA Licensee LLC	E050346	01/04/2022	*Fixed Earth Station – Site ID*: 1 (Wasilla, AK) Authority within 5091-5250 MHz and 6875-7055 MHz – File No. SES-MFS-20101108-01414 granted June 7, 2011; *see* Public Notices, Report Nos. SES-01354 and SES-01405.

GUSA Licensee LLC	E050347	01/04/2022	*Fixed Earth Station – Site ID*: WSLA-1 (Wasilla, AK) Authority within 5091-5250 MHz and 6875-7055 MHz – File No. SES-MFS-20101108-01415 granted June 7, 2011; *see* Public Notices, Report Nos. SES-01354 and SES-01405.
GUSA Licensee LLC	E970199	02/27/2023	*Fixed Earth Station – Site ID*: CLFN-1 (Clifton, TX) Authority within 5091-5250 MHz and 6875-7055 MHz – File No. SES-MOD-20170112-00029 granted Feb. 7, 2017; *see* Public Notice, Report No. SES-01927.
GCL Licensee LLC	E050237	10/17/2020	*Fixed Earth Station – Site ID*: LPMA-4 (Cabo Rojo, PR) Authority within 5091-5250 MHz and 6875-7055 MHz – File No. SES-MFS-20091221-01606 granted March 18, 2011; *see* Order, 26 FCC Rcd 3948 (2011) (DA 11-520).
GCL Licensee LLC	E990335	06/23/2025	*Fixed Earth Station – Site ID*: LPMA-3 (Cabo Rojo, PR) Authority within 5091-5250 MHz and 5875-7055 MHz – File No. SES-MFS-20091221-01605 granted March 18, 2011; *see* Order, 26 FCC Rcd 3948 (2011) (DA 11-520).
GCL Licensee LLC	E990336	06/23/2025	*Fixed Earth Station – Site ID*: LPMA-2 (Cabo Rojo, PR) Authority within 5091-5250 MHz and 6900-7055 MHz – File No. SES-MFS-20091221-01604 granted March 18, 2011; *see* Order, 26 FCC Rcd 3948 (2011) (DA 11-520).
GCL Licensee LLC	E990337	06/23/2025	*Fixed Earth Station – Site ID*: LPMA-1 (Cabo Rojo, PR) Authority within 5091-5250 MHz and 6900-7055 MHz – File No. SES-MOD-20170112-00030 granted Feb. 7, 2017; *see* Public Notice, Report No. SES-01927.
Globalstar, Inc.	WH2XNQ	01/01/2020	*Experimental License – Mobile and Fixed Base Stations – Locations*: San Mateo, CA; Washington, DC (two sites); Herndon, VA; New York, NY; Chicago, IL. Authority in 2484 MHz – File No. 0501-EX-RR-2015 granted Nov. 10, 2015 (effective Jan. 1, 2016).
Globalstar, Inc.	WJ2XYD	10/01/2019	*Experimental License – Mobile – Location:* Non-geostationary. Authority in 2483.5-2500 MHz – File No. 0523-EX-CN-2017 granted Oct. 24, 2017.
Globalstar, Inc.	WJ2XLN	05/01/2020	*Experimental License – Mobile – Location:* Non-geostationary space station. Authority in 2483.5-2495 MHz – File No. 0595-EX-CN-2017 granted Apr. 26, 2018.
Globalstar, Inc.	WJ2XLL	05/01/2020	*Experimental License – Mobile – Location:* Globalstar LEO. Authority in 2483.5-2495 MHz – File No. 0941-EX-CN-2017 granted Apr. 26, 2018.
Globalstar, Inc.	WJ2XLM	05/01/2020	*Experimental License – Mobile – Location:* Globalstar LEO, non-GEO. Authority in 2483.5-2495 MHz – File No. 0014-EX-CN-2018 granted Apr. 26, 2018.
Globalstar, Inc.	WJ2XJC	03/01/2020	*Experimental License – Mobile – Location:* Globalstar, FCC Reg HIBLEO-4. Authority in 2483.5-2495 MHz – File No. 0017-EX-CN-2018 granted Mar. 12, 2018.
Globalstar, Inc.	WJ2XJD	03/01/2020	*Experimental License – Mobile – Location:* Globalstar, FCC Reg HIBLEO-4. Authority in 2483.5-2500 MHz – File No. 0095-EX-CN-2018 granted Mar. 12, 2018.
Globalstar, Inc.	WJ2XOR	07/01/2020	*Experimental License – Mobile – Location:* Globalstar, FCC Reg HIBLEO-4. Authority in 2483.5-2495 MHz – File No. 0305-EX-CN-2018 granted June 28, 2018.

Globalstar, Inc.	WJ2XZE	02/01/2021	*Experimental License – Mobile – Location:* Globalstar, FCC Reg HIBLEO-4. Authority in 2483.5-2495 MHz – File No. 0400-EX-CN-2018 granted Feb. 12, 2019.
Globalstar, Inc.	WJ2XTR	10/01/2020	*Experimental License – Mobile – Location:* Globalstar, FCC Reg HIBLEO-4. Authority in 2483.5-2500 MHz – File No. 0578-EX-CN-2018 granted Oct. 2, 2018.
Globalstar, Inc.	WJ2XSB	09/01/2020	*Experimental License – Mobile – Location:* Globalstar, FCC Reg HIBLEO-4. Authority in 2483.5-2500 MHz – File No. 0579-EX-CN-2018 granted Sept. 13, 2018.
Globalstar, Inc.	WJ2XVX	11/01/2019	*Experimental License – Mobile – Location:* Globalstar, FCC Reg HIBLEO-4. Authority in 2483.5-2500 MHz – File No. 0783-EX-CN-2018 granted Nov. 7, 2018.
Globalstar, Inc.	WK2XFU	05/01/2020	*Experimental License – Mobile – Location:* Globalstar, FCC Reg HIBLEO-4. Authority in 2483.5-2500 MHz – File No. 0192-EX-CN-2019 granted May 13, 2019.
Globalstar USA, LLC	ITC-214-19990728-00484	None	*International Section 214 Authorization* – Global Facilities Based and Resale Service – *see* Public Notice, Report No. TEL-00131 (DA 99-1782); Public Notice, DA 04-628.
Globalstar USA, LLC	ITC-214-19991229-00795	None	*International Section 214 Authorization* – Global Facilities Based and Resale Service – *see* Public Notice, Report No. TEL-00191 (DA 00-361); Public Notice, DA 04-628.
Globalstar USA, LLC	ITC-214-20000615-00356	None	*International Section 214 Authorization* – Global Facilities Based and Resale Service – *see* Public Notice, Report No. TEL-00261 (DA 00-1614); Public Notice, DA 04-628.

Schedule 16

Satellites

Orbital Plane	In-Plane Slot Location	Satellite Flight Model Number	Transponder Frequency	Satellite Status as of November 5, 2019
A	1	M092	See Transponder Frequency Table	Operational in-orbit
A	2	M073		Operational in-orbit
A	3	M077		Operational in-orbit
B	1	M079		Operational in-orbit
B	2	M076		Operational in-orbit
B	3	M074		Operational in-orbit
C	1	M075		Operational in-orbit
C	2	M089		Operational in-orbit
C	3	M094		Operational in-orbit
D	1	M085		Operational in-orbit
D	2	M096		Operational in-orbit
D	3	M081		Operational in-orbit
E	1	M097		Operational in-orbit
E	2	M093		Operational in-orbit
E	3	M091		Operational in-orbit
F	1	M095		Operational in-orbit
F	2	M078		Operational in-orbit
F	3	M088		Operational in-orbit
G	1	M086		Operational in-orbit
G	2	M090		Operational in-orbit
G	3	M082		Operational in-orbit
H	1	M083		Operational in-orbit
H	2	M084		Operational in-orbit
H	3	M080		Operational in-orbit
B	Spare	M070		Operational in-orbit
C	Spare	M069		Operational in-orbit
C	Spare	M071		Operational in-orbit
D	Spare	M065		Operational in-orbit
E	Spare	M072		Operational in-orbit
G	Spare	M066		Operational in-orbit

Orbital Plane	In-Plane Slot Location	Satellite Flight Model Number	Satellite Status as of 5-Nov-19
A	1	92	In-service
	2	73	In-service
	3	77	In-service
B	1	79	In-service
	2	76	In-service
	3	74	In-service
C	1	75	In-service

	2	89	In-service
	3	94	In-service
D	1	85	In-service
	2	96	In-service
	3	81	In-service
E	1	97	In-service
	2	93	In-service
	3	91	In-service
F	1	95	In-service
	2	78	In-service
	3	88	In-service
G	1	86	In-service
	2	90	In-service
	3	82	In-service
H	1	83	In-service
	2	84	In-service
	3	80	In-service
S	1	70	In-service
	2	69	In-service
	3	71	In-service
	4	65	In-service
	5	72	In-service
	6	66	In-service

Transponder Frequency Table
(all frequencies in MHz)

	Forward Link					
	C-Band Uplink			S-Band Downlink		
	low limit	center	high limit	low limit	center	high limit
1	5096.9600	5105.2100	5113.4600	2483.5000	2491.7500	2500.0000
2	5116.3400	5124.5900	5132.8400			
3	5135.7200	5143.9700	5152.2200			
4	5155.1000	5163.3500	5171.6000			
5	5174.4800	5182.7300	5190.9800			
6	5193.8600	5202.1100	5210.3600			
7	5213.2400	5221.4900	5229.7400			
8	5232.6200	5240.8700	5249.1200			

Command Frequency		
5091.0000	5091.5000	5092.0000

	Return Link					
	L-Band Uplink			C-Band Downlink		
	low limit	center	high limit	low limit	center	high limit
1	1610.0000	1618.2500	1626.5000	6900.7400	6908.9900	6917.2400
2				6920.1200	6928.3700	6936.6200
3				6939.5000	6947.7500	6956.0000
4				6958.8800	6967.1300	6975.3800
5				6978.2600	6986.5100	6994.7600
6				6997.6400	7005.8900	7014.1400
7				7017.0200	7025.2700	7033.5200
8				7036.4000	7044.6500	7052.9000

Telemetry Frequency		
6875.9000	6877.5000	6879.1000

Schedule 17

Existing Liens

1. Delaware - UCC-1 Financing Statements to name BNP Paribas, as agent, as secured party filed 18 June 2009:
   (a) Globalstar, Inc., 91950739;
   (b) Globalstar USA, LLC, 91951547;
   (c) Globalstar C, LLC, 91950895;
   (d) Globalstar Leasing LLC, 91953501;
   (e) Globalstar Security Services, LLC, 91951836;
   (f) ATSS Canada, Inc., 91951976;
   (g) GSSI, LLC, 91951281;
   (h) Globalstar Licensee LLC, 91953584;
   (i) GUSA Licensee LLC, 91951059;
   (j) GCL Licensee LLC, 91951158; and
   (k) Globalstar Brazil Holdings, L.P., 91951695.
2. Colorado Secretary of State UCC-1 Financing Statement 2009F052197 filed against Spot LLC, with BNP Paribas as agent, 18 June 2009.
3. Form 3C Personal Property Security Registrations filed against the Borrower and Subsidiary Guarantors in favour of the administrative agent with the Ontario, Canada Ministry of Consumer and Business Services on 17 January 2008:
   (a) Globalstar, Inc. <625298679;
   (b) Globalstar USA, LLC <625298661;
   (c) Globalstar C, LLC <625298607;
   (d) Globalstar Leasing LLC <625298598;
   (e) Globalstar Security Services, LLC <625298625;
   (f) ATSS Canada, Inc. <625298643; and
   (g) GSSI, LLC <625298634.
4. Delaware Secretary of State UCC-1 Financing Statement filed against Globalstar Broadband Services Inc., with BNP Paribas as agent filed June 25, 2012, 22445536.

5. Louisiana Secretary of State UCC-1 Financing Statement filed against Globalstar Media, L.L.C., with BNP Paribas as agent filed 25 June 2012, 52-64212.

6. Delaware Secretary of State UCC-1 Financing Statement filed against Globalstar International, LLC, with BNP Paribas as agent filed June 4, 2019, 20193840423.

7. Delaware Secretary of State UCC-1 Financing Statement filed against Globalstar Holding US, LLC, with BNP Paribas as agent filed June 4, 2019, 20193840647.

8. United States Patent and Trademark Office filings against the Borrower's Patents.

9. United States Patent and Trademark Office filings against the Borrower's Trademarks.

10. Regarding the Clifton, Texas real property:

    (a) Deed of Trust, Security Agreement, Assignment of Leases, Rents and Profits, Financing Statement and Fixture Filing granted by Globalstar USA, LLC to BNP Paribas regarding Clifton, Texas real property dated as of 9 July 2009 and recorded on 28 July 2009 as Instrument No. 2009-00002393 with the County Clerk of Bosque County, Texas, as amended on or about the date hereof by that certain Modification of Deed of Trust, Security Agreement, Assignment of Leases, Rents and Profits, Financing Statement and Fixture Filing;

    (b) mineral reservation as set forth in the deed dated 10 June 1954 and recorded in volume 172, page 298 of the Deed Records of Bosque County, Texas;

    (c) the following oil and gas leases as recorded in the Deed Records of Bosque County, Texas: volume 16, page 439; volume 134, page 301; volume 14, page 370; volume 134, page 369; and

    (d) items shown on the survey prepared by David Lane, RPLS #5233 dated 14 August 2006.

11. Regarding Wasilla, Alaska real property:

    (a) Deed of Trust, Security Agreement, Assignment of Leases, Rents and Profits, Financing Statement and Fixture Filing granted by Globalstar USA, LLC to BNP Paribas regarding Wasilla, Alaska real property dated as of 9 July 2009 and recorded on 29 July 2009 as Instrument No. 2009-016786-0 in Palmer Recording District, Alaska, as amended on or about the date hereof by that certain Modification of Deed of Trust, Security Agreement, Assignment of Leases, Rents and Profits, Financing Statement and Fixture Filing;

    (b) reservations or exceptions in patents or in acts authorizing the issuance thereof, recorded 1 April 1963 at Book 45, page 284, Palmer Recording District, Alaska;

    (c) items shown on the plats of Discovery Hill Subdivision filed under Plat Number 2003-46 and Plat Number 98-134, Palmer Recording District, Alaska;

    (d) items shown on the As-Built Survey prepared by John Shadrach, PLS dated 18 August 2005;

(e) Right of Way Easements granted to Matanuska Electric Association, Inc. recorded in Book 29, Page 86; Book 325, Page 353; Book 913, Page 542; as Serial Number 2005-029959-0, each in Palmer Recording District, Alaska; and

(f) Easement in favor of Enstar Natural Gas Company, recorded in Book 944, Page 145, Palmer Recording District, Alaska.

12. Lien in favor of NFS Leasing Inc. and Peoples United Bank with Globalstar, Inc. listed as debtor, for all equipment and peripherals leased by Globalstar, Inc. under that certain Master Lease # 2015-413, as described in the UCC-1 filed on 19 February 2016 with the Delaware Department of State (Initial Filing No. 2016 1015922).

13. Lien in favor of Electro Rent Corporation with Globalstar, Inc. listed as debtor, for a signal and spectrum analyzer, Asset #1734309D, Serial #103743, as described in the UCC-1 filed on 2 July 2018 with the Delaware Department of State (Initial Filing No. 2018 4523722).

14. Lien in favor of Dell Financial Services L.L.C. with Globalstar, Inc. listed as debtor, for all computer equipment and peripherals and other equipment financed under the Payment Plan Agreement entered into between Globalstar, Inc. and Dell Financial Services L.L.C., as described in the UCC-1 filed on 13 April 2017 with the Caddo Clerk of Court (09-1327337).

15. Lien in favor of Dell Financial Services L.L.C. with Globalstar, Inc. listed as debtor, for all computer equipment and peripherals and other equipment financed under the Payment Plan Agreement entered into between Globalstar, Inc. and Dell Financial Services L.L.C., as described in the UCC-1 filed on 15 February 2017 with the Caddo Clerk of Court (09-1321841).

16. Lien in favor of Toyota Industries Commercial Finance, Inc. with Globalstar, Inc. listed as debtor, for one Toyota Forklift, Model #8BWS10, Serial #11586, as described in the UCC-1 filed on 25 February 2019 with the Caddo Clerk of Court (09-1387856).

17. Lien in favor of Cisco Systems Capital Corporation with Globalstar USA, LLC listed as debtor, for all right, title, and interest in and to, among other things, the equipment subject to that Agreement to Lease Equipment No. 12020-MM001-0 entered into between Cisco Systems Capital Corporation and Globalstar USA, LLC, as described in the UCC-1 filed on 2 September 2015 with the Delaware Department of State (Initial Filing No. 2015 3856514).

Schedule 18

Qualifying Certificate

To: BPIFAE Agent

CC: Borrower

From: [*Supplier*] / [*Launch Services Provider*]

Date [●]

Dear Sirs,

Re: BPIFAE Facility Agreement - Globalstar

We refer to the facility agreement dated 5 June 2009 (as amended and restated from time to time) and made between Globalstar Inc., as Borrower, BNP Paribas, Natixis, Crédit Industriel et Commercial, Crédit Agricole Corporate and Investment Bank and Société Générale as Mandated Lead Arrangers, BNP Paribas as BPIFAE Agent, the Lenders and others (the "**BPIFAE Facility Agreement**"). Terms defined in the BPIFAE Facility Agreement have the same meanings herein.

1. We refer to the utilisation request issued by [*the Borrower*] and dated [●] (the "**Utilisation Request**").

2. We confirm that the copy of the [*transportation documents / acceptance certificates*] attached to the Utilisation Request have been issued for the payment of the attached Invoices.

3. We confirm that:

   (a) [We have received from the Borrower a payment of one hundred *per cent.* (100%) of the Invoices in respect of the Eligible Portion to be reimbursed in accordance with the Utilisation Request and such amount does not include:

      (i) any sum in respect of any payment you may already have made to us;

      (ii) any amount in respect of which we have already issued a Qualifying Certificate; and

      (iii) any sum in respect of goods and services which are not eligible for financing under the Facility.

      We attach bank credit advice confirming that a payment of one hundred *per cent.* (100%) of the attached Invoices have already been made.]

   (b) All documents supplied by us in support of this Qualifying Certificate are true copies of the originals and are in all material respects in conformity with the [*Satellite Construction Contract*] / [*Launch Services Contract*] and you may rely on the accuracy and completeness of all information and documents contained in or supplied with this Qualifying Certificate;

(c) The goods and services to be financed by the Loan requested in the Utilisation Request are goods and services included in the attached Invoices, and:

(i) the portion of the amount referred to in paragraph 3(a) above attributable to goods and services of French origin is [●].

(ii) the portion of the amount referred to in paragraph 3(a) above attributable to goods and services of foreign origin eligible for financing under the limits and under the conditions determined by the French Authorities and which have been approved for financing by the French Authorities is [●].

We attach corresponding supporting documents.

(d) The [*Satellite Construction Contract*] / [*Launch Services Contract*] is in full force and effect and no default by us has occurred and is continuing since the date of the last Utilisation Request (or, if none, the date of the BPIFAE Facility Agreement);

(e) The amount referred to in paragraph 3(a) above does not include any amount in respect of any matter which is the subject of any legal proceedings, nor to the best of our actual knowledge and belief will it become the subject of legal proceedings; and

(f) We undertake to supply you with such information and documentation, and such clarification, as you advise us is necessary in connection with the BPIFAE Insurance Policy and we agree we shall not hold you responsible for any delay in meeting this request for a Loan occasioned by our making such request for information.

Yours faithfully,

For and on behalf of [*Thales Alenia Space, France*] / [*Arianespace, France*]

…….

(**Authorised Signatory**)

Schedule 19

Key Performance Indicators

North America

Key Performance Indicators	Quarter Ended
Subscribers (by product line)	
Gross Additions (by product line)	
Net Additions (by product line)	
Churn (by product line)	
ARPU (by product line)	
Minutes of Use	

Rest of the World

Key Performance Indicators	Quarter Ended
Subscribers (by product line)	
Gross Additions (by product line)	
Net Additions (by product line)	
Churn (by product line)	
ARPU (by product line)	
Minutes of Use	

Schedule 20

Transactions with Affiliates

1. See Schedule 22 for a description of the Equity Plan (defined therein).

2. Transactions with Thermo

   (a) Settlement Agreement with Thermo and Other Shareholders

      (i) On 14 December 2018, the Borrower, Thermo and other unaffiliated shareholders entered a stipulation and agreement of settlement, compromise and release of stockholder derivative action to settle all claims asserted against all defendants in the shareholder action filed on 25 September 2018.

   (b) General & Administrative & Non-cash expenses

      (i) Certain general and administrative expenses are incurred by Thermo on behalf of the Borrower. These expenses, which include non-cash expenses, relate to services provided by certain executive officers of Thermo and expenses incurred by Thermo on behalf of the Borrower which are charged to the Borrower. The expenses charged are based on actual amounts (with no mark-up) incurred by Thermo or upon allocated employee time.

   (c) Second Lien Facility Agreement.

   (d) The Borrower is issuing a Common Stock Purchase Warrant to Thermo in connection with the Second Lien Facility Agreement.

   (e) Thermo Loan Agreement.

3. Thermo Covington, LLC

   (a) On 1 February 2019, the Borrower entered into a Lease Agreement for provision of its headquarters with Thermo Covington, LLC with an annual rent payment of $1,400,000 subject to annual increases of 2.5%.

Schedule 21

Existing Loans, Investments and Advances

1. Open end line of credit promissory note in the maximum principal amount of US$50,000,000, dated 30 June 2007 and amended December 31, 2008 from Globalstar Canada Satellite Co. to the Borrower, having a balance outstanding of $0 as of 30 September 2019.

2. Open end promissory note in the maximum principal amount of US$10,000,000 dated 23 March 2006 from Globalstar Canada Satellite Co. to Globalstar de Venezuela, C.A., having a balance outstanding of US$4,700,868.93 as of 30 September 2019.

3. As of the First Effective Date, the Borrower owned 225,000,000 ordinary shares of Globaltouch (West Africa) Limited pursuant to a Share Purchase Agreement between the Borrower and Globaltouch (West Africa) Limited dated 16 October 2007.

4. Joint venture agreement, dated as of 21 January 2010, between the Borrower and Arion Communications Co., pursuant to which the Borrower has advanced a total of US$1,457,381 to Globalstar Asia Pacific.

5. On April 7, 2011, the Borrower purchased 1,000,000 Series B Convertible Preferred Stock and 250,000 warrants of TRAFFICCAST INTERNATIONAL, INC. at an Aggregate Purchase Price of US$500,000.

6. On March 23, 2015, the Borrower entered into an agreement with CROC 684 (Proprietary) Limited T/A BBI Wireless @ Home. The Borrower retains a 74% economic interest and CROC 684 (Proprietary) Limited T/A BBI Wireless @ Home holds the remaining 26%. Operations are conducted through the entity The World's End Proprietary Limited, which is a subsidiary of the Borrower's parent company, Globalstar Inc. As of 30 September 2019, the initial shareholder loan from CROC 684 (Proprietary) Limited T/A BBI Wireless @ Home to The World's End has a balance of $104,000 and the loan from Globalstar, Inc. to the World's End has a balance of $296,000.

7. On 16 April 2014 and 25 June 2014, the Borrower entered into separate Loan Agreements totalling $575,000 with VehSmart, a simplex VAR providing a tracking solution for the Ministry of Agriculture and Fishing in Ecuador. These loans are secured by all inventory held at VehSmart.

8. Acquisition of capital stock of Yippy, Inc. ("**Yippy**"), pursuant to a stock issuance agreement, dated 15 December 2015, between the Borrower and Yippy, which, among other things, provides Yippy access to the Borrower's network to sell certain Yippy services. In lieu of cash consideration, as consideration for such access, the Borrower received 19.99% of Yippy's total outstanding shares of capital stock with certain anti-dilutive protections.

9. In October 2018, Globalstar Satellite Services (Pty) Ltd. loaned US$50,000 to Miles Hilton to partially finance his purchase of 45 of its shares and loaned US$100,000 to Roxsanne Dyssell to finance her purchase of 45 of its shares.

Schedule 22

Incentive Plan

1. *Third Amended and Restated Globalstar 2006 Equity Incentive Plan.* The Borrower's 2006 Equity Incentive Plan (the "Equity Plan") is a broad based, long-term retention programme intended to attract and retain talented employees and align stockholder and employee interests. The Equity Plan was originally approved by the Board of Directors and the holders of a majority of our outstanding common stock on 12 July 2006 and became effective upon the registration of our common stock under the Securities Act of 1933 on 1 November 2006. The Plan was amended and restated at the 2008 Annual Meeting of Stockholders and further amended and restated at each of the 2016 and 2018 Annual Meetings of Stockholders. The number of shares of the Borrower's common stock authorized for issuance under the Equity Plan is subject to yearly increases each 1 January equal to the lesser of a) two percent of the number of shares of the Borrower's common stock issued and outstanding on the immediately preceding 31 December or b) such other amount determined by the Borrower's Board of Directors. As of 30 September 2019, 83,200,000 shares of the Borrower's common stock were authorized under the Equity Plan.

2. *Globalstar Key Employee Bonus Plans.* The Borrower has an annual bonus plan designed to reward designated key employees' efforts to exceed the Borrower's financial performance goals for the designated calendar year ("Plan Year"). The bonus pool available for distribution is determined based on the Borrower's adjusted EBITDA performance during the Plan Year. The bonus may be paid in cash or the Borrower's common stock, as determined by the Compensation Committee.

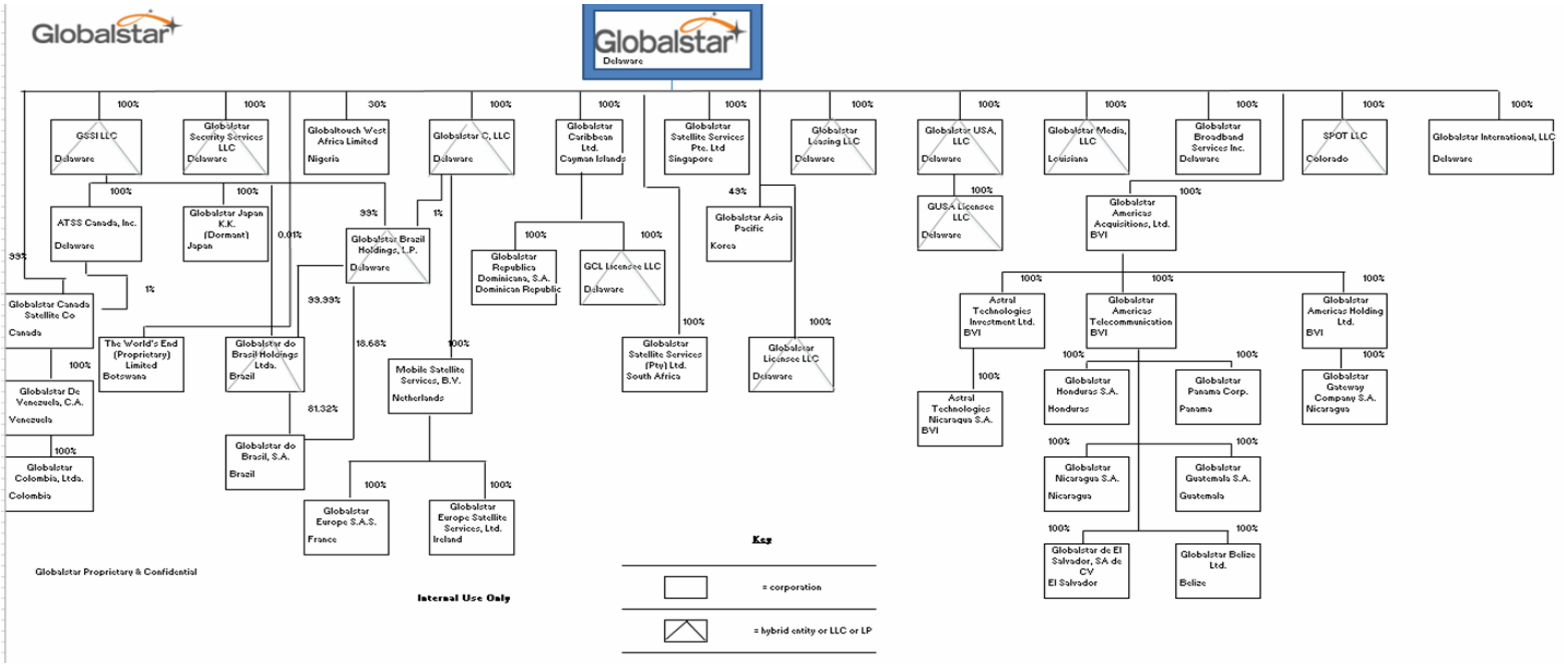
3. *Letter Agreement with Barbee Ponder and David Milla, dated 27 November 2018.* Mr. Ponder and Mr. Milla have a letter agreement in connection with obtaining certain international spectrum authorities. They will each receive restricted stock awards or cash for each license obtained.

4. *Letter Agreement with David Kagan dated 4 September 2018.* In 2018, Mr. Kagan was granted 3,000,000 restricted stock awards of which 1,250,000 have a graded vesting schedule whereby ten percent of the awards vest on the first anniversary of the grant date, fifteen percent vest on the second anniversary of the grant date, twenty-five percent vest on the third anniversary of the grant date and the remaining fifty percent vest on the fourth anniversary of the grant date; these equity awards are designed to recognize performance and encourage retention. The remaining 1,750,000 have vesting conditions that are contingent upon his achievement of certain performance milestones.

5. *Letter Agreement with Jim Kilfeather dated 26 September 2018.* Mr. Kilfeather has a letter agreement, which states that he will receive restricted stock awards in connection with reaching certain performance milestones.

Schedule 23

Group Structure Chart



Schedule 24

Disclosures

The disclosures set out in schedule 8 (*Disclosures*) of the First Global Deed of Amendment, schedule 5 (*Disclosures*) of the Second Global Amendment and Restatement Agreement, schedule 4 (*Disclosures*) of the Third Global Amendment and Restatement Agreement, and schedule 4 (*Disclosures*) of the Fourth Global Amendment and Restatement Agreement are, in each case, incorporated by reference into this Schedule 24 (*Disclosures*).

Schedule 25

Form of Promissory Note

Note P n° ..... US$ .....

(amount in figures)

..... , ……
(place and date of issue)

For .....
(date of payment)

We hereby agree to pay against this note to the order of BNP PARIBAS..... ..... the amount of..... US Dollars (amount in letters).

This note is expressly exempted from protest.

This note is governed by [English / French law].

Issued under the BPIFAE Facility Agreement dated June 5th, 2009 (as amended and restated from time to time)

Issuer
GLOBALSTAR, INC 1351 Holiday Square Boulevard, Covington LA 70433 United States of America
Domiciliation
BNP PARIBAS 16, bd des Italiens 75009 Paris (France)

For : **GLOBALSTAR, INC.**

Name : .....

Title : .....”

Schedule 26

Subsidiary Guarantors

1. GSSI, LLC, a limited liability company organised in Delaware, United States of America, with organisational identification number 3732317 and whose chief executive office is at 1351 Holiday Square Boulevard, Covington, LA 70433, United States of America;

2. Globalstar Security Services, LLC, a limited liability company organised in Delaware, United States of America, with organisational identification number 3747502 and whose chief executive office is at 1351 Holiday Square Boulevard, Covington, LA 70433, United States of America;

3. Globalstar C, LLC, a limited liability company organised in Delaware, United States of America, with organisational identification number 3732313 and whose chief executive office is at 1351 Holiday Square Boulevard, Covington, LA 70433, United States of America;

4. Globalstar USA, LLC, a limited liability company organised in Delaware, United States of America, with organisational identification number 2663064 and whose chief executive office is at 1351 Holiday Square Boulevard, Covington, LA 70433, United States of America;

5. Globalstar Leasing LLC, a limited liability company organised in Delaware, United States of America, with organisational identification number 3731109 and whose chief executive office is at 1351 Holiday Square Boulevard, Covington, LA 70433, United States of America;

6. Spot LLC, a limited liability company organised in Colorado, United States of America, with organisational identification number 20071321209 and whose chief executive office is at 1351 Holiday Square Boulevard, Covington, LA 70433, United States of America;

7. ATSS Canada, Inc., a corporation incorporated in Delaware, United States of America, with organisational identification number 2706412 and whose chief executive office is at 1351 Holiday Square Boulevard, Covington, LA 70433, United States of America;

8. Globalstar Brazil Holdings, L.P., a limited partnership formed in Delaware, United States of America, with organisational identification number 2453576 and whose chief executive office is at 1351 Holiday Square Boulevard, Covington, LA 70433, United States of America;

9. GCL Licensee LLC, a limited liability company organised in Delaware, United States of America, with organisational identification number 4187922 and whose chief executive office is at 1351 Holiday Square Boulevard, Covington, LA 70433, United States of America;

10. GUSA Licensee LLC, a limited liability company organised in Delaware, United States of America, with organisational identification number 4187919 and whose chief executive office is at 1351 Holiday Square Boulevard, Covington, LA 70433, United States of America;

11. Globalstar Licensee LLC, a limited liability company organised in Delaware, United States of America, with organisational identification number 4187920 and whose chief executive office is at 1351 Holiday Square Boulevard, Covington, LA 70433, United States of America;

12. Globalstar Media, L.L.C., a limited liability company organised in Louisiana, United States of America, with organisational identification number 40224959k and whose chief executive office is at 1351 Holiday Square Boulevard, Covington, LA 70433, United States of America;

13. Globalstar Broadband Services Inc. a corporation incorporated in Delaware, United States of America, with organisational identification number 4833062 and whose chief executive office is at 1351 Holiday Square Boulevard, Covington, LA 70433, United States of America;

14. Globalstar International, LLC, is a limited liability company organized in Delaware, United States of America, with organisational identification number 6438610 and whose chief executive office is at 1351 Holiday Square Boulevard, Covington, LA 70433; and

15. Globalstar Holding US, LLC, a limited liability company organised in Delaware, United States of America, with organisational identification number 6508346 and whose chief executive office is at Globalstar, Inc., 1351 Holiday Square Boulevard, Covington, LA 70433.

Schedule 27

Investment Policy

1. **Purpose**

This document outlines the Borrower's Corporate Investment policy. The main objectives of the investment policy are:

(a) To ensure the safety and preservation of principal. The Borrower shall only invest in instruments and accounts with the lowest level of default and volatility risk. The Borrower shall use other methods to minimize risk such as diversifying the investment portfolio to minimize the adverse effects of the failure of any one issuer or broker.

(b) To coincide with its short-term liquidity needs. The Borrower's investment policy contemplates buying only the securities that have active secondary markets to provide immediate liquidity, when needed.

(c) To offer maximum return without compromising the Borrower's stated investment objectives.

(d) To provide fiduciary control.

2. **Approved Investment Vehicles**

In order to meet the Borrower's stated investment objectives, it must choose between several different investment options available to it. The following options have been identified for the Borrower for meeting its investment objectives as stated above.

(a) Corporate Savings Accounts. The account must be fully collateralized by instruments issued by the US Treasury.

(b) Corporate Money Market Funds, Repurchase Agreements, and Commercial Paper. The funds must meet the following criteria:

(i) the investment objectives and policies must be substantially similar to those set forth in this guideline, i.e., principal preservation and risk mitigation;

(ii) the funds must offer immediate redemption of shares upon request; and

(iii) the funds load or sales charges are not excessive, relative to those of other potential investments meeting the objectives.

3. **US Government obligations**

T-Bills or bonds of short-term or medium-term maturity. At any given time, the Borrower may have invested in one or all of the above mentioned investment vehicles. However, under no circumstances will the Borrower make investment decisions contrary to its investment objectives.

4. **Credit Quality**

Except for US Treasury, all securities must be rated by S & P's or Moody's, and shall be of high credit quality (A-1 and P-1 or better).

5. **Marketability**

All holdings should be sufficient in size and held in issues which are traded actively to facilitate timely transactions at a minimum cost and accurate market evaluation.

6. **Trading**

All purchases and sales shall be executed at the best net price with principal dealers and banks in the particular securities. All securities purchased shall be in the name of the Globalstar, Inc. or its designate.

7. **Responsibility and Authorization**

The Chief Financial Officer has reviewed this investment policy. Revisions to this policy will be initiated by the Chief Financial Officer and implemented upon approval of the Borrower's Chief Executive Officer and the President.

The Chief Financial Officer of the Borrower shall have the authority to:

(a) open accounts with brokers, investment banks, commercial bank, and mutual funds companies;

(b) establish safekeeping accounts or other arrangements concerning the custody of the securities; and

(c) execute documents to effect the above, as necessary.

In addition, the Chief Financial Officer or his or her designate is expected to monitor the portfolio and cash management policy for suitably in light of then-current corporate and market conditions. The Borrower may use the services of investment firms, brokers, or mutual funds companies for its investment program. All investment firms, brokers, and mutual fund companies must be personally approved by the Chief Financial Officer of the Borrower.

Schedule 28

Loss Payee Clause

Loss Payments

The insured irrevocably shall authorise and instruct the insurer to pay, all claims, return premiums, *ex gratia* settlements and any other monies payable to the insured, under or in relation to this policy, to the account in the name of the insured and opened on the books of the following Account Bank:

Bank – BNP Paribas

Account Name – Insurance Proceeds Account

Account Number – 30004 05658 0000034085H 59

or to such other account as the Security Agent, as loss payee may specify in writing, and that no instruction, whether by the insured or by any person other than the Security Agent, to make any payment to any other person or account shall be honoured by the Security Agent and the insurer unless given or countersigned by the Security Agent, or such other person as that the Security Agent may notify to the insurer in writing.

All such payments shall be made by the insurer without any deduction or set-off on any account or of any kind, other than in respect of unpaid premiums. A payment to the loss payee in accordance with this clause shall, to the extent of that payment, discharge the liability of the insurer to pay the insured or other claimant insured party.

Schedule 29

Repayment Schedule

Repayment Date	Principal Repayment	Cumulative – Principal Repayment
	US$	US$
31 December 2014	4,045,759	4,045,759
30 June 2015	3,224,880	7,270,639
31 December 2015	3,224,880	10,495,519
30 June 2016	16,417,573	26,913,092
31 December 2016	16,417,573	43,330,665
30 June 2017	21,694,651	65,025,316
29 December 2017	54,060,724	119,086,040
29 June 2018	38,933,103	158,019,143
31 December 2018	38,933,103	196,952,246
28 June 2019	47,435,060	244,387,306
31 December 2019	147,635,060	392,022,366
30 June 2020	0	392,022,366
31 December 2020	0	392,022,366
30 June 2021	44,800,000	436,822,366
31 December 2021	20,000,000	456,822,366
30 June 2022	20,000,000	476,822,366
30 December 2022	109,519,550	586,341,917
Total	**US$586,341,917**	

Schedule 30

Form of Quarterly Health Report

Part 1
Satellite Status

Orbital Plane	In-Plane Slot Location	Satellite Flight Model Number	Satellite Status as of [●]
[●]	[●]	[●]	[●]

Part 2
Band Status

Satellite Flight Model Number	L-Band Status	S-Band Status	Status of Command Telemetery Receiver
[●]	[●]	[●]	[●]

Part 3
Material Events

[Attached is a letter providing details of material or unusual events that have occurred with respect to the Satellites since the delivery to the BPIFAE Agent of the last quarterly report.]

Schedule 31

Satellite Performance Criteria

IOT Criteria to Declare Satellite Stabilization **Bus**			
Parameter	**Status**		
SHM acquisition- check satellite configuration	NOMINAL/FAIL		
Solar Array Wings Deployed	NOMINAL/FAIL		
Telemetry Transmitters “ON”	NOMINAL/FAIL		
Telemetry Tx EIRP (Nominal Unit) within 3dB of prediction	YES/NO	Value	
Telemetry Tx EIRP (Redundant Unit) within 3dB of prediction	YES/NO	Value	
Telemetry Signal Successfully Received by Ground Station	NOMINAL/FAIL		
Command Rx Sensitivity (Nominal Unit) with in 3dB of prediction	YES/NO	Value	
Command Rx Sensitivity (Redundant Unit) within 3dB of prediction	YES/NO	Value	
EAM acquisition after SHM	NOMINAL/FAIL		
NOM acquisition after EAM	NOMINAL/FAIL		
Heaters “ON”	NOMINAL/FAIL		
Successful orbit raising to 1414 km orbit (thruster check)	NOMINAL/FAIL		
Expended 100K or fewer thruster pulses; 90kg of propellant	YES/NO	Value	
Battery DOD less than 15%	YES/NO	Value	
PAYLOAD			
Good health check of transponders	**Turn On**	**Nominal operations**	
Test all 16 beams of C-S Transponder	**1.1V**	**2.65V**	**4.0V**
X1	NOMINAL/FAIL	NOMINAL/FAIL	NOMINAL/FAIL
X2			
X3			
X4			
X5			
X6			
X7			
X8			
Y1			
Y2			
Y3			
Y4			
Y5			
Y6			
Y7			
Y8			
Test all 16 beams of L-C Transponder			
X5	NOMINAL/FAIL		
X7			
Y1			
X3			
Y5			
X4			
Y7			
X1			
Y6			
X2			
Y4			
X8			
Y3			
X6			

Y2		
Y8		

Schedule 32

Form of Auditors Report

To the Audit Committee and Management of Globalstar, Inc.:

We have performed the procedures enumerated below, which were agreed to by the audit committee, management of Globalstar Inc. ("**Globalstar**") and the Finance Parties (as such term is defined in the Facility Agreement) solely to assist you with respect to the [*insert date*] Compliance Certificate required to be issued pursuant to clause 19.4 (*Compliance Certificate*) of the facility agreement dated September 5, 2009 (as amended and restated) (the "**Facility Agreement**"). Globalstar's management is responsible for the Compliance Certificate. This agreed-upon procedures engagement was conducted in accordance with attestation standards established by the American Institute of Certified Public Accountants. The sufficiency of these procedures is solely the responsibility of those parties specified in this report. Consequently, we make no representation regarding the sufficiency of the procedures described below either for the purpose for which this report has been requested or for any other purpose.

Procedures performed:

1. Agreed the financial information contained in the Compliance Certificate to the general ledger or underlying accounting records prepared by management.

2. Mathematically recomputed the calculations in the Compliance Certificate to make sure they are arithmetically accurate.

3. Compared each individual financial component of the Compliance Certificate to the definition included within the Facility Agreement.

We were not engaged to, and did not conduct an examination, the objective of which would be the expression of an opinion on the Compliance Certificate. Accordingly, we do not express such an opinion. Had we performed additional procedures, other matters might have come to our attention that would have been reported to you.

This report is intended solely for the information and use of the audit committee, management of Globalstar and the Finance Parties (as such term is defined in the Facility Agreement) and is not intended to be and should not be used by anyone other than these specified parties.

[*insert name of auditor*]

[*insert address of auditor and date*]

Schedule 33

Security Documents

Part 1 Definition of Security Documents

"**Security Documents**" or "**Senior Facility Security Documents**" means:

(a) the Collateral Agreement;

(b) the Joinder Agreement;

(c) the Security Amendment and Restatement Agreement;

(d) the Borrower Pledge of Bank Accounts;

(e) the Borrower Additional Pledge of Bank Accounts;

(f) the Holding Account Pledge Agreement;

(f) the Thermo Pledge of Bank Accounts;

(g) each Account Control Agreement;

(i) each Stock Pledge Agreement;

(h) each Delegation Agreement;

(i) United States Trademarks Security Agreement;

(j) United States Patents Security Agreement;

(k) each Mortgage;

(l) each Landlord Waiver and Consent Agreement;

(m) all other agreements conferring, or purporting to confer, security in favour of the Finance Parties with respect to the obligations of the Borrower under the Finance Documents entered into after the date of this Agreement as required by the terms of this Agreement;

(n) all agreements and other documents executed from time to time pursuant to any of the foregoing; and

(o) any other agreement or document which the Security Agent and the Borrower (acting reasonably) from time to time designate as a "*Senior Facility Security Document*" for the purposes of this Agreement.

Part 2 Defined Terms

"**Account Control Agreements**" means:

(a) the control agreement regarding deposit accounts dated 22 June 2009 between the Deposit Account Bank (as such term is defined therein), the Borrower and the Security Agent;

(b) the control agreements regarding deposit accounts (Lockbox) dated 22 June 2009 between the Deposit Account Bank (as such term is defined therein), the Borrower and the Security Agent;

(c) the account control agreement dated 22 June 2009 between the Customer, Secured Party and Securities Intermediary (as each term is defined therein);

(d) the control agreement regarding deposit accounts dated 30 October 2009 between the Deposit Account Bank (as such term is defined in each Account Control Agreement), the Borrower and the Security Agent;

(e) the notice and acknowledgement of assignment dated 5 January 2010 from the Security Agent to Union Bank, N.A. (with a copy to the Borrower and Spot, LLC) in relation to certain bank accounts of Spot LLC; and

(f) any other account control agreement entered into between any other deposit account bank, a member of the Group and the Security Agent (in form and substance satisfactory to the BPIFAE Agent).

"**Borrower Additional Pledge of Bank Accounts**" means the French law "*Convention de Nantissement de Comptes Bancaires*" dated 22 August 2013 between the Borrower, the Offshore Account Bank and the Security Agent.

"**Borrower Pledge of Bank Accounts**" means the French law "*Convention de Nantissement de Comptes Bancaires*" dated 5 June 2009 between the Borrower, the Offshore Account Bank and the Security Agent.

"**Collateral Agreement**" means the security agreement dated 22 June 2009 (as supplemented by the Joinder Agreement and as amended and restated by the Security Amendment and Restatement Agreement) between the Borrower, each Domestic Subsidiary and the Security Agent.

"**Delegation Agreement**" means:

(a) the French law delegation agreement dated 5 June 2009 between the Borrower, the Supplier and the Security Agent (as amended by an amendment agreement dated 22 August 2013 pursuant to the First Global Deed of Amendment and Restatement between the Borrower, the Security Agent and the Supplier); and

(b) the French law delegation agreement dated 24 June 2009 between the Borrower, the Launch Services Provider and the Security Agent (as amended by an amendment agreement dated 22 August 2013 between the Borrower, the Security Agent and the Launch Services Provider).

"**Holding Account Pledge Agreement**" means the French law "*Convention de Nantissement de Compte Bancaire*" dated 22 August 2013 and made between the Borrower and the Security Agent.

"**Joinder Agreement**" means the joinder agreement dated 5 August 2010 entered into by the Subsidiary Guarantors set out in paragraphs 12 and 13 of Schedule 26 (*Subsidiary Guarantors*) in favour of the Security Agent in connection with the Collateral Agreement and the Stock Pledge Agreement.

"**Landlord Waiver and Consent Agreements**" means:

(a) any landlord waiver and consent agreement entered into between Four Sierra, LLC as landlord and the Security Agent;

(b) any landlord waiver and consent agreement entered into between Orinda Equity Partners, LLC as landlord and the Security Agent;

(c) any landlord waiver and consent agreement entered into between Sebring Airport Authority as landlord and the Security Agent; and

(d) any other agreement or document which the Security Agent and the Borrower (acting reasonably) from time to time designate as a "*Landlord Waiver and Consent Agreement*" for the purposes of this Agreement.

"**Mortgages**" means the collective reference to each mortgage, deed of trust or other real property security document, encumbering all real property now or hereafter owned by the Borrower or any Subsidiary, in each case, in form and substance reasonably satisfactory to the Security Agent and executed by the Borrower or any Subsidiary in favour of the Security Agent (for and on behalf of itself and the other Finance Parties), as any such document may be amended, restated, supplemented or otherwise modified from time to time.

"**Security Amendment and Restatement Agreement**" means the security amendment and restatement agreement in respect of the Collateral Agreement and the Stock Pledge Agreement entered into on 8 August 2013 between the Borrower, each Domestic Subsidiary and the Security Agent.

"**Stock Pledge Agreements**" means:

(a) the stock pledge agreement dated 22 June 2009 (as supplemented by the Joinder Agreement and as amended and restated by the Security Amendment and Restatement Agreement) between the Borrower, each Domestic Subsidiary and the Security Agent;

(b) the joinder of amended and restated pledge agreement dated 13 November 2015 made by the Borrower in favour of the Security Agent, as acknowledged and agreed to by The World's End (Proprietary) Limited;

(c) the amended and restated agreement regarding uncertificated securities dated 6 October 2009 and made between Mobile Satellite Services, B.V. (as issuer), the Security Agent and Globalstar C, LLC (as pledgor);

(d) the amended and restated agreement regarding limited liability company interests dated 6 October 2009 and made between Globalstar do Brasil Holdings, Ltda. (as issuer), the Security Agent and Globalstar Brazil Holdings L.P. (as pledgor);

(e) the amended and restated agreement regarding limited liability company interests dated 6 October 2009 and made between Globalstar do Brasil Holdings, Ltda. (as issuer), the Security Agent and GSSI, LLC (as pledgor);

(f) the amended and restated agreement regarding uncertificated securities dated 6 October 2009 and made between Globalstar Satellite Services (Pty) Ltd. (as issuer), the Security Agent and the Borrower (as pledgor);

(g) the amended and restated agreement regarding uncertificated securities dated 6 October 2009 and made between Globalstar do Brasil Holdings, Ltda. (as issuer), the Security Agent and Globalstar Brazil Holdings L.P. (as pledgor);

(h) the quota pledge agreement dated 30 November 2009 and made between the Borrower, Globalstar do Brasil Holdings, Ltda. (as pledged company), the Security Agent and Globalstar Brazil Holdings L.P. and GSSI, LLC (as pledgors);

(i) the share pledge agreement dated 30 November 2009 and made between Globalstar Brazil Holdings L.P. (as pledger), the Security Agent, Globalstar do Brasil S.A. (as pledged company) and the Borrower;

(j) the agreement regarding limited liability company interests dated 5 August 2010 and made between the Borrower (as pledgor), the Security Agent and Globalstar Media, L.L.C. (as issuer); and

(k) any other stock pledge agreement (howsoever described) entered into between any other deposit account bank, a member of the Group and the Security Agent (in form and substance satisfactory to the BPIFAE Agent).

"**Thermo Pledge of Bank Accounts**" means the French law "*Convention de Nantissement de Comptes Bancaires*" dated 5 June 2009 between Thermo, the Offshore Account Bank, the BPIFAE Agent and the Security Agent.

"**United States Patents Security Agreements**" means:

(a) the agreement relating to the grant of a security interest in United States patents dated 22 June 2009 and made between the Borrower and the Security Agent;

(b) the agreement relating to the grant of a security interest in United States patents dated 9 September 2010 and made between the Borrower and the Security Agent; and

(c) any other patents security agreement entered into between any other deposit account bank, a member of the Group and the Security Agent (in form and substance satisfactory to the BPIFAE Agent).

"**United States Trademarks Security Agreements**" means:

(a) the agreement relating to the grant of a security interest in United States trademarks dated 22 June 2009 and made between the Borrower and the Security Agent;

(b) the agreement relating to the grant of a security interest in United States trademarks dated 9 September 2010 and made between the Borrower and the Security Agent; and

(c) any other trademarks security agreement entered into between any other deposit account bank, a member of the Group and the Security Agent (in form and substance satisfactory to the BPIFAE Agent).

Schedule 34

Personal Data (Natixis)

1. As part of the signature and performance of this contract, and more generally our business relationship, Natixis will collect certain information about you. Information explaining why and how Natixis intends to use this information, how long it will be retained and the rights you have on your data are available here: https://fr.gtb.natixis.com/donnees-personnelles.

2. Natixis will communicate in due course the changes made to this information.

EX-10.1 2 dex101.htm EXHIBIT 10.1

EXHIBIT 10.1

Pursuant to 17 CFR 240.24b-2, confidential information has been omitted in places marked "[***]" and has been filed separately with the Securities and Exchange Commission pursuant to a Confidential Treatment Request filed with the Commission.

LAUNCH SERVICES AGREEMENT

FOR THE LAUNCHING INTO

GEOSTATIONARY TRANSFER ORBIT

OF THE JUPITER SATELLITE

BY AN ARIANE 5 LAUNCH VEHICLE

Commercial in Confidence

DC/D/JBR/VSH/C10-004

LAUNCH SERVICES AGREEMENT

This Launch Services Agreement is entered into:

BY AND BETWEEN

Hughes Network Systems, LLC ("Hughes") hereinafter referred to as "CUSTOMER", a company duly organized and validly existing under the laws of the State of Delaware, with principal offices located at 11717 Exploration Lane, Germantown, Maryland 20876,

On the one hand

AND

ARIANESPACE, a company organized under the laws of France with principal offices located at Boulevard de l'Europe, B.P. 177, 91006 Evry-Courcouronnes CEDEX, France, hereinafter referred to as "ARIANESPACE",

On the other hand

DC/D/JBR/VSH/C10-004

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PART I

TERMS AND CONDITIONS

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RECITALS

WHEREAS CUSTOMER has approached ARIANESPACE with a view to launching the Jupiter Satellite(s), and

WHEREAS ARIANESPACE has proposed to CUSTOMER a Double Launch by means of the ARIANE 5 launch vehicle, and

WHEREAS CUSTOMER has selected a Double Launch, being aware of the particular constraints involved in such a launch, and

WHEREAS CUSTOMER and ARIANESPACE, aware of the constraints and risks involved in any Launch operation and of the complex nature of the technologies involved, have reached an agreement in accordance with the terms and conditions set forth herein,

NOW, THEREFORE, IT IS AGREED AS FOLLOWS:

ARTICLE 1 - DEFINITIONS

In this Agreement capitalized terms shall have the meanings set forth in this Article:

Affiliate means any entity Controlling, Controlled by or under common Control with the CUSTOMER.

Agreement means this Agreement as defined in Article 3 hereof.

Associated Services means those supplementary launch services specified in Sub-paragraphs 4.1.2 and 4.1.3 hereof.

Associates means any individual or legal entity, whether organized under public or private law, who or which shall act, directly or indirectly, on behalf of or at the direction of either Party to this Agreement or on behalf of the Third Party Customer(s) of ARIANESPACE to fulfill the obligation undertaken by such Party pursuant to this Agreement or by the Third Party Customer(s) of ARIANESPACE, including, without limitation, any employee, officer, director or agent of either Party, and of the Third Party Customer(s) of ARIANESPACE, and their respective Affiliates, contractors, subcontractors and suppliers at any tier.

For the purpose of the definition of Third Party and Article 14:

a) any individual or legal entity governed by private or public law that has directed ARIANESPACE to proceed with the Launch or has any interest in the Launch, including, without limitation, a legal interest in the Launch Vehicle, shall be deemed to be an Associate of ARIANESPACE;

b) any individual or legal entity governed by private or public law that has directed CUSTOMER to proceed with the Launch or has any interest in the Satellite to be launched, including, without limitation, insurers, any person or entity to whom CUSTOMER has sold or leased, directly or indirectly, or otherwise agreed to provide any portion of the Satellite or Satellite service, shall be deemed to be an Associate of CUSTOMER;

c) any individual or legal entity governed by private or public law, that has directed the Third Party Customer(s) of ARIANESPACE to proceed with the launch, or has any interest in the satellite(s) of the Third Party Customer(s) to be launched, including without limitation, insurers, any person or entity to whom the Third Party Customer(s) has sold or leased, directly or indirectly, or otherwise agreed to provide any portion of the satellite(s) or satellite(s) services shall be deemed to be an Associate of the Third Party Customer(s) of ARIANESPACE.

Base Rate means the **[***]**.

Commercial Insurance Market means the providers of insurance or reinsurance for first party space-related risks on a regular basis that are not affiliated with or controlled directly or indirectly by CUSTOMER.

Control (or Controlling or Controlled by) means direct or indirect ownership of over fifty (50%) of the issued share capital of an entity.

Dedicated Launch means a Launch performed on a Launch Vehicle the only payload of which consists of CUSTOMER’s Satellite.

Deviation means non-compliance with the specifications included in the D.C.I. (Document de Contrôle des Interfaces / Interface Control Document, including its reference documents, applicable documents and annexes) with respect to:

a) the performance of the various systems of the Launch Vehicle; and/or the environmental conditions to which the Satellite was subjected during the period from the instant when the Launch occurred until the instant when the activation of either the propulsion and/or orientation systems of the Satellite should have occurred;

and/or

b) the behavior of the satellite of a Third Party Customer(s) of ARIANESPACE from the instant when the Launch occurred until the earlier of the following:

- the instant when the propulsion and/or orientation systems of the satellite(s) of the Third Party Customer(s) of ARIANESPACE are activated, or
- the instant when the activation of either the propulsion and/or orientation systems of the Satellite should have occurred.

Double Launch means a Launch performed on a Launch Vehicle the payload of which consists of TWO (2) satellites including the Satellite supplied by CUSTOMER.

Events of Force Majeure means events (such as but not limited to fires, earthquakes, floods, bad weather and other Acts of God, wars, whether or not declared, social uprisings, and governmental or administrative measures), which are beyond the reasonable control and without the fault or negligence of a Party or its Associates that impede the execution of the obligations of such Party or its Associates, including, but without limitation, the accomplishment of the Launch within the Launch Period, Slot, Day, Window or at Launch Time, provided such difficulties may not be overcome using reasonable efforts to establish work-around plans, payment of expedited fees, alternate sources or other means by the affected Party or its affected Associates and provided further that the affected Party provides the other Party with written notice thereof as soon as possible but in no event later than the earlier of ten (10) days after learning the occurrence of such an event or thirty (30) days of the occurrence of such an event. Notwithstanding anything to the contrary in the foregoing, any failure by a subcontractor to meet its obligations to ARIANESPACE, or any delay due to labor shortages, defective tooling, transportation difficulties, equipment failure or breakdowns, lockouts, or inability to obtain materials shall not constitute an Event of Force Majeure (except where such circumstance is itself caused by a Force Majeure event), and shall not relieve ARIANESPACE from meeting any of its obligations under this Agreement. The Parties shall use reasonable efforts to minimize the effect of any Events of Force Majeure. In the event a Party claims an Event of Force Majeure, such Party's written notice called for above shall include a detailed description of the portion of the Work (or other obligations) known to be affected by such delay, as well as a proposed work-around plan reasonably satisfactory to the other Party. The work-around plan shall: (1) set forth the affected Party's reasonable efforts to mitigate the effect of any such Event of Force Majeure and include a schedule for such mitigation; and (2) contain sufficient detail for the other Party to be able to evaluate such plan. If appropriate, such work-around plan shall use work-around schedules, payment of expedited fees, twenty four (24) hour operations, and the use of alternate subcontractors (to be approved by CUSTOMER if required under this Agreement). In the event of an Event of Force Majeure, the applicable requirement shall be extended for such period as is supported by the evidence provided and the Payment Milestone Schedule shall be adjusted accordingly; provided, however, the occurrence of an Event of Force Majeure shall in no event entitle ARIANESPACE to an increase in the price for the Launch Services and, in the event of ARIANESPACE is the affected Party, CUSTOMER shall not be responsible for any expedited fees. Any adjustment of time appropriate for an Event of Force Majeure and the Payment Milestone Schedule shall be formalized promptly by the execution of a mutually acceptable amendment to this Agreement.

Guarantee Amount means an amount equivalent to **[***]** of the price specified in Sub-paragraph 8.1.1 of Article 8 hereof.

L means, except otherwise specified in the Agreement, the first day of the most recently agreed Launch Period, Launch Slot or Launch Day (as applicable).

Launch or Launching means the order of ignition of solid propellant booster(s) if such event follows ignition of the Vulcain engine of the Launch Vehicle that has been integrated with the Satellite supplied by CUSTOMER and with other satellite(s).

Launch Abort means the launch operations of the Launch Vehicle that has been integrated with the Satellite supplied by CUSTOMER and with other satellite(s) supplied by the Third Party Customer(s) of ARIANESPACE with subsequent ignition of the Vulcain engine without the Launch occurring.

Launch Base means the ARIANE launch base in Kourou, French Guiana, including all its facilities and equipment.

Launch Day or Launch Date means a calendar day (established for the Launch pursuant to this Agreement) within the Launch Slot during which the Launch Window is open.

Launch Failure means:

a) that the Satellite is destroyed or lost during the period extending from the instant when the Launch occurred and the instant when the Satellite is separated from the Launch Vehicle, or that such Satellite cannot be separated from the Launch Vehicle; or

b) the occurrence due to a Deviation of a reduction, expressed as a percentage, of more than LFF of the operational capability of the Satellite for CUSTOMER's intended communication purposes, using reasonable business judgment.

Where LFF is the percentage specified in the insurance policy procured by CUSTOMER on the Commercial Insurance Market to define a constructive total loss providing for the payment of the full amount of insurance with application of the determination mode of the degradation factor as provided for in the second section of the definition of the term "Loss Quantum".

However, if CUSTOMER does not procure any insurance policy on the Commercial Insurance Market, the constructive total loss percentage shall be equal to SEVENTY FIVE (75%).

Launch Manifest means the agreed-to Launch Periods and Launch Slots of all ARIANESPACE customers, including CUSTOMER.

Launch Opportunity means the availability to CUSTOMER of a Satellite position within a Launch Period or Launch Slot for a Launch on a Launch Vehicle provided that the other allocated satellite(s) have a launch mission and a satellite mission compatible with that of CUSTOMER's Satellite in accordance with Part 1 of Annex 1 to this Agreement. Such availability is linked to the time required to complete the mission analysis studies and to select the Launch Vehicle/Satellite configuration.

Launch Period or Period means **[***]**.

Launch Rank means the chronological position of the Satellite in the order of all satellite(s) to be launched by ARIANESPACE, based on the Launch Period or Launch Slot agreed for the CUSTOMER' Satellite provided for herein (as the same may from time to time be postponed pursuant to this Agreement) and by reference to the Launch Period or Launch Slot agreed for other customers of ARIANESPACE (as the same may from time to time be postponed pursuant to the agreements between ARIANESPACE and its other customers).

Launch Risk Guarantee (LRG) means the guarantee consisting of the Refund Option described in Paragraph 4.3 of Article 4 of this Agreement.

Launch Services means the services to be provided by ARIANESPACE as specified in (i) Part 2 and Part 4 of Annex 1 to this Agreement and (ii) Paragraphs 4.1 and 4.3 hereof.

Launch Slot or Slot means a period of [***] within a Launch Period with daily Launch Window possibilities.

Launch Time means the instant, within the Launch Window, that the ignition of the first stage engine(s) is scheduled to take place, as defined in hours, minutes and seconds (GMT Universal Time). The initial Launch Time shall commence immediately upon the opening of the Launch Window.

Launch Vehicle means an ARIANE 5 launch vehicle chosen by ARIANESPACE to perform the Launch.

Launch Vehicle Mission or Launch Mission means the mission assigned to the Launch Vehicle as defined in Part 1 of Annex 1 to this Agreement.

Launch Window means a time period as defined in Sub-paragraph 2.3 of Part 1 of Annex 1 to this Agreement.

Loss Quantum means, for purposes of the Launch Risk Guarantee, the degradation factor of the Satellite resulting from the application of the determination mode of the loss quantum provided for in the insurance policy with the higher coverage, as delivered by CUSTOMER to ARIANESPACE on or prior to [***] months. If a different determination mode is further agreed with the Commercial Insurance Market, for that policy with higher cover, this new determination mode shall consequently apply; it being understood that CUSTOMER shall promptly inform ARIANESPACE, and in any event before the Launch has occurred of any change, provided, that, if CUSTOMER has taken out, either in insurance or in reinsurance, on the Commercial Insurance Market for at least EIGHTY PERCENT (80%) of the amount of insurance placed for the satellite, one or more policy(ies) of launch insurance, the determination mode of the loss quantum provided for in the insurance policy with the higher coverage, as delivered by CUSTOMER to ARIANESPACE on or prior to [***], shall apply. If a different determination mode is further agreed with the Commercial Insurance Market, for that policy with higher cover, this new determination mode shall consequently apply; it being understood that CUSTOMER shall promptly inform ARIANESPACE, and in any event before the Launch has occurred of any change.

Partial Failure means, for purposes of the Launch Risk Guarantee, the occurrence due to a Deviation of a reduction of more than a percentage defined as PFF but not more than LFF of the operational capability of the Satellite for CUSTOMER's intended communication purposes, using reasonable business judgment.

Where PFF is TWENTY PERCENT (20%), unless CUSTOMER procures on the Commercial Insurance Market a policy of launch insurance with consequent application of the determination mode of the degradation factor as provided for in the definition of the term "Loss Quantum", in which case PFF shall mean the percentage specified in the insurance policy to define a partial loss. Said reduction of the operational capability shall be determined by using the Loss Quantum.

Party or Parties means CUSTOMER or ARIANESPACE or both according to the context in which the term is used.

Postlaunch Services means (i) the reports and range services as specified in Parts 2, 4 and 5 of Annex 1 to this Agreement that are to be provided to CUSTOMER by ARIANESPACE after the Launch and (ii) the services provided for in Paragraph 4.3 hereof.

Refund Option means the option available to CUSTOMER providing for a payment from ARIANESPACE subject to the conditions specified in Sub-paragraph 4.3.3 of Article 4 hereof.

Replacement Launch means a Launch subject to Article 13 hereof subsequent to a previous Launch that, for any reason whatsoever, has not accomplished the Launch Vehicle Mission or the Satellite Mission.

Satellite (referred to as Spacecraft in Annex 1 to this Agreement) means a spacecraft supplied by CUSTOMER that is compatible with the Launch Vehicle and the Launch Vehicle Mission, and that meets the specifications set forth in Part 1 of Annex 1 to this Agreement.

Satellite Mission means the mission assigned to the Satellite by CUSTOMER after separation from the Launch Vehicle.

Scientific Satellite(s) or Scientific Mission means (a) national, European and other international satellite programmes with specific missions imposing scheduling constraints justifying an absolute priority on a particular launch window outside of which the launch mission cannot be achieved, such as, for example, planetary or "rendez-vous" missions.

Services means any and all services to be provided by ARIANESPACE under this Agreement.

Third Party means any individual or legal entity other than the Parties, any Third Party Customer(s) of ARIANESPACE and their respective Associates.

Third Party Customer(s) of ARIANESPACE means other customer(s) of ARIANESPACE that use(s) ARIANESPACE's launch services for the same Launch as CUSTOMER for the launching of a main satellite.

U.S. Export Authorizations means the Technical Assistance Agreement issued by the United States Department of State, Directorate of Defense Trade Controls, for purposes of permitting exchanges of technical data and related defense services between the Satellite manufacturer and ARIANESPACE with respect to the interface design, development and integration of the Satellite to the Launch Vehicle.

ARTICLE 2 - SUBJECT OF THE AGREEMENT

The subject of this Agreement is the Launch of a Satellite supplied by CUSTOMER at the Launch Base for the purpose of accomplishing the Launch Mission in accordance with the terms and conditions of this Agreement.

ARTICLE 3 - CONTRACTUAL DOCUMENTS

3.1 This Agreement consists of the following documents, which are contractually binding between the Parties:

1) Terms and Conditions
2) Launch Specifications (Part 1 of Annex 1)
3) ARIANESPACE Technical Commitments (Part 2 of Annex 1)
4) CUSTOMER’s Technical Commitments (Part 3 of Annex 1)
5) Documentation and reviews (Part 4 of Annex 1)
6) General Range Support (GRS) and Optional Services (Part 5 of Annex 1)
7) ESA-ARIANESPACE Arrangement (Extract) (Annex 2)

3.2 In the event of any conflict or inconsistency among the provisions of the various parts of this Agreement, including the Annexes, such conflict or inconsistency shall be resolved by giving precedence to the Terms and Conditions, without consideration of the Annexes, and then to the Annexes without order of preference.

ARTICLE 4 - ARIANESPACE'S SERVICES

4.1 ARIANESPACE shall perform the Services under this Agreement including:

4.1.1 Launch Services as specified in Part 2 and Part 4 of Annex 1 to this Agreement (and Paragraph 4.3 below). The Launch Services are to be provided during the Launch Period, provided that CUSTOMER shall have the right, without an increase to the price or providing an equitable adjustment to ARIANESPACE, to postpone the Launch to the next Launch Period or Launch Slot (as applicable) or the right to request ARIANESPACE to re-schedule the Launch on the next Launch Opportunity, if no Launch Opportunity exists during the next Launch Period or Launch Slot, should, within the six (6) months prior to the first day of the last agreed Launch Period or Launch Slot (as applicable), ARIANESPACE encounter an anomaly on a Launch Vehicle of the type used for the Launch involving hardware or software that is similar or applicable to the Launch, until the CUSTOMER reasonably determines that there has been an acceptable resolution of the anomaly. In the case of any such postponement, payments shall be modified to reflect the revised schedule under Section 10.1 and being further agreed that such rescheduling shall not be considered as a postponement by either Party under the terms of Article 11 and/or Article 18 of this Agreement.

4.1.2 Associated Services ordered by CUSTOMER as set forth in this Agreement, and as defined in Paragraph 1 ("General Range Support") and Paragraph 3 ("Options Ordered by the CUSTOMER") of Part 5 of Annex 1 to this Agreement, in accordance with the conditions as specified therein.

4.1.3 Subject to any additional orders of CUSTOMER, one or more of the services as set forth in (i) Paragraph 2 ("Options Price Catalogue") of Part 5 of Annex 1 to this Agreement, (ii) the latest issue of the ARIANE 5 User's Manual (M.U.A.) in effect on the date of the corresponding order of CUSTOMER, in accordance with the then applicable conditions and any other services ordered by CUSTOMER and accepted by ARIANESPACE.

4.2 Launch Services, except for Postlaunch Services, shall be deemed to be completed by ARIANESPACE when the Launch has taken place. In the event that, for any reason whatsoever, a Launch Abort occurs, ARIANESPACE shall postpone the Launch in accordance with the conditions set forth in Article 11 of this Agreement.

4.3 Launch Risk Guarantee (LRG)

4.3.1 For an Ariane 5 Launch, the Launch Risk Guarantee shall consist of the Refund Option described in Sub-paragraph 4.3.2 below available to CUSTOMER as provided for in Sub-paragraphs 4.3.1.1 and 4.3.1.2 hereafter through purchase of a Refund Option.

4.3.1.1 Against payment to ARIANESPACE of the non refundable amount set forth in Sub-paragraph 8.1.2.1 of Article 8 of this Agreement, CUSTOMER shall have the ability, by written notice received by ARIANESPACE within THIRTY (30) days following the date of execution of this Agreement, to reserve the Refund Option, to be exercised by CUSTOMER pursuant to Sub-paragraph 4.3.1.2 below.

4.3.1.2 Once CUSTOMER has paid the amount mentioned in Sub-paragraph 4.3.1.1 above, ARIANESPACE shall maintain the Refund Option available to CUSTOMER for the price specified in Sub-paragraph 8.1.2.2 of Article 8 of this Agreement and CUSTOMER shall have until [***] to exercise the option by written notice, in which case the provisions of Sub-paragraph 4.3.2 below shall apply. If CUSTOMER does not exercise the option by [***], CUSTOMER shall be deemed to have waived the option, unless ARIANESPACE has extended the period of time for accepting the option.

4.3.2 Should the Refund Option have been exercised by CUSTOMER and the Launch Mission result in a:

4.3.2.1 Launch Failure, and provided all amounts due prior to launch by CUSTOMER to ARIANESPACE under this Agreement have been actually been made, ARIANESPACE shall pay to CUSTOMER an amount equal to the Guarantee Amount, or

4.3.2.2 Partial Failure, and provided all amounts due prior to launch by CUSTOMER to ARIANESPACE under this Agreement have been actually been made, ARIANESPACE shall [***] if the Launch Mission has resulted in a Partial Failure. The resulting amount will be subject to [***] provided for the launching, in accordance with the following formula:

[***].

Notwithstanding the foregoing, if the insurance policy taken out by CUSTOMER (i) provides for a deductible higher or lower than PFF, such deductible as provided for in the said insurance policy shall apply, or (ii) does not provide for a deductible, no deductible shall apply.

4.3.3 Any amount due by ARIANESPACE to CUSTOMER pursuant to this Paragraph 4.3 shall be paid within the SIXTY (60) day period following the date when the Parties have agreed on the occurrence of a Launch Failure or Partial Failure, whichever is relevant, and on the corresponding Loss Quantum, provided CUSTOMER has paid all amounts due and payable by it under this Agreement.

4.3.4 The implementation of the above Sub-paragraph 4.3.2, whichever is relevant, shall not imply any transfer of title to the Satellite to ARIANESPACE. In case of Launch Failure or Partial Failure, the rights of ARIANESPACE shall be the same as those of any entity(ies) who could cover risks related to the launch of the Satellite. Especially and not limitatively, in circumstances where salvage can be performed, ARIANESPACE will be entitled to a share in any salvage value remaining in any portion of the Satellite for which a payment has been due by ARIANESPACE to CUSTOMER and will negotiate the disposition of the Satellite if transfer of title has been requested.

4.3.5 In the event that, after application of the above Sub-paragraph 4.3.2, due to a Launch Failure, the Satellite is placed into commercial operation and/or is sold, leased or otherwise transferred, ARIANESPACE shall be entitled to a share of any resulting revenues and/or payments, as shall be negotiated and agreed upon promptly, taking into account the conditions peculiar to such commercial operation, but in no case shall any shared amount exceed the Guarantee Amount or Elected Amount, whichever is relevant.

4.3.6 There shall not be any cover for Launch Failure or Partial Failure and consequently the provisions of the above Sub-paragraph 4.3.2 shall not apply, in any of the following cases:

4.3.6.1 If CUSTOMER does not notify in writing ARIANESPACE of any event that would entitle CUSTOMER to any right under this Paragraph 4.3 before the first to occur of any of the THREE (3) following events;

(i) the day the Satellite is put into commercial operation,

(ii) the SIXTIETH (60th) day following the date of station acquisition of the Satellite,

(iii) the NINETIETH (90th) day at zero hour following the date of the Launch.

Notwithstanding the foregoing, an extension of the periods hereabove might be obtained upon request from CUSTOMER if both of the following conditions occur:

(a) the launching does not conform to the specifications of the D.C.I. and the Satellite reached its final positioning such that it cannot be determined that a Launch Failure or Partial Failure has occurred and;

(b) CUSTOMER's request for extension is received before the first of the THREE (3) events specified above.

In no event shall such extension extend beyond the ONE HUNDRED AND EIGHTIETH (180th) day following the date of the Launch.

and/or

4.3.6.2 if the Launch Failure or the Partial Failure is caused by, or results from one or more of the following events

A War, hostile or warlike action in time of peace or war, including action in hindering, combating or defending against an actual, impending or expected attack by (a) any government or sovereign power (de jure or de facto), or (b) any authority maintaining or using a military, naval or air force, or (c) a military, naval or air force, or (d) any agent of any such government, power, authority or force;

B any anti-satellite device, or device employing atomic or nuclear fission and/or fusion, or device employing laser or directed energy beams;

C insurrection, strikes, riots, civil commotion, rebellion, revolution, civil war, usurpation or action taken by a government authority in hindering, combating or defending against such an occurrence whether there be a declaration of war or not;

D confiscation by order of any government or governmental authority or agent (whether secret or otherwise), or public authority;

E nuclear reaction, nuclear radiation, or radioactive contamination of any nature, whether such loss or damage be direct or indirect, except for radiation naturally occurring in the space environment;

F willful or intentional acts of CUSTOMER designed to cause loss or failure of the Satellite;

G electromagnetic or radio frequency interference, except for physical damage to the Satellite resulting from such interference and except for interference naturally occurring in the space environment.

H any act of one or more persons, whether or not agents of a sovereign power, for political or terrorist purposes and whether the loss or damage resulting therefrom is accidental or intentional.

I any unlawful seizure or wrongful exercise of control of the Satellite made by any person or persons acting for political or terrorist purposes whether the loss or damage resulting therefrom is accidental or intentional.

ARTICLE 5 - CUSTOMER'S TECHNICAL COMMITMENTS

5.1 CUSTOMER, subject to applicable laws and the necessary U.S. Export Authorizations, shall fulfill the Technical Commitments set forth in Parts 1 and 3 of Annex 1 to this Agreement including, without limitation, delivery of the Satellite to the Launch Base within the time limits consistent with the launch schedule set forth herein, being agreed that any CUSTOMER's delays or default in the performance of its Technical Commitments due to any applicable laws and/or U.S. Export Authorizations restrictions shall be treated as a postponement requested by CUSTOMER as set forth in accordance with Article 11.2, provided, however, that payments shall be suspended in accordance with Article 11.4 of this Agreement if the postponement is beyond the reasonable control and without the fault or negligence of CUSTOMER.

5.2 CUSTOMER shall promptly notify ARIANESPACE in writing of any event learned by CUSTOMER that at the time is reasonably likely to cause a delay in the launch schedule not attributable to ARIANESPACE.

ARTICLE 6 - LAUNCH SCHEDULE

6.1 The Launch of the Satellite shall take place during the following Launch Period:

[***]

6.2 ARIANESPACE hereby represents, warrants and confirms to CUSTOMER, as of the effective date of the Agreement, and to the best knowledge and information of ARIANESPACE, that the Launch Vehicle and the Third Party Customer satellite will be available and transported to the Launch Base on a schedule consistent with the timely performance of the Launch.

6.3 Taking into account available Launch Opportunity(ies), the Launch Slot within the Launch Period shall be determined by mutual agreement of the Parties no later than SIX (6) months prior to the first day of the Launch Period.

6.4 Based on a proposal made by ARIANESPACE, by mutual agreement of the Parties, the Launch Day within the Launch Slot shall be determined, no later than THREE (3) months prior to the first day of the Launch Slot.

6.5 Based on a proposal made by ARIANESPACE, by mutual agreement of the Parties, the Launch Window set forth in Sub-paragraph 2.3 of Part 1 to Annex 1 to this Agreement shall be determined no later than the Final Mission Analysis Review.

6.6 In the event that, for any reason whatsoever, the Parties fail to agree upon the Launch Slot within the Launch Period, the Launch Day or the Launch Window, ARIANESPACE shall determine in a commercially reasonable manner said Launch Slot, Launch Day, or Launch Window taking into account the available Launch Opportunity(ies) and the requirements and respective interests of CUSTOMER and ARIANESPACE and any of the Third Party Customer(s) of ARIANESPACE, provided, however, that ARIANESPACE shall guarantee that at least one Launch Slot shall be available to CUSTOMER within the Launch Period.

6.7 **[***]**

6.8 **[***]**

6.9 **[***]**

ARTICLE 7 - COORDINATION BETWEEN ARIANESPACE AND CUSTOMER

7.1 CUSTOMER and ARIANESPACE shall each designate a program director (hereinafter "Program Director") no later than TWO (2) months after the execution of this Agreement for purposes of coordinating the performance of each Parties' obligations under this Agreement.

7.2 The Program Directors shall supervise and coordinate the performance of the Services and the Technical Commitments of the respective Parties within the Launch schedule set forth herein.

7.3 Each Program Director shall have sufficient powers to be able to settle any technical issues that may arise during the performance of this Agreement, as well as any day-to-day management issues.

7.4 A Party may replace its Program Director by prior written notice to the other Party, signed by an authorized official, indicating the effective date of designation of the new Program Director.

ARTICLE 8 - REMUNERATION

8.1 The remuneration of ARIANESPACE for the provision of Launch Services under this Agreement for a Satellite of a mass of 6,100 kg (without adapter) is a firm and fixed price as follows:

8.1.1 Basic Launch Services and General Range Support (GRS) price

ONE HUNDRED EIGHTEEN MILLION FIVE HUNDRED THOUSAND United States Dollars (US$ 118,500,000)

8.1.2 Launch Risk Guarantee

8.1.2.1 Purchase of the Refund Option pursuant to Sub-paragraph 4.3.1.1 of Article 4 of this Agreement

Should CUSTOMER purchase the Refund Option, the price(s) mentioned in the above Sub-paragraph 8.1.1 shall be increased by the amount obtained by multiplying the said price(s) by **[***]**. This amount shall not be refundable. Therefore, if CUSTOMER has not exercised the Refund Option by L minus SIX (6) months in accordance with sub 4.3.2 of Article 4 hereof, ARIANESPACE shall be entitled to keep the said amount.

8.1.2.2 Exercise of the Refund Option pursuant to Sub-paragraph 4.3.1.2 of Article 4 of this Agreement

Should CUSTOMER exercise the Refund Option, the price(s) mentioned in the above Sub-paragraph 8.1.1 shall be increased by the amount obtained by multiplying the said price by **[***]**, which amount shall be in addition the amount mentioned in Sub-paragraph 8.1.2.1 above.

8.1.3 Commencing with the effective date of this Agreement, and up to L minus EIGHT (8) months, CUSTOMER may vary the Satellite mass by a maximum total mass of **[***]** kg. Any increase in mass shall be subject to an increase in the firm fixed amount stated in Sub-paragraph 8.1.1 above of **[***]** for each kilogram that the Satellite mass is increased. Such amount is based on a Launch to occur in the 2012 calendar year and varies on a calendar year basis in the same proportion as the average of the price of the Associated Services listed in the Part 5 of the Annex 1 to this Agreement, unless the Launch Service has been extended beyond calendar year 2012 for reasons attributable to ARIANESPACE.

8.2 The firm fixed price, if any, for Associated Services assumes, that the Launch will be performed within calendar year **[***]**. Should the Launch Period or Launch Slot assigned to CUSTOMER under Article 11 of this Agreement extend beyond calendar year **[***]** other than for reasons attributable to ARIANESPACE, the then catalogue price for the relevant year will apply to any and all Associated Services other than those included in the GRS that will not have been performed by the date of request for any such postponement and any and all Associated Services that would have to be performed again as a consequence of any such Launch postponement.

8.3 All prices, expenses, and charges set forth in this Agreement shall be free from any and all taxes and other duties of any French tax authority and/or the tax authority of any country or jurisdiction where work is performed by ARIANESPACE, in relation to the Services. ARIANESPACE will fully indemnify CUSTOMER for any such taxes and duties that nonetheless become the obligation of CUSTOMER or any of its Associates or Affiliates.

ARTICLE 9 - PRICE ESCALATION FORMULA

(NOT APPLICABLE)

Commercial in Confidence

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ARTICLE 10 - PAYMENT FOR SERVICES

10.1 Payment of the remuneration under Paragraph 8.1 of Article 8 of this Agreement shall be made in accordance with the following payment schedule (and in the case of any revision in the Launch Schedule due to postponements by ARIANESPACE pursuant to Article 11.3, the payment milestones shall apply to the revised schedule):

10.1.1 **[***]**

[***]	**[***]**	**[***]**	**[***]**
[***]	**[***]**	**[***]**	**[***]**
[***]	**[***]**	**[***]**	**[***]**
[***]	**[***]**	**[***]**	**[***]**
[***]	**[***]**	**[***]**	**[***]**
[***]	**[***]**	**[***]**	**[***]**
[***]	**[***]**	**[***]**	**[***]**
[***]	**[***]**	**[***]**	**[***]**
[***]	**[***]**	**[***]**	**[***]**

Where:

L means the first day of the initial Launch Period of the Launch concerned if no postponement has been requested by ARIANESPACE or otherwise the date obtained by adding to the first day of the initial Launch Period of the Launch concerned the aggregate duration of Launch Period postponement(s) requested by ARIANESPACE for such Launch pursuant to Sub-paragraph 11.3.1.1 of Article 11 of this Agreement or applicable as a result of Force Majeure.

L* means the first day of the initial Launch Slot of the Launch concerned if no postponement has been requested by ARIANESPACE or otherwise the date obtained by adding to the first day of the initial Launch Slot of the Launch concerned the aggregate duration of Launch Slot postponement(s) requested by ARIANESPACE for such Launch pursuant to Sub-paragraph 11.3.1.1 of Article 11 of this Agreement or applicable as a result of Force Majeure.

10.1.2 The price of the Refund Option shall be paid in accordance with the following:

10.1.2.1 The price set forth in Sub-paragraph 8.1.2.1 of Article 8 of this Agreement shall be paid at CUSTOMER's purchase of the Refund Option pursuant to Sub-paragraph 4.3.1.1 of Article 4 of this Agreement.

10.1.2.2 In the event of exercise of the Refund Option pursuant to Sub-paragraph 4.3.1.2, the price set forth in Sub-paragraph 8.1.2.2 of Article 8 of this Agreement shall be paid according to the following payment schedule:

DATE	Percentage of the price set forth in Sub-paragraph 8.1.2.2 of Article 8 of this Agreement
[***]	**[***]**

Where:

L* means the first day of the initial Launch Slot of the Launch concerned if no postponement has been requested by ARIANESPACE or otherwise the date obtained by adding to the first day of the initial Launch Slot of the Launch concerned the aggregate duration of Launch Slot postponement(s) requested by ARIANESPACE for such Launch pursuant to Sub-paragraph 11.3.1.1 of Article 11 of this Agreement or applicable as a result of Force Majeure.

10.1.3 Mass increase

If CUSTOMER increases the Satellite mass under Sub-paragraph 8.1.3 of Article 8 of this Agreement, the resulting price increase shall be due by CUSTOMER to ARIANESPACE on the date set forth in Sub-paragraph 10.1 immediately subsequent to the receipt by ARIANESPACE of CUSTOMER's written request for mass variation and shall be paid in accordance with Sub-paragraph 10.3.2.

10.2 Payment for Associated Services

10.2.1 Payment for Associated Services ordered by CUSTOMER under Part 5 of Annex 1 to this Agreement, for which a firm fixed price has been established, shall be due as of the date set forth in said Part and shall be paid in accordance with Sub-paragraphs 10.3.1 or 10.3.2 as applicable.

10.2.2 Payment for Associated Services ordered by CUSTOMER under Part 5 of Annex 1 to this Agreement, for which no total firm fixed price can be determined in advance, shall be due on the date on which CUSTOMER terminates use of the relevant Associated Services and shall be paid in accordance with Sub-paragraphs 10.3.1 or 10.3.2 as applicable.

10.3 Terms and Conditions of Payment/ARIANESPACE's Invoices

10.3.1 Where this Agreement determines a precise payment date, payment has to be made at such date or within **[***]** days from receipt of ARIANESPACE's corresponding invoice, whichever is later, except for the first payment provided for in Sub-paragraph 10.1.1 of Article 10 of this Agreement, for which invoice will be presented upon EDC and paid within **[***]** days of EDC.

10.3.2 Where the Agreement does not determine a precise payment date, payment has to be made at the date when payment becomes due or within **[***]** of receipt of ARIANESPACE corresponding invoice, whichever is later.

10.3.3 ARIANESPACE invoices shall be drawn up in THREE (3) copies (one original and two (2) copies) and sent to the same address as specified herein for notices to CUSTOMER under Section 20.2, or to such other address as CUSTOMER may notify ARIANESPACE in writing.

The method for calculating the amount of each invoice shall be shown clearly.

10.3.4 Payments shall be made to the account(s) designated on the relevant invoice by bank transfer with SWIFT notice to be sent by CUSTOMER to ARIANESPACE

upon its receipt from the issuing bank. ARIANESPACE shall be responsible for SWIFT notice expenses. Each SWIFT notice shall clearly state the value date which shall be the date stated in sub paragraph 10.1, as applicable, and the bank through which the funds will be made available to the receiving bank or its correspondent.

Payment shall be effective as of the date on which the amount of the ARIANESPACE invoice is noted as debited on the SWIFT notice from the issuing bank.

10.3.5 CUSTOMER's payment(s) shall be made in U.S. Dollars and in the amount(s) corresponding to the applicable Payment Milestone identified in the invoice from ARIANESPACE, and shall be exclusive of any and all taxes, duties, or withholdings that may be imposed in the Country of CUSTOMER and the Country from which they are paid.

10.3.6 **[***]**

10.3.7 In addition, in the event that an invoice is submitted by Arianespace that is not due, for example as a result of schedule changes, such payment will be made no later than **[***]** after the later date on which it would actually be due.

10.3.8 For the avoidance of doubt, references in this AGREEMENT to "payments made by CUSTOMER," or the like, shall also include payments made on behalf of CUSTOMER, [***].

10.4 Late Payment

In the event of late payment, CUSTOMER shall pay ARIANESPACE interest on such late payment at the Base Rate per annum from and including the date due to but excluding the date made. The computation of interest for late payments shall be based on a year of 360 days.

In the event that such late payment has not been cured by CUSTOMER within **[***]** after receipt of a written ARIANESPACE notice to such effect, ARIANESPACE shall be entitled to suspend any and all of its activities in preparation of the Launch and to reschedule the Launch under Sub-paragraph 11.3.2 of Article 11 of this Agreement.

ARTICLE 11 - LAUNCH POSTPONEMENTS

11.1 Each postponement of the Launch Period, the Launch Slot, the Launch Day or the Launch Time, for whatever reason, shall, for each particular Launch under this Agreement, be governed solely by the terms and conditions provided in this Article 11. Except as otherwise expressly provided in this Agreement, the Parties hereto expressly waive, renounce, and exclude any and all rights and remedies that may arise at law or in equity with respect to postponements that are not stated in this Article 11 or elsewhere in this Agreement, including, but not limited to, any right to seek consequential, special, incidental or punitive damages.

11.2 Postponements requested by CUSTOMER

11.2.1 CUSTOMER shall have the right for any reason whatsoever to postpone the Launch Period and, once determined, the Launch Slot or the Launch Day. The CUSTOMER's written notice for postponement shall indicate the new requested Launch Period, Launch Slot or Launch Day, as the case may be.

11.2.1.1 If the CUSTOMER's written request relates to a Launch Period or a Launch Slot postponement, ARIANESPACE shall inform CUSTOMER within TWO (2) weeks of receipt of such request whether a Launch Opportunity exists within the Launch Period or the Launch Slot requested, or will propose a new Launch Period or Launch Slot. CUSTOMER shall have THIRTY (30) days following receipt of ARIANESPACE's proposal to consent thereto in writing.

11.2.1.2 If the CUSTOMER's written request relates to a Launch Day postponement, the choice of a new Launch Day shall be made by mutual agreement of the Parties, taking into account (i) the technical needs and interests of CUSTOMER and ARIANESPACE and any of the Third Party Customer(s) of ARIANESPACE, (ii) the time necessary for the revalidation of the launch assembly complex consisting of the Launch Vehicle, the Launch Base (ELA) and the payload preparation assembly (EPCU) and (iii) meteorological forecasts.

11.2.1.3 Any postponements by CUSTOMER of the Launch Time within the Launch Window may only be requested during the countdown period. In the event that CUSTOMER has requested such postponement and technical reasons, including, without limitation, those relating to any Third Party Customer(s) of ARIANESPACE, or meteorological reasons prevent ARIANESPACE from performing the Launch in the Launch Window opening during the Launch Day, the postponement shall be considered to be a postponement of the Launch Day.

11.2.1.4 In the event of a postponement requested by CUSTOMER, the CUSTOMER will be re-sequenced to the next available Launch Opportunity, taking into account the commercial requirements and interests of CUSTOMER.

11.2.1.5 In the event that the aggregate duration of all postponements requested by CUSTOMER for the Launch under this Agreement exceeds **[***]**, the Launch Services price shall be renegotiated by the Parties on a fair and reasonable basis.

11.3 Postponements requested by ARIANESPACE

Any and all postponements requested by ARIANESPACE shall be subject to Article 11.4 and Article 18.3 of this Agreement.

11.3.1 ARIANESPACE shall have the right to postpone a Launch, for the following reasons:

11.3.1.1 Postponement of Launch Period and Launch Slot

a) ARIANESPACE or its Associates encounter adverse technical problems that prevent the Launch from taking place under satisfactory conditions of safety or reliability.

b) ARIANESPACE cannot perform the Launch as a Double Launch for any reason related to the co-passenger.

c) ARIANESPACE is obligated to perform replacement launch(es), or to launch Scientific Satellite(s) whose mission(s) may be degraded in the event of postponement.

d) ARIANESPACE postpones the launch(es) due to postponement(s) by ARIANESPACE, of satellite(s) having an earlier Launch Period or Launch Slot than CUSTOMER's Satellite(s), for the reasons set forth in a) and c) as applied to such other satellite(s).

11.3.1.2 Postponement of Launch Day within the Launch Slot and/or Launch Time within the Launch Window

a) For any of the reasons listed in Sub-paragraph 11.3.1.1 a), b), c) and d) above.

11.3.1.3 The Parties shall determine by mutual agreement a new Launch Period and/or a new Launch Slot as near as possible to the postponed one, **[***]** by applying the following criteria in the order listed below:]

1) Launch Rank of CUSTOMER's Satellite **[***];**

2) date of signature of this Agreement **[***];**

[***]

[***]

[***]

11.3.2 Any postponement by ARIANESPACE of the Launch Period, Launch Slot, Launch Day, Launch Window, or Launch Time due to CUSTOMER's non-fulfillment of its obligations under this Agreement making the Launch impossible within the Launch Period, Launch Slot, or during Launch Window of the Launch Day, or at the Launch Time, as determined by mutual agreement of the Parties, shall be considered to be requested by CUSTOMER in accordance with Paragraph 11.2 above as of the date of ARIANESPACE's decision to postpone the Launch.

11.4 Any postponement by ARIANESPACE shall modify the Payment Milestone Schedule such that the payment date set forth in Paragraph 10.1 of Article 10 of this Agreement shall be extended on a day-to-day basis for the length of the delay and then resumed with all remaining payments postponed by the amount of the delay.

ARTICLE 12 - RIGHT OF OWNERSHIP AND CUSTODY

12.1 The obligations of ARIANESPACE under this Agreement are strictly limited to the Services, and CUSTOMER acknowledges and agrees that at no time shall it have any right of ownership of, any other right in, or title to, the property that ARIANESPACE shall use in connection with the Launch, or shall place at CUSTOMER's disposal for the purpose of this Agreement, including, without limitation, the Launch Vehicle and the Launch Base of ARIANESPACE. Said property shall at all times be considered to be the sole property of ARIANESPACE.

12.2 ARIANESPACE acknowledges and agrees that at no time shall it have any right of ownership, or any other right in, or title to, the property that CUSTOMER shall use for the Launch and the interface test(s), including, without limitation, the Satellite and all equipment, devices and software to be provided by CUSTOMER on the Launch Base in order to prepare the Satellite for Launch. Said property shall at all times be considered to be the sole property of CUSTOMER.

12.3 At all times during the performance by the Parties of this Agreement, each Party shall be deemed to have full custody and possession of its own property.

ARTICLE 13 - REPLACEMENT LAUNCH

13.1 Terms

13.1.1 CUSTOMER is entitled to request a Replacement Launch from ARIANESPACE in the event that, following the Launch, either the Launch Mission or the Satellite Mission has not been accomplished for any reason whatsoever. Replacement Launch Services are subject to the conditions set forth in this Article 13. Any and all other rights and remedies of CUSTOMER relating to a Replacement Launch are excluded whatever their nature.

13.1.2 CUSTOMER shall be entitled to have a Launch Slot for a Replacement Launch allocated to it by ARIANESPACE within [***] following the month ARIANESPACE has received a written request for Replacement Launch. Should CUSTOMER request a Launch Period beyond such [***] period, ARIANESPACE shall allocate the nearest Launch Opportunity, provided however that in no way shall the Launch Period requested by CUSTOMER extend beyond the [***] period following the date of request for a Replacement Launch.

13.1.3 The written request for a Replacement Launch shall be received by ARIANESPACE no later than the last day of the second month following the month in which the cause of the failure of either the Launch Vehicle Mission or the Satellite Mission has been established, but in no event later than, in the case of a Satellite Mission failure, TWENTY-SEVEN (27) months following the date of Launch.

The written request for a Replacement Launch shall indicate the Launch Period requested by CUSTOMER within one of the periods specified in Sub-paragraph 13.1.2 above. It is understood that the replacement Satellite and all equipment, devices and software to be made available by CUSTOMER on the Launch Base in order to make the replacement Satellite ready for Launch shall be made available to ARIANESPACE pursuant to the schedule of Part 3 of Annex 1 to this Agreement.

13.1.4 ARIANESPACE shall inform CUSTOMER, within the month following receipt of CUSTOMER's request for a Replacement Launch, whether or not a Launch Opportunity exists within the requested Launch Period and, in any event, shall allocate a Launch Slot to CUSTOMER, the first day of which shall be before the expiration of the [***] period specified in Sub-paragraph 13.1.2 of Article 13 of this Agreement if the Launch Period requested by CUSTOMER is within that [***] period; otherwise ARIANESPACE shall allocate to CUSTOMER the nearest existing Launch Opportunity. The date allocated shall not begin earlier than the first day of the Launch Period requested by CUSTOMER.

13.1.5 The replacement Satellite shall be in accordance with the interface control document (DCI) governing CUSTOMER's Satellite.

13.2 General conditions

The remuneration for Replacement Launch Services shall be the then applicable price pursuant to the ARIANESPACE pricing policy for a Launch on the date of the Replacement Launch.

The remuneration for Associated Services associated with the Replacement Launch shall be the applicable price for a Launch to take place within the calendar year of the Replacement Launch.

The payment schedule shall provide for the payment of the entire price for Replacement Launch Services prior to said Replacement Launch.

The Replacement Launch shall form the subject of a separate launch services agreement substantially in the form of this Agreement.

ARTICLE 14 - ALLOCATION OF POTENTIAL LIABILITIES AND RISKS

14.1 Allocation of risks for damage caused by one Party and/or its Associates to the other Party and/or its Associates

14.1.1 Due to the particular nature of the Services, except in the event of willful misconduct of either Party or their Associates, the Parties agree that any liability of ARIANESPACE or of CUSTOMER arising from the defective, late, or non-performance of ARIANESPACE's Services and CUSTOMER's technical obligations under this Agreement is, in all circumstances, including termination of this Agreement or a Launch under this Agreement, strictly limited to the liability expressly provided for in this Agreement. Except as provided in this Agreement and except in the event of willful misconduct , the Parties hereto expressly waive, renounce, and exclude any and all rights and remedies that may arise at law or in equity with respect to the Services, including, but not limited to, any right to seek consequential, special, incidental or punitive damages.

14.1.2 Each Party shall bear any and all loss of or damage to physical property and any bodily injury (including death) and all consequences, whether direct or indirect, of such loss, damage or bodily injury (including death), and/or of a Launch Mission failure and/or of a Satellite Mission failure, which it or its Associates may sustain, directly or indirectly, arising out of or relating to this Agreement or the performance of this Agreement. Each Party irrevocably agrees to a no-fault, no-subrogation, inter-party waiver of liability, and waives the right to make any claims or to initiate any proceedings whether judicial, arbitral, or administrative on account of any such loss, damage or bodily injury (including death) and/or Launch Mission failure and/or Satellite Mission failure against the other Party or that other Party's Associates arising out of or relating to this Agreement for any reason whatsoever.

The provisions above exclude, without limitation, any liability of ARIANESPACE or its Associates for any loss or damages to CUSTOMER or its Associates, resulting from the intentional destruction of the Launch Vehicle and the Satellite in furtherance of launch range safety measures.

Each Party agrees to bear the financial and any other consequences of such loss, damage or bodily injury (including death) and/or of a Launch Mission failure and/or a Satellite Mission failure which it or its Associates may sustain, without recourse to the other Party or the other Party's Associates.

14.1.3 Each Party shall take all necessary and reasonable steps to foreclose claims for loss, damage or bodily injury (including death) by any participant involved in Launch activities. Each Party shall require its Associate(s) to agree to a no-fault, no-subrogation, inter-party waiver of liability and indemnity for loss, damage or bodily injury (including death) its Associates sustain identical to the Parties' respective undertakings under this Article 14. Furthermore, ARIANESPACE shall require all Third Party Customer(s) of ARIANESPACE entering into launch services agreements with ARIANESPACE to agree to the inter-party waiver and indemnities set forth in this Article 14.

14.1.4 In the event that one or more Associates of a Party shall proceed against the other Party and/or that Party's Associates as a result of such loss, damage or bodily injury (including death) and/or Launch Mission failure and/or Satellite Mission failure, the first Party shall indemnify, hold harmless, dispose of any

claim, and defend, when not contrary to the governing rules of procedure, the other Party and/or its Associates, as the case may be, from any liability, cost or expense, including attorneys' fees, on account of such loss, damage or bodily injury (including death) and/or Launch Mission failure and/or Satellite Mission failure, and shall pay all costs and expenses and satisfy all judgments and awards which may imposed on or rendered against that other Party and or its Associates.

14.1.5 Notwithstanding any provision of this Agreement to the contrary, any waiver, release, assumption of responsibility or agreement to hold harmless and indemnify herein shall not apply to claims for loss of or damage to physical property and any bodily injury (including death) and all consequences, whether direct or indirect, of such loss, damage or bodily injury (including death) resulting from willful misconduct of the Parties or their Associates.

14.2 Loss or Damage or bodily injury caused or sustained by any Third Party Customer(s) of ARIANESPACE or its (their) Associates

14.2.1 Each Party shall bear any and all loss of or damage to property and any bodily injury (including death) and all consequences, whether direct or indirect, of such loss, damage or bodily injury (including death) and/or Launch Mission failure and/or Satellite Mission failure, which it or its Associates may sustain, that is caused, in any way, by (a) Third Party Customer(s) of ARIANESPACE or its (their) Associates, directly or indirectly, arising out of or relating to the performance of this Agreement and/or the launch services agreement signed by ARIANESPACE with such Third Party Customer(s) of ARIANESPACE.

14.2.2 CUSTOMER hereby irrevocably agrees to a no-fault, no-subrogation, inter-party waiver of liability and waives the right to make any claims or to initiate any proceedings whether judicial, arbitral, administrative or otherwise on account of any such loss, damage or bodily injury (including death) and/or Launch Mission failure and/or Satellite Mission failure against Third Party Customer(s) of ARIANESPACE, and/or ARIANESPACE and/or their respective Associates for any reason whatsoever.

CUSTOMER agrees to bear the financial and any other consequences of such loss, damage or bodily injury (including death) and/or Launch Mission failure and/or Satellite Mission failure caused in any way by any Third Party Customer(s) of ARIANESPACE or its (their) Associates without recourse against the Third Party Customer(s) of ARIANESPACE and/or ARIANESPACE and/or their respective Associates.

In the event that one or more of CUSTOMER's Associate(s) proceed against the Third Party Customer(s) of ARIANESPACE and/or ARIANESPACE and/or their respective Associates as a result of any loss, damage or bodily injury (including death) and/or Launch Mission failure and/or Satellite Mission failure caused in any way to it by such Third Party Customer(s) of ARIANESPACE or its (their) Associates, CUSTOMER shall indemnify, hold harmless, dispose of any claim and defend, when not contrary to the governing rules of procedure, such Third Party Customer(s) of ARIANESPACE, and/or ARIANESPACE and/or their respective Associates from any liability, cost or expense, including attorneys' fees, on account of such loss, damage or bodily injury (including death) and/or Launch Mission failure and/or Satellite Mission failure, and shall pay all costs and expenses and satisfy all judgments and awards which may be imposed on or rendered against the Third Party Customer(s) of ARIANESPACE and/or ARIANESPACE, and/or their respective Associates.

14.2.3 Arianespace shall cause its Third Party Customer(s) to take all necessary and reasonable steps to foreclose claims for loss, damage or bodily injury

(including death) by any of its Associates. Arianespace shall cause its Third Party Customer(s) to require its Associate(s) to agree to a no-fault, no-subrogation, inter-party waiver of liability and indemnity for loss, damage or bodily injury (including death) its Associates sustain identical to the Parties' respective undertakings under this Article 14. Furthermore, ARIANESPACE shall require all Third Party Customer(s) of ARIANESPACE entering into launch services agreements with ARIANESPACE to agree to the inter-party waiver and indemnities set forth in this Article 14. 1

14.2.4 In the event that any Third Party Customer(s) of ARIANESPACE and/or its (their) Associates proceed against CUSTOMER and/or its Associates as a result of any loss, damage or bodily injury (including death) and/or launch mission failure and/or satellite mission failure caused in any way by CUSTOMER and/or its (their) Associates, directly or indirectly, arising out of or relating to the performance of this Agreement and/or the agreement signed by ARIANESPACE with such Third Party Customer(s) of ARIANESPACE, ARIANESPACE shall indemnify, hold harmless, dispose of any claim and defend, when not contrary to the governing rules of procedure, CUSTOMER and/or its Associates from any liability, cost or expense, including attorney's fees, on account of such loss, damage or bodily injury (including death), and/or Launch Mission failure and/or Satellite Mission failure, and shall pay all costs and expenses and satisfy all judgments and awards which may be imposed or rendered against CUSTOMER and/or its Associates.

14.3 Reserved.

14.4 Liability for damages suffered by Third Parties

14.4.1 Except in the event of liability for property loss or damage and bodily injury that Third Parties may sustain and that is caused by the Launch Vehicle, and/or the Satellite, and/or the satellite of any Third Party Customer(s) of ARIANESPACE and/or their components or any part thereof or is otherwise caused by the Launch as specified under Article 15, each Party shall be solely and entirely liable for all loss, damage or bodily injury (including death) sustained, whether directly or indirectly, by any Third Party, which is caused by such Party or its Associates arising out of or relating to the performance by such Party of this Agreement.

14.4.2 In the event of any proceeding, whether judicial, arbitral, administrative or otherwise, by a Third Party against one of the Parties or its Associates on account of any loss, damage or bodily injury (including death), caused by the other Party, its property or its Associates or its (their) property, whether directly or indirectly the latter Party shall indemnify and hold harmless the former Party and/or the former Party's Associates, as the case may be, and shall advance any funds necessary to defend their interests.

14.5 Infringement of industrial property rights of Third Parties

14.5.1 ARIANESPACE shall indemnify and hold CUSTOMER harmless with respect to any damage, cost, and expense resulting from an infringement or claim of infringement of patent rights or any other industrial or intellectual property rights of any third party which may arise from CUSTOMER's use of ARIANESPACE's Services, including, without limitation, the use of any and all products, processes, articles of manufacture, supporting equipment, facilities, and services by ARIANESPACE in connection with said Services; provided however, that this indemnification shall not apply to an infringement of rights

as set forth above that have been mainly caused by an infringement of a right of a third party for which CUSTOMER is liable pursuant to Sub-paragraph 14.5.2 of Article 14 of this Agreement.

14.5.2 CUSTOMER shall indemnify and hold ARIANESPACE harmless with respect to any damage, cost, and expense resulting from an infringement or claim of infringement of the patent rights or any other industrial or intellectual property rights of any third party arising out of or relating to CUSTOMER with respect to the design or manufacture of the Satellite, or ARIANESPACE's compliance with specifications furnished by CUSTOMER with respect to the Launch Mission and the Satellite Mission.

14.5.3 The rights to indemnification provided hereunder shall be subject to the following conditions:

14.5.3.1 The Party seeking indemnification shall promptly advise the other Party of the filing of any suit, or of any written or oral claim against it, alleging an infringement of any third party's rights, which it may receive relating to this Agreement.

14.5.3.2 The Party seeking indemnification shall not make any admission, nor shall it reach a compromise or settlement, without the prior written approval of the other Party, which approval shall not be unreasonably withheld or delayed.

14.5.3.3 The Party required to indemnify, defend and hold the other harmless shall assist in and shall have the right to assume, when not contrary to the governing rules of procedure, the defense of any claim or suit or settlement thereof, and shall pay all reasonable litigation and administrative costs and expenses, including legal counsel fees and expenses, incurred in connection with the defense of any such suit, shall satisfy any judgments rendered by a court of competent jurisdiction in such suits, and shall make all settlement payments.

14.5.3.4 The Party seeking indemnification may participate in any defense at its own expense, using counsel reasonably acceptable to the Party required to indemnify, provided that there is no conflict of interest and that such participation does not otherwise adversely affect the conduct of the proceedings.

14.5.4 In the event that ARIANESPACE, with respect to the Launch, and CUSTOMER, with respect to the Satellite, shall be the subject of the same court action or the same proceedings based on alleged infringements of patent rights or any other industrial or intellectual property rights of a third party pursuant to both Sub-paragraphs 14.5.1 and 14.5.2 hereof, ARIANESPACE and CUSTOMER shall jointly assume the defense and shall bear all damages, costs and expenses pro rata according to their respective liability. In the event of any problems in the implementing the pro rata allocation of the amounts referred to in the immediately preceding sentence, the Parties shall undertake in good faith to resolve such problems.

14.5.5 Neither Party's execution or performance of this Agreement grants any rights to or under any of either Party's respective patents, proprietary information, and/or data, to the other Party or to any third party, unless such grant is expressly recited in a separate written document duly executed by or on behalf of the granting Party.

ARTICLE 15 - INSURANCE

15.1 ARIANESPACE shall, for any particular Launch under this Agreement, take out an insurance policy at no cost to CUSTOMER, to protect itself and CUSTOMER against liability for property loss or damage and bodily injury that Third Parties may sustain and that is caused by the Launch Vehicle, and/or the Satellite, and/or the satellite of any Third Party Customer(s) of ARIANESPACE and/or their components or any part thereof. Such insurance policy shall name as additional insureds:

1) The Government of France and the Government of the United Kingdom.

2) The Centre National d'Etudes Spatiales "C.N.E.S." and any launching state as such term is defined in the Convention on International Liability for Damage Caused by Space Objects of 1972.

3) The auxiliaries of any kind, whom ARIANESPACE and/or the C.N.E.S. would call for in view of the preparation and the execution of the launching operations.

4) The European Space Agency "E.S.A." but only in its capacity as owner of certain facility and/or outfits located at the Centre Spatial Guyanais in Kourou and made available to ARIANESPACE and/or the C.N.E.S for the purpose of the preparation and the execution of the launches.

5) The firms, who have participated in the design and/or in the execution and/or who have provided the components of the Launch Vehicle, of its support equipment including propellants and other products either liquid or gaseous necessary for the functioning of the said Launch Vehicle, their contractors, sub-contractors and suppliers.

6) CUSTOMER, its Affiliates, its customers or entities who have purchased or leased a portion of the Satellite identified to ARIANESPACE prior to Launch, its contractors and its subcontractors and each of their respective officers, directors, legal representatives, managing director, employees, agents and interim staff, and any Third Party Customer(s) of ARIANESPACE on whose behalf ARIANESPACE executes the launch services as well as their co-contractors and sub-contractors.

7) Provided they act within the scope of their duties, the officers and directors, legal representatives, managing director, employees, agents and interim staff employed by ARIANESPACE or by any of additional insured mentioned in the preceding sub-paragraphs from 1 to 6 (included).

15.2 The insurance referred to in Paragraph 15.1 shall come into effect as of the day of the Launch concerned, and shall be maintained for a period of the lesser of TWELVE (12) months or so long as all or any part of the Launch Vehicle and/or the Satellite and/or the satellite of any Third Party Customer(s) of ARIANESPACE, and/or their components remain in orbit.

15.3 The insurance policy shall be in the amount of [***]. ARIANESPACE shall, in compliance with the French space law n° 2008-518 dated June 3rd, 2008), settle all liabilities, and shall indemnify and hold CUSTOMER and its Affiliates and the Government of the United Kingdom harmless for property damage and bodily injury arising from the Services when caused to Third Parties by the Launch Vehicle and/or the Satellite and/or the satellite of any Third Party Customer(s) of ARIANESPACE and/or their components or any part thereof including during the period provided for in Paragraph 15.2 above for any amount in excess of the insured limits of said insurance policy. Upon expiration of the insurance in accordance with Paragraph 15.2, CUSTOMER shall be responsible for property damage and bodily injury caused to Third Parties by the Satellite or any part thereof.

ARTICLE 16 - OWNERSHIP OF DOCUMENTS AND WRITTEN INFORMATION CONFIDENTIALITY/PUBLIC STATEMENTS

16.1 Title to all documents, data, and written information furnished to CUSTOMER by ARIANESPACE or its Associates during the performance of this Agreement shall remain exclusively with ARIANESPACE.

16.2 Title to all documents, data, and written information furnished to ARIANESPACE by CUSTOMER or its Associates during the performance of this Agreement shall remain exclusively with CUSTOMER or with said Associates as to their respective documents, data, and written information.

16.3 Each Party shall use the documents, data, and written information supplied to it by the other Party or the other Party's Associates solely for the performance of this Agreement and any activities directly related thereto.

16.4 To the extent necessary for the performance of this Agreement, each Party shall be entitled to divulge to its own Associates the documents, data, and written information received from the other Party or from the other Party's Associates in connection herewith, provided that such receiving person shall have first agreed to be bound by the nondisclosure and use restrictions of this Agreement.

16.5 Subject to the provisions of Paragraph 16.4, neither Party shall divulge any documents, data, or written information that it receives from the other Party or the other Party's Associates, and shall protect all such documents and written information that are marked with an appropriate and valid proprietary or confidentiality legend from unauthorized disclosure except as provided herein, in the same manner as the receiving Party protects its own confidential information; provided, however, that each Party shall have the right to use and duplicate such documents, data, and written information for any Party purpose subject to the nondisclosure requirements and use restrictions provided herein.

If the information disclosed by one Party to the other Party or by or to their respective Associates is deemed confidential by the disclosing Party or Associate and is verbal, not written, such verbal confidential information shall be identified prior to disclosure as confidential and, after acceptance by and disclosure to the receiving Party, shall be reduced to writing promptly, labeled confidential, but in no event later than TWENTY (20) days thereafter, and delivered to the receiving Party in accordance with this Paragraph.

16.6 The obligation of the Parties to maintain the confidentiality of documents, data, and written information shall not apply to documents, data, and written information that:

- are not properly marked as confidential;
- are in the public domain;
- shall come into public use, by publication or otherwise, and due to no fault of the receiving Party;
- the receiving Party can demonstrate were legally in its possession at the time of receipt;
- are rightfully acquired by the receiving Party from third parties;
- are commonly disclosed by ARIANESPACE or its Associates;
- are inherently disclosed in any product or provision of any service marketed by ARIANESPACE or its Associates;
- are independently developed by the receiving Party;
- are approved for release by written authorization of the disclosing Party; or
- the receiving party becomes legally compelled to disclose (including disclosures necessary or in good faith determined to be reasonably necessary under the Securities Act of 1933, as amended, and the Securities Exchange Act of 1934, as amended), in which event the receiving Party shall, to the extent practicable under the circumstances, provide the disclosing Party with written notice thereof so that the disclosing Party may seek a protective order or other appropriate remedy, or to allow the disclosing Party to redact such portions of the confidential information as the disclosing Party reasonably deems appropriate. In any such event, the receiving Party will, to the extent practicable, disclose only such information as it reasonably determines is legally required, and will cooperate with the disclosing Party (at the disclosing Party's expense) to seek proprietary treatment for any confidential information being disclosed and that is excludable under applicable law. CUSTOMER hereby provides notice to ARIANESPACE that CUSTOMER must disclose this Agreement pursuant to the securities and communications laws of the United States, and confirms that it will consider in good faith any reasonable and timely requests for redaction from ARIANESPACE.

16.7 The provisions of this Article 16 shall survive the completion of performance of Services under this Agreement and shall remain in full force and effect until said documents, data, and written information become part of the public domain; provided, however that each Party shall be entitled to destroy documents, data, and written information received from the other Party, or to return such documents, data, or written information to the other Party, at any time after Launch.

16.8 This Agreement and each part hereof shall be considered to be confidential by both Parties. Any disclosure of the same by one Party shall require the prior written approval of the other Party, which approval shall not be unreasonably withheld or delayed.

Except for publication of the launch manifest, either Party shall obtain the prior written approval of the other Party only through such Party's authorized representative concerning the content and timing of news releases, articles, brochures, advertisements, speeches, and other information releases concerning the work performed or to be performed hereunder by ARIANESPACE and its Associates. Each Party agrees to give the other Party reasonable advance notice for review of any material submitted to the other Party for approval under this Paragraph.

ARTICLE 17 - PERMITS AND AUTHORIZATIONS - GROUND STATIONS

17.1 ARIANESPACE shall be obligated to obtain all required licenses, permits, authorizations, or notices of non-opposition from all national or international, public or private authorities having jurisdiction over the Launch Vehicle and the Launch Mission.

17.2 CUSTOMER shall be obligated to obtain, or cause an Associate to obtain, all required government licenses, permits and authorizations, including the necessary U.S. Export Authorizations, for delivery of the Satellite and all equipment, devices and software to be provided by CUSTOMER on the Launch Base in order to prepare the Satellite for Launch, from its country of origin to the Launch Base, and, the use of the Satellite's ground stations.

17.3 ARIANESPACE agrees to assist and support CUSTOMER and its Associates, at no expense, with any and all administrative matters related to the importation into French Guiana of the Satellite and all equipment, devices and software to be provided by CUSTOMER on the Launch Base in order to prepare the Satellite for Launch, and their storage and possible return, as well as to the entry, stay, and departure of CUSTOMER and its Associates.

17.4 ARIANESPACE agrees to assist and support CUSTOMER and its Associates, at no expense, in obtaining and maintaining a Launch and In-Orbit Insurance Policy. ARIANESPACE, at no expense to CUSTOMER (including CUSTOMER Associates) hereunder, shall furnish CUSTOMER (or CUSTOMER Associates, their respective underwriters and insurers) with such information regarding the Launch Vehicle and the Launch Mission as is requested by the insurers and as is customary and normal to support and assist CUSTOMER (including any applicable CUSTOMER Associates) in obtaining and maintaining a Launch and In-Orbit Insurance Policy or making claims thereunder (or conducting investigations in support of possible claims) including but not limited to: (i) providing a comprehensive presentation package on the Launch Vehicle, suitable for presentation to the space insurance brokers and underwriters; (ii) supporting all necessary associated presentations (oral, written or otherwise), including attendance and participation in such presentations where reasonably requested by CUSTOMER; (iii) providing on a timely basis all reasonable and appropriate technical information, data and documentation; and (iv) providing documentation and answers to insurer and underwriter inquiries. Notwithstanding Article 16, CUSTOMER may disclose this Agreement to its insurers (and others assisting with the making of claims or conducting investigations relating thereto), provided that CUSTOMER has entered into binding agreements with such insurers (and such others) that limit the disclosure and use of such Agreement on terms comparable to those contained herein.

ARTICLE 18 - TERMINATION BY CUSTOMER

18.1 [***]

18.2 In case of termination by CUSTOMER pursuant to Paragraph 18. 1 or in case of termination by ARIANESPACE pursuant to Paragraph 19.1, ARIANESPACE shall be entitled for the Launch terminated to the following:

18.2.1 Termination charges depending of the date of termination as follows, provided, however, that [***], and where applicable, ARIANESPACE shall refund to CUSTOMER any amounts in excess of the applicable termination charge corresponding to the date of termination. **[***]**:

[***]	**[***]**
[***]	**[***]**
[***]	**[***]**
[***]	**[***]**
[***]	**[***]**
[***]	**[***]**

Where:

[***]

[***]

18.2.1.1 **[***]**

[***]	**[***]**
[***]	**[***]**
[***]	**[***]**
[***]	**[***]**
[***]	**[***]**

Where:

P **[***]**

C [***]

18.2.2 Plus (i) any other amount(s) paid or due including, without limitation, late payment interest due under the Agreement at the effective date of termination, and/or (ii) the price of those Associated Services provided, at CUSTOMER's cost, which have actually been performed as of the date of termination and/or (iii) the amount provided for in Sub-paragraph 8.1.2 of Article 8 hereof.

18.2.3 Termination fees are due by CUSTOMER to ARIANESPACE as of the effective date of termination and payable within THIRTY (30) days of receipt by CUSTOMER of the corresponding invoice from ARIANESPACE. Any amounts paid by CUSTOMER for the Launch concerned in excess of the above termination fees shall be refunded promptly by ARIANESPACE to CUSTOMER and in no event later than THIRTY (30) days from the effective date of termination as provided in Article 18.1.

18.3 Notwithstanding the foregoing, in the event that the aggregate of all postponements requested by ARIANESPACE under Sub-paragraph 11.3 of Article 11 of this Agreement should result in ARIANESPACE delaying a CUSTOMER's Launch under this Agreement by more than **[***]**, then CUSTOMER shall have the right to terminate the Launch concerned (which right cannot be waived except by written notice from CUSTOMER to ARIANESPACE, and shall not be deemed waived by any CUSTOMER conduct), in which case ARIANESPACE shall promptly refund to CUSTOMER all payments made by CUSTOMER for said Launch and in no event later than THIRTY (30) days from the date of termination. [***].

However, postponements resulting from (i) Events of Force Majeure; (ii) any damage caused by CUSTOMER and/or its Associates to the property of ARIANESPACE and/or the property of its Associates; and/or (iii) any bodily injury (including death) caused by CUSTOMER and/or its Associates to ARIANESPACE and/or its Associates shall not be taken into account for the computation of the above mentioned **[***]** period.

[***].

18.4 **[***]**

18.5 **[***]**

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ARTICLE 19 - TERMINATION BY ARIANESPACE

19.1 Except in the case of a disputed payment under Article 10.3.6, in the event that CUSTOMER fails to comply with its payment obligations pursuant to the payment schedule and other payment dates set forth in this Agreement for a Launch under this Agreement, and does not pay within THIRTY (30) days after the date of receipt of a written notice to that effect, ARIANESPACE shall be entitled to terminate the Launch concerned by registered letter with acknowledgment of receipt.

19.2 In the event of termination by ARIANESPACE pursuant to the provisions of this Article 19, the provisions of Paragraph 18.2 of Article 18 of this Agreement shall apply.

ARTICLE 20 - MISCELLANEOUS

20.1 Working language

All documentation provided to CUSTOMER and all communications between the Parties and between CUSTOMER and its Associates on the Launch Base, and between ARIANESPACE and its Associates on the Launch Base with CUSTOMER's personnel and that of its Associates, shall be made in English.

20.2 Notices

Unless expressly provided otherwise under this Agreement, all communications and notices to be given by one Party to the other in connection with this Agreement shall be in writing and in the language of this Agreement and shall be sent by registered mail, and if transmitted by fax or email, shall be confirmed by registered letter to the following addresses (or to such address as a Party may designate by written notice to the other Party):

ARIANESPACE

Boulevard de l'Europe
B.P. 177
91006 Evry-Courcouronnes Cedex
FRANCE

Attention: Directeur Commercial
Phone Nr.: **[***]**
Fax: **[***]**

CUSTOMER

11717 Exploration Lane
Germantown, Maryland 20876
USA

Attention: Jupiter Program Manager
Phone Nr.: **[***]**
Fax: **[***]**

With copy to:

Attention: **[***]**
Phone Nr.: **[***]**
Fax: **[***]**

20.3 Waiver

Waiver on the part of either ARIANESPACE or CUSTOMER of any term, provision, or condition of this Agreement shall only be valid if made in writing and accepted by the other Party. Said acceptance shall not obligate the Party in question to waive its rights in connection with any other previous or subsequent breaches of this Agreement.

20.4 Headings

The headings and sub-headings used in this Agreement are provided solely for convenience of reference, and shall not prevail over the content of the Articles of this Agreement.

20.5 Assignment

No Party shall be entitled to assign its rights and obligations under this Agreement, in whole or in part, without the prior written consent of the other Party, whose consent shall not be unreasonably withheld or delayed.

Notwithstanding the foregoing, CUSTOMER shall be entitled to assign in whole and not in part, its rights, title, interest and to delegate all of its obligations under this Agreement to any Affiliate or third party entity in connection with obtaining financing or to any Affiliate or third party entity that expressly assumes all obligations of CUSTOMER and all terms and conditions of the Agreement, or in connection with a sale of all or substantially all of CUSTOMER's business whereupon the assigning CUSTOMER shall be relieved of liability hereunder as long as CUSTOMER can demonstrate to the reasonable satisfaction of ARIANESPACE that such Affiliate or third party is capable of performing CUSTOMER's obligations under the Agreement as assigned to it, whereupon the assigning CUSTOMER shall be relieved of liability hereunder.

20.6 Entire Agreement and Modifications

This Agreement constitutes the entire understanding between the Parties, and supersedes all prior and contemporaneous discussions between the Parties with respect to the subject matter of this Agreement. Neither Party shall be bound by the conditions, warranties, definitions, statements, or documents previous to the execution of this Agreement, unless this Agreement makes express reference thereto. Any actions subsequent to the execution of this Agreement undertaken pursuant to an agreement shall be in writing and signed by duly authorized representatives of each of the Parties, which agreement shall expressly state that it is an amendment to this Agreement.

20.7 Registration of CUSTOMER's Satellite

CUSTOMER shall be responsible to ensure that the Satellite is properly registered by a state of registry in accordance with the Convention on Registration of Objects Launched into Outer Space of 1974 either (i) directly, if CUSTOMER is a state or the state designated by an international intergovernmental organization for the purposes of registration, or (ii) if CUSTOMER is not a state, through a state having jurisdiction and control over CUSTOMER.

20.8 Counterparts

This Agreement may be signed in any number of counterparts with the same effect as if the signature(s) on each counterpart were upon the same instrument.

ARTICLE 21 - APPLICABLE LAW

This Contract shall be interpreted, construed and governed, and the rights of the Parties shall be determined, in all respects, according to the laws of the State of New York without reference to its conflicts of laws rules other than Section 5-1402 of the New York General Obligations Law. The provisions of the United Nations Convention for the International Sale of Goods shall not be applicable to this Agreement.

ARTICLE 22 - DISPUTE RESOLUTION

22.1 Any dispute, claim, or controversy between the Parties arising out of or relating to this Contract ("Dispute"), including any Dispute with respect to the interpretation, performance, termination, or breach of this Agreement or any provision thereof shall be resolved as provided in this Article 22.

22.2 In the event of any Dispute, the Parties shall use their best efforts to reach an amicable settlement. If an amicable settlement cannot be achieved, the dispute shall be referred to the President of ARIANESPACE and of CUSTOMER, who will use their best efforts to reach a settlement.

22.3. Either Party shall be entitled to forego or terminate prematurely the informal dispute resolution process specified in Article 22.2 and bring suit to settle the Dispute. Any suit brought shall be brought in any court of competent jurisdiction in the State of New York sitting in the Borough of Manhattan, and the Parties hereby waive any objection to that venue and that court's exercise of personal jurisdiction over the case. The Parties hereby irrevocably consent to the exercise of personal jurisdiction by the state and federal courts in the State of New York sitting in the Borough of Manhattan concerning any Dispute between the Parties.

22.4 Nothing in this Agreement precludes a Party that prevails on any claim from initiating litigation in any appropriate forum to enter or enforce a judgment based on the court's award on that claim.

22.5 Pending final resolution of any dispute (including the informal dispute resolution process and litigation), ARIANESPACE shall, unless otherwise directed by CUSTOMER in writing, perform all its obligations under this Agreement, provided that CUSTOMER continues to make undisputed payments as they come due.

ARTICLE 23 - EFFECTIVE DATE

This Agreement shall take effect after signature by the TWO Parties.

Executed in Paris,

On April 30, 2010

In two (2) originals

ARIANESPACE	**CUSTOMER**
Name: Jean-Yves Le Gall	Name: Bob Buschman
Title: Chairman and CEO	Title: Senior Vice President
Date: April 30, 2010	Date: April 30, 2010
Signature: /s/ Jean-Yves Le Gall	Signature: /s/ Bob D. Buschman

PART II

ANNEXES

Commercial in Confidence

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JUPITER

ARIANESPACE

STATEMENT OF WORK

April 2010

Direction Commerciale – April 2010

Part 1
LAUNCH SPECIFICATION

Part 2
ARIANESPACE TECHNICAL COMMITMENTS

Part 3
CUSTOMER TECHNICAL COMMITMENTS

Part 4
DOCUMENTATION AND REVIEWS

Part 5
GENERAL RANGE SUPPORT (GRS) AND OPTIONAL SERVICES

Applicable documents

The following documents form a part of this Statement of Work (SoW) and are applicable. In the event of a conflict with any of the documents listed, the SoW shall take precedence.

- [A] ARIANE 5 User's Manual (MUA 5), Issue 5, Revision 0 (July 2008)
- [B] CSG safety regulations (Volume 2, Part 2) - CSG-RS-22A-CN, Issue 5, Revision 7 (June 2008)
- [C] General specification for payload dynamic models - A5-SG-0-01, Issue 4 (March 2001)
- [D] Technical specification for the payload thermal model - A4-SG-1-26, Issue 3 (October 1992)
- [E] Format for Spacecraft Environmental Test Prediction and Test Report – Documentation for Sine Test Support, LS-SG-1000000-X-001-AE Issue 0, Revision 0 (July 2006) [1]
- [F] General Specification for Radio Compatibility Analysis Input; LS-SG-1000000-X-002-AE Edition 0, Revision 0 (October 2008)

ARIANESPACE reserves the right to modify documents [A] to [F]. Copies of any revised pages shall be forwarded to CUSTOMER as soon as they have been approved for implementation by the Ariane Modification Review Boards. In any case, modification(s) to these documents, which are not part of this annex 1, and which may affect the compatibility of the Spacecraft with the Launch System, and/or impact the mission, will not be applicable without negotiation and prior agreement between the Parties.

Reference documents

A reference document is part of the necessary data base used by CUSTOMER and ARIANESPACE in the course of fulfilling the Launch Service Agreement. This list of reference documents will be completed throughout the project.

- EPCU Manual, Revision V-9.0 (2009)

[1] Document [E] shall be considered applicable as far as it defines comprehensively the contents of the spacecraft environmental test report requested by ARIANESPACE to address the spacecraft qualification for a mission using the Arianespace Launch Vehicles. However, the format specified for such report is not mandatory and shall not be considered applicable.

Part 1

LAUNCH SPECIFICATION

April 2010

st

1. General

The standard characteristics of the Launch Vehicle, Launch Range, Launch Operations, and of the Mission are described in the latest issue of the ARIANE 5 User's Manual, "MUA 5".

2. Principal Characteristics of the Launch

2.1 The Mission

	ARIANE 5
Type of Mission :	**[***]**
Type of Orbit :	**[***]**
Altitude of Perigee :	**[***]**
True altitude @ 1st Apogee :	**[***]**
Inclination :	**[***]**
Argument of Perigee :	**[***]**
	[***]
Separated Mass :	**[***]**
S/C Separation Conditions :	**[***]**

The final Launch Vehicle trajectory will be optimised in the frame of the Final Mission Analysis, taking into account JUPITER and its co-passenger final mass properties, as defined at RAMF – 3 months, where the RAMF is the Final Mission Analysis Review. Should enough performance be available, the optimised trajectory will target improved orbital parameters (e.g. lower inclination), as long as it remains compliant with both satellites and Launch Vehicle constraints.

2.2 Period, Slot, Day of the Launch

The Period, Slot and Day of the Launch are defined according to the provisions of Article 6 of the Terms and Conditions of the Agreement.

2.3 Launch Window

The Spacecraft Launch Window must contain, at least, the ARIANE 5 standard window as specified in the figure 2.7.3.a of the ARIANE 5 User's Manual (MUA5). The Launch must be possible any day of the Period or of the Slot. Any discrepancy between the MUA 5 specified window and the JUPITER window will be treated in the course of the mission integration activities and the parties will cooperate in good faith to achieve its resolution.

Based on the ARIANE reference orbit and time, the preliminary Launch Window will be agreed upon by CUSTOMER and ARIANESPACE at the Preliminary Mission Analysis Review RAM(P).

The final Launch Window, in terms of lift-off time, will be calculated by CUSTOMER and the Co-passenger, respectively, based on orbit parameters at separation taken from the Final Mission Analysis document.

The resulting Combined Launch Window will then be computed by ARIANESPACE.

The Combined Launch Window will be agreed upon by CUSTOMER, the Co-passenger and ARIANESPACE before the Launch Vehicle Readiness Review (RAV). Any further modification is subject to formal agreement between all Parties.

In case of launch postponement after filling operations, the CUSTOMER shall do his best efforts to meet any new launch date set forth by ARIANESPACE.

3. Main Interfaces

All mechanical and electrical interfaces shall be compatible with the Ariane interfaces defined in the MUA 5.

3.1 Mechanical Interfaces

3.1.1 Adapter interface

Adapter Interface:	1194

The Payload Adapter System to be used for JUPITER mission is either PAS 1194VS or PAS 1194C as described in Annex 8 of the MUA 5. The clamp band tension will be defined in accordance with the spacecraft mass and centre of gravity height with respect to the separation plane.

3.1.2 Spacecraft volume

The Spacecraft shall be compatible with the volume available beneath a long fairing and above a SYLDA 5 + 1500 mm, as defined in Figure A5.2 of the MUA 5.

3.2 Electrical and RF Interfaces

ARIANE Standard Umbilical Connectors:

Location	Type
Spacecraft J1	DBAS 70 37 OSN
Spacecraft J2	DBAS 70 37 OSY
Adapter P1 or P5	DBAS 025 8210 37
Adapter P2 or P6	DBAS 025 8214 37

ARIANE services:

Service definition	
Dry Loop command	NO
Electrical command	NO
Power supply	NO
Pyrotechnic command	NO

In case of RF interference with another spacecraft, the CUSTOMER accepts, at ARIANESPACE request, to consider a 50/50% time sharing agreement.

4. Environmental conditions

Environmental conditions are as described in Chapter 3 of the ARIANE-5 User's Manual (MUA 5), except for the applicable shock environment in Section 3.2.6.

[***]

Axial Shock		Radial Shock	
Frequency (Hz)	SRS Levels (g's Peak)	Frequency (Hz)	SRS Levels (g's Peak)
[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]
		[***]	[***]

[***]

5. Modification to the Applicable Documents

The following modifications have been brought to the applicable documents in the frame of this Statement of Work.

Technical specification for the payload thermal model - A4-SG-1-26 Issue 3

- The number of thermal nodes used to represent the spacecraft may be increased from [***].

Part 2

ARIANESPACE TECHNICAL COMMITMENTS

April 2010

ARIANESPACE shall provide the following Launch services using the ARIANE 5 Launch Vehicle as described in the latest issue of the User's Manuals.

- Overall Launch Service management
- Launch Vehicle hardware and software supply
- Mission analysis
- Launch Vehicle Operations
- Launch site CUSTOMER support as described in Part 5
- Documentation and meeting as described in Part 4

Additions to the deliverables in this annex 1 are possible, subject to negotiations and additional order(s) from the CUSTOMER as listed in Part 5.

1. Launch Service management

ARIANESPACE shall provide overall management for the Launch services as described in MUA 5. The ARIANESPACE Program director will be the single point of contact between the CUSTOMER and ARIANESPACE.

General Contract Management	Contract amendments, payments, planning, configuration control, documentation, reviews, meetings, co-passenger management if any), etc…
Launch Vehicle Production including quality plan	Test, acceptance, …
Mission Analysis	
Launch Base Operations	
Ground and Flight Safety	Interface with CSG for Safety Submissions

2. Launch Vehicle Hardware and Software Supply

ARIANESPACE shall supply the Hardware and Software to carry out the Mission, complying with mission/launcher requirements as defined in part 1.

2.1 Launch Vehicle Hardware

Launch Vehicle

Launch Vehicle Propellants

2.2 Launch Vehicle Payload Compartment

Fairing or Dual Launch Support Structure	As defined in chapt.3.1.2 of Part 1
Spacecraft Adapter	As per chapt.3.1.1 of Part 1, including the corresponding separation system
Passive Repeater	[***]
Access Doors	[***]
1 Mission Logo (2 identical stickers, 2m x 2m)	Artwork to be supplied at L – 6 months by customer

2.3 Fight Software

One Flight Program

2.4 Miscellaneous

Spacecraft side Adapter Interface Umbilical Connectors	As defined in chapt.3.2 of Part 1
Cannon Connectors	
2 Check-Out Terminal Equipment (COTE) Racks (if required)	Compatible with the ARIANE 5 launch Table

3. Systems Engineering

ARIANESPACE shall provide the systems engineering as described hereunder.

INTERFACE MANAGEMENT

Interface Control Document (DCI) configuration control		

MISSION ANALYSIS

Trajectory, Performance and Injection Accuracy AnalysisŒ	Prelim.	1
	Finalv	1
Separation Analysis (Clearance, Kinematics, Collision Avoidance)	Prelim.	1
	Finalv	1
Dynamic Coupled Loads Analysis (CLA)	Prelim.	1
	Finalv	1
Electromagnetic and Radio-Frequency Compatibility Analysis	Prelim.	1
	Finalv	1
Thermal Analysis	Finalv	1

SPACECRAFT DESIGN COMPATIBILITY VERIFICATION SUPPORT

Support for S/C Environmental Tests		

POST-LAUNCH ANALYSIS

S/C orbital parameters & attitude date from L/V telemetry (at S/C Separation)		
Launch Evaluation Report [DEL]		

Œ The spacecraft orbital parameters at separation are provided as part of this analysis.

v Final analysis are carried out with the final flight configuration

4. Operations

ARIANESPACE shall supply the following on the Launch Campaign as listed hereunder.

Launch Vehicle Operations	All operations without the S/C
Combined Operations (POC)	Assembly, integration and checkout of S/C on Launch Vehicle flight structures (adapter, Sylda, fairing, VEB…)
Countdown Rehearsal	At [***] days Operational rehearsal with participation of Spacecraft(s) and Launch Vehicle, countdown sequence training with simulated flight sequence (activation of all Launch base resources)
Countdown Execution:	Up to Lift-Off

The ARIANESPACE Launch site CUSTOMER support for Spacecraft operations as well as the ARIANESPACE optional services are described in Part 5.

The ARIANESPACE responsibility for documentation and meetings is described in Part 4.

Part 3

CUSTOMER TECHNICAL COMMITMENTS

April 2010

1. General

To allow ARIANESPACE to timely prepare the Launch, the CUSTOMER shall make available technical data and documentation, a comprehensive overview of Spacecraft production planning, the Spacecraft and associated means as defined in the ARIANE 5 User's Manual (MUA 5).

CUSTOMER shall ensure that the Spacecraft meets the requirements expressed in Part 1.

As the Launch site, CUSTOMER and its subcontractors shall manage and perform all Spacecraft activities relative to the Spacecraft preparation for Launch.

The CUSTOMER responsibility for documentation and meetings is described in Part 4.

2. Hardware supply

Spacecraft Hardware	
Spacecraft Propellants	
Spacecraft Simulator	Representative of the Spacecraft electrical systems in interface with the Launch System. Used for electrical validations during fit-check, if any, and launch campaign.
Mechanical and Electrical Ground Support Equipment	As required to operate the Spacecraft on the launch site (with the execution of those temporarily or permanently provide by ARIANESPACE as listed in the GRS – see Part 5)

Two sets of ground harness will be required to connect CUSTOMER's Check-Out Terminal Equipment (COTE) to the spacecraft or spacecraft simulator for electrical validations performed during combined operations.

3. Schedule Obligations

Depending on the Launch configuration, the Spacecraft shall be made available to ARIANESPACE for the Combined Operations with the Launch Vehicle [***] working days prior to the Launch, at the latest. The applicable date will be defined in the Combined Operations Plan (P.O.C.) approved by the CUSTOMER.

The Spacecraft check-out equipment and the ARIANE 5 specific COTE (Check Out Terminal Equipment) necessary to support the Spacecraft/Launch Vehicle on-pad operations shall be made available to ARIANESPACE, and validated, two days prior to operational use according to the approved POC, at the latest. The Spacecraft check-out equipment and the ARIANE 5 specific COTE (Check Out Terminal Equipment) will be available for removal from the launch table between

one working day (COTE compliant with an horizontal position handling capability) to three working days after launch (COTE not compliant with a horizontal position handling capability).

All Spacecraft mechanical & electrical support equipment shall be removed from the various EPCU buildings & A5 Launch Table within [***] working days after the Launch, packed and made ready for return shipment.

4. Spacecraft Propellants and Hazardous Products

Spacecraft propellants are provided by the CUSTOMER and his subcontractors. The spacecraft propellants will be delivered to the CSG at the earliest [***] before and at the latest [***] before the Spacecraft launch campaign.

The CUSTOMER and its subcontractors are responsible for the transport of the propellants to the CSG in compliance with the International Maritime Dangerous Goods (IMDG) rules.

Disposal of hazardous products is not authorised and wastes must be repatriated by the CUSTOMER after the campaign. The residual propellants and hazardous products must be shipped back within one month after the launch Campaign.

Part 4

DOCUMENTATION AND REVIEWS

April 2010

1. Documentation

The description of main documentation to be issued by CUSTOMER and ARIANESPACE in order to prepare the mission can be found in the MUA 5.

1.1 DUA

In accordance with the MUAs, the CUSTOMER will issue the **Application to Use ARIANE (DUA)**, which contains the essential requirements and information for the correct execution of the Launch Service. The DUA can be provided under the form of a Spacecraft Interface Requirements Document (IRD) or a redlined Interface Control Document of a previous LS1300 program launched by ARIANE 5ECA.

1.2 DCI

ARIANESPACE will issue the **Interface Control Document (DCI)** between the Spacecraft and the Launch System. The DCI will be maintained under formal Configuration Control until the Launch, and becomes the unique working document for all technical interfaces between the Spacecraft and the Launch System.

The **DCI Issue 0**, based on the DUA, will be prepared and released before the Preliminary Mission Analysis Review (RAMP).

The **DCI Issue 1**, will be prepared and released after the Preliminary Mission Analysis Review (RAMP).

The **DCI Issue 2**, specific to each Spacecraft Launch, will be prepared and released after the Final Mission Analysis Review (RAMF).

1.3 Systems Engineering Documentation

The CUSTOMER and ARIANESPACE will issue input and output data related to the Mission, the Qualification and Acceptance process of the Spacecraft, Operations and Safety, respectively. These documents (as described in tables hereunder) are intended to:

- Specify the mission Requirements
- Demonstrate the compatibility of the ARIANE 5 mission with the CUSTOMER requirements.
- Demonstrate the compatibility of the Spacecraft with the ARIANE 5 flight environment and specifications.

The timely availability and validity of such documentation, especially Mission Analysis Inputs, is essential for the preparation of the Launch.

The documentation deliverables between ARIANESPACE and CUSTOMER are summarized in the following paragraphs. Except where otherwise specified, “L” (in months) represents [***] .

1.4 Documentation to be issued by Customer

Customer shall deliver to ARIANESPACE the documentation listed in the table hereunder. Any changes to these requirements shall be agreed by the Parties, shall be documented through the milestones list or meetings minutes and will not require a change to these Statements of work.

Ref.	Document	Date	Arianespace Action
1	Applications to use Ariane DUA	[***]	R
	Safety Submission Phase 1	[***]	A
2	S/C Dynamic model (preliminary)	[***]	R
	According to SG-0-01		
3	Safety submission Phase 2	[***]	A
		[***]	
		[***]	
4	S/C mechanical environment Test plan	[***]	A
5	S/C thermal model according to SG-1-26	[***]	R
6	S/C Launch Operations Plan (POS)	[***]	R
7	S/C Dynamic model (final) according to SG-0-01	[***]	R
8	Updated S/C data for final mission analysis	[***]	R
9	S/C operations procedures applicable at CSG, including Safety Submission Phase 3	[***]	A
10	Environmental Testing : Instrumentation plan, notching plan, test prediction for Sine test according LS-SG-1000000-X-001-AE	- ⏲	A
11	Environmental Testing : Instrumentation plan, test plan for Acoustic test according LS-SG-1000000-X-001-AE	- ⏲	A
12	S/C final Launch window	[***]	
13	S/C mechanical environment tests results according to LS-SG-1000000-X-001-AE	- Ž	A
14	Final SC/mass properties⏲	- ⏲	R
15	Orbital Tracking report (orbit parameters and attitude at separation)	[***]	I

Œ A ⇨ Approval ; R ⇨ Review; I ⇨ Information

⏲ [***]

Ž [***]

⏲ Including S/C wet mass, S/C dry mass, propellant mass break down

⏲ [***]

1.5 Documentation to be issued by ARIANESPACE

ARIANESPACE shall deliver to Customer the documentation listed in the table hereunder. Any changes to these requirements shall be agreed by the Parties, shall be documented through the milestones list or meetings minutes and will not require a change to these Statements of work.

Ref.	Document	Date	Customer Action	Remarks
1	Interface Control Document (DCI):			
	Issue 0	[***]	R	
	Issue 1, rev 0	[***]	A	After RAMP
	Issue 2, rev 0	[***]	A	After RAMF
2	Preliminary Mission Analysis Documents	[***]	R	
3	Final Mission Analysis Documents (including Final CLA and Thermal Analysis report)	[***]	R	
4	Interleaved Operations Plan (POI)	[***]	R	At RAMF
5	Combined Operations Plan (POC)	[***]	A	
6	Countdown sequence	[***]	R	
7	Safety Statements :			
	Phase 1 reply	[***]	R	
	Phase 2 replies	[***]	R	
	Phase 3 reply	[***]	R	
8	Injection Data (orbital parameters and attitude data prior to separation)	[***]		
9	Launch Evaluation Document (del)	[redacted]		

Œ A ⇨ Approval ; R ⇨ Review; I ⇨ Information

[redacted] [***]

2. Meetings

2.1 Interface Meetings

The CUSTOMER and ARIANESPACE agree to meet as necessary to allow for good and timely execution of all activities related to the preparation of the Launch. A guideline is presented in following Table 1.

The responsible managers of the CUSTOMER and ARIANESPACE shall agree exact dates, locations, agendas and participation upon sufficiently in advance, on a case by case basis.

For all meetings taking place at the CUSTOMER's contractor premises, the CUSTOMER will obtain necessary clearance for ARIANESPACE and their nominated contractor(s) personnel. Similarly, ARIANESPACE will obtain clearances for Customer(s) and Customer Contractor(s) personnel for meetings/Visits at ARIANESPACE and its Contractor(s) premises.

It is understood that during the interface meetings, a review of contractual and general management items will be performed, i.e. planning, milestones, changes, financial matters as applicable. The CUSTOMER and ARIANESPACE will be free to invite their contractors to the interface meetings.

2.2 Launch Vehicle Standard Reviews

The CUSTOMER will be invited to the following Launch Vehicle Reviews:

- Launch Vehicle Flight Readiness Review (**RAV**) [***] .
- POC Readiness Review (**BT POC**) [***] .
- Launch Readiness Review (**RAL**) at [***] .
- Immediate Post Flight Review (**CRAL**) at [***]

The review documentation will be handed out to the CUSTOMER at each of these reviews.

2.2.1 Launch Vehicle Flight Readiness Review (RAV)

This review is performed about [***] before the Launch and allows ARIANESPACE Management to authorise the start of the Launch Vehicle campaign. CUSTOMER is formally invited to attend.

The review is co-chaired by the ARIANE Production Project Manager (CPAP) and the Launch Campaign Quality Director (CQCL).

At that time, all flight hardware i.e. stages, vehicle equipment bay, upper composite structures (including fairing and adaptors), are reviewed, through comprehensive documentation (available at ARIANESPACE). The documentation covers, but is not limited to, hardware identification performance test results and major waivers, anomalies and failures during tests, life limitations, on-going production status of same equipment, etc… The Payload status is also presented (mission, flight program, waivers, etc…).

The RAV documentation will be made available to CUSTOMER during the review.

2.2.2 POC Readiness Review (BT POC)

This review is performed before the start of the Combined Operations (POC). It allows ARIANESPACE Management to authorise the start of the Combined Operations (POC) between the Launch Vehicle and the Spacecrafts. The CUSTOMER is required to provide a Spacecraft readiness status to start the POC activities.

The review is chaired by the Ariane Mission Director (CM) and it covers the readiness status with respect to the POC activities for:

- The Launch Vehicle, (including RAF debriefing),
- The Ariane Launch Complex (ELA),
- The Spacecraft.

All participants to the Review receive a comprehensive set of summary documents presenting the readiness status of all the parties.

The Launch Vehicle Functional Review (RAF) is an internal ARIANESPACE review of the Launch Vehicle status before the transfer of the Launch Vehicle to the BAF.

2.2.3 Launch Readiness Review (RAL)

This review takes places at the launch site at [***] . It allows ARIANESPACE Management to authorize the transfer of the Launch Vehicle from the Final Assembly Building to the Launch pad and to start filling operations and final countdown. CUSTOMER is requested to attend and confirm Spacecraft readiness for flight.

A **pre-RAL** meeting will be organised by ARIANESPACE prior to that actual review in order to:

- Inform the CUSTOMER of the significant items that will be presented in the RAL,
- Provide any additional clarification that may result from previous written questions raised by the CUSTOMER.

The review is co-chaired by the ARIANE Production Project Manager (CPAP) and the Launch Campaign Quality Director (CQCL).

It covers the launch readiness of:

- The Launch Vehicle
- The Ariane 5 Launch Complex (ELA),
- The Launch Base (CSG)
- The Spacecraft and its associated ground support network.

All participants to the Review receive a comprehensive set of summary documents presenting the readiness status of all the parties.

No further presentation meeting, dealing with the RAL content, will be organised after the RAL has authorised to proceed with the Launch Vehicle filling operations.

Nevertheless, in the event of significant anomalies occurring after the RAL, necessary meetings may be organised.

2.2.4 Immediate Post Flight Review (CRAL)

This review is performed the day after the Launch. ARIANESPACE provides the first flight data evaluation after the flight.

The CUSTOMER is invited to attend and provide the Spacecraft status after separation and acquisition by the ground stations.

2.3 Spacecraft Reviews

ARIANESPACE wishes to be invited to attend the Spacecraft Qualification / Acceptance / Flight readiness and/or Pre-shipment Review.

2.4 Launch Vehicle campaign meetings at the Launch Base

During the Launch Vehicle Campaign, CUSTOMER is invited to attend the daily Launch Vehicle BAF Campaign meetings. These meetings are held in French.

In case of a major anomaly or incident, a specific dedicated meeting is organised with the Launch Vehicle and Quality authorities to understand the anomaly or incident, and to set up a corrective action plan.

2.5 Quality Reporting

Quality in Production, Operations and Organization has been given a top priority, directly driven and monitored by the General Management of ARIANESPACE.

The ARIANESPACE QUALITY MANUAL translates this commitment in terms of operating principles, method and functioning rules.

The information given to the CUSTOMER is subject to the confidentiality provisions described in Article 16 of the Launch Service Agreement.

2.5.1 Quality Meetings

See optional service: E10

2.5.2 Failure Reporting

All non conformances and incidents are processed in accordance with the ARIANESPACE QUALITY MANUAL. Any incident during integration or test is registered in the log book of the equipment concerned.

Assessment of incidents is performed systematically by the services of the industrial Prime-Contractor and by the Industrial Architect.

In case of significant anomalies, visits to main contractor facilities may be organized, if necessary.

Significant incidents are also reported systematically during RAV and RAL reviews.

2.5.3 Reliability

Reliability predictions are continuously updated, taking into account any new data or configuration changes.

Reliability information is made available to CUSTOMER during reviews.

2.6 Support for Insurance

ARIANESPACE will provide its support to the Customer for launch activities related questions (pre launch or post launch, if, as, and when required) raised by the insurance community.

ARIANESPACE may attend and provide support for Customer presentations for the insurance community.

2.7 Quarterly Progress Reports and Meeting

Arianespace may prepare Quarterly Progress Meetings that shall be convened quarterly and attended by representatives from the Customer and ARIANESPACE.

Arianespace shall provide for these meetings Quarterly Progress Reports that contain an overall program review and an overview of the Spacecraft integration activities, such as the review of the master schedule, approval of program documentation, review of all outstanding action items, and action item closures since the previous meetings/reviews. The Quarterly Meeting could be combined with other meetings or may be organized through Conference calls.

Table 1 – ARIANESPACE/CUSTOMER – Interface Meeting Schedule

A typical content of the different reviews are described below, the description of the reviews below is not exhaustive and is susceptible to modification, after agreements between the parties. Any changes to the contents below listed will not require a change to the SOW.

N°	Titre	Date	Object,	Place
1	**Contractual Kick-off Meeting:**	[***]	M-E	C
	Project management – project milestones – organisation – security an confidentiality aspects – communications protocol			
2	**DUA Review:**	[***]	M-E-O-S	E
	Review of the Spacecraft characteristics and requirements			
3	**Mission Analysis Kick-off:**	[***]	M-E-O-S	C or W
	Presentation of the ARIANE mission analysis computations and methods			
	Review of Safety Submission Phase 1			
	First review of the DCI Issue 0 Revision 0			
4	**Prelim. Mission Analysis Review (RAMP):**	[***]	M-E-O-S	E
	Trajectory – performance – separation – dynamic environment – EMC environment			
	Review of Safety Submission status			
	DCI review			
5	**DCI Signature issue 1/revision 0**	[***]	M-E-O	E ou C
6	**Preparation of S/C Operations Plan (POS)**	[***]	M-O-S	K or C
	Launch base facilities visit – Satellite Operations Plan (POS) – CSG support – Telecommunications network - Safety submission phases 1 and 2			
	DCI review (chapters 7 and 8)			

7	**Review of S/C Operations Plan (POS)** Launch base facilities visit – transport and logistics –Satellite Operations Plan (POS) – Interleaved Operations Plan (POI) – Combined Operations Plan (POC) – telecommunications network Safety submission phases 1 and2 DCI review (chapters 7 and 8)	[***]	M-O-S	K
8	**Security Review**	[***]	M-O-S	K
9	**Final Mission Analysis Review (RAMF):** Trajectory – performance –separation – thermal – dynamic environment – EMC environment – authorisation to start the flight program production – Spacecraft qualification status DCI review	[***]	M-E-O-S	E
10	**Final Campaign Preparation Meeting:** Campaign preparation status - Satellite Operations Plan (POS) – Interleaved Operations Plan (POI) – Combined Operations Plan Safety submission status DCI review (chapters 7 and 8)	[***]	M-O-S	E
11	**DCI Signature issue 2 Revision 0:**	[***]	M-O-S	E, C or K
12	**Range Configuration Review:** Review of the range facilities used for the Spacecraft campaign at the start of the campaign	[***]	M-O-S	K
13	**POC Readiness Review:** Launch Vehicle and Launch system status Spacecraft status	[***]	M-0-S	K

Œ Meeting target dates are given, taking into account the respective commitments of both parties for the delivery of the documentation as described in this annex 1 parts 2 & 3

Dates are given in months, relative to L, where L is the first day of the latest agreed Launch period or Slot, as applicable.

[***] M ⇨ Management; E ⇨ Engineering; O ⇨ Operations; S ⇨ Safety

Ž E ⇨ Evry ; K ⇨ Kourou; C ⇨ CUSTOMER HQ; W ⇨ Contractor Plant

[***] [***]

[***] [***]

Part 5

GENERAL RANGE SUPPORT (GRS) AND OPTIONAL SERVICES

April 2010

1. General Range Support

The General Range Support provides the CUSTOMER, on a lump sum basis, with a number of standard services and standard quantities of fluids (see List hereafter). Request(s) for additional services and/or supply of additional fluids exceeding the scope of the GRS can be accommodated, subject to negotiation between ARIANESPACE and the CUSTOMER.

Technical Definitions are in the MUA. Further technical details and data can be found in the EPCU Manual.

Except where otherwise specified, “L” (in months) represents the first day of the latest agreed Launch Period, or Slot, as applicable.

Campaign durationŒ	Price (k€)	Terms
[***]	[***]	

Œ From S/C and associated equipment arrival in French Guiana up to the S/C hand over to Arianespace.

Note that the prices quoted in the GRS do not include spacecraft storage periods due to delays incurred by the Spacecraft or any other unforeseen extension of the planned launch campaign duration caused by the Spacecraft. Situations such as these will be discussed in good faith by ARIANESPACE and CUSTOMER to agree on how to share any additional cost. For greater clarity, the Jupiter spacecraft will be stored at no cost to CUSTOMER if the launch delays are caused by ARIANESPACE or the co-passenger.

1.1 Transport Services

CUSTOMER Personnel & Luggage	Transport from and to Rochambeau Airport and Kourou at arrival and departure, as necessary.
Spacecraft & Equipment Transport Œ ⏲	Subject to advanced notice and performed nominally within normal CSG working hours (2 shifts of 8 hours per day, between 6 am and 10 pm from Monday to Friday). Availability outside normal working hours, Saturdays, Sundays, and public holidays subject to negotiations, to advance notice and to agreement by the local authorities. From Cayenne to CSG and return. Various freight categories (standard, hazardous, fragile, oversized loads, low speed drive, etc…) Limited to 26 10 ft pallets (or equivalent) in one shipment (plane or vessel)
Spacecraft Inter-Site Transport ⏲	All CSG inter-site transports of the Spacecraft either inside the S/C container, the ARIANE Payload Container (CCU) or encapsulated inside the Launch Vehicle Composite.
Inter-Site Equipment Transport ⏲	All CSG inter-site transports of CUSTOMER equipment.
Logistics Support	Support for shipment and customs procedures for the Spacecraft and its associated equipment, and for personal luggage and equipment transported as accompanied luggage.

Œ **The following is included in the Transport Service :**

Coordination of loading/unloading activities

Transport form Rochambeau Airport and/or Degrad-des-Cannes harbour to CSG

Return to Airport/Harbour 3 working days after Launch

Depalletisation of Spacecraft Support Equipment on arrival to CSG, and dispatching to the various working areas.

Palletisation of Spacecraft Support Equipment prior to departure from CSG to Airport/Harbour,

All work associated with the delivery of freight by the Carrier at Airport/Harbour,

CSG Support for the installation and removal of the Spacecraft Check-Out Equipment.

The following is NOT included in the Transport Service :

The “octroi de mer” tax on equipment permanently imported to Guyana, if any.

Insurance for Spacecraft and its associated Equipment.

The maximum temperature to which containers and packing may be exposed during any transport is 35°C.

1.2 Payload Preparation Facilities

The Payload Preparation Complex, with its personnel for support, may be used simultaneously by several customers. Specific facilities are dedicated to the CUSTOMER on the following basis:

Range Operations	Normal working hours are based on 2 Shifts of 8 hours per day, between 6:00 am and 10:00 pm from Monday to Friday and, for non hazardous operations, on Saturday	
	Work shifts out of normal working hours, Sunday or Public Holiday or for hazardous operations on Saturday are possible, but subject to negotiations and agreement of Local Authorities. (No shifts on Sunday and Public Holiday in hazardous zone)	
EPCU Facilities Standard Conditions for Temp. and relative Humidity are defined in the ARIANE 5 User’s Manual MUA 5	Spacecraft Preparation (Clean Room)	350 m2
	Filling Hall	Dedicated
	Lab for Check-out Stations (LBC)	110 m2
	Offices and meeting rooms	250 m2
Access to the EPCU area	Restricted to authorised personnel only, permanently controlled by Range Security.	
	Access to offices, checkout stations, and clean rooms, is controlled through dedicated electronic card system and keypad locks.	

	Clean rooms are permanently monitored by a CCTV camera
Access outside normal Working Hours	Access to Offices and LBC beyond normal working hours is authorized. Access to the clean rooms beyond normal working hours is authorized with the following restrictions : - Advanced notice - No Range Support provided - No hazardous operations or external hazardous constraints - Crane utilisation only by certified personnel - No changes to the facilities configuration
Schedule Restrictions	Launch Campaign Duration Extension is possible, but is subject to negotiations. Spacecraft ground equipment must be ready to leave the range within 3 working days after the Launch. Transfer of S/C and its associated equipment to the spacecraft filing facilities normally no earlier than [***] before start of POC. After S/C transfer to spacecraft filling facility, and upon request by ARIANESPACE, the Spacecraft Preparation Clean room may be used by another S/C. Evacuation of equipment from clean room 24H after departure of S/C
Access to the EPCU area	As described in EPCU Manual.
No Break Power Supply	LBC 30 kVA Spacecraft Filling Building (Hazardous Preparations Facilities or HPF) 20 kVA Launch Pad & BAF 20 kVA
Calibration Equipment	As described in EPCU Manual
Storage	Any storage of equipment during the Campaign Propellant storage provided for a duration starting two months before the campaign until one month after Launch.

1.3 Communication Links

The following communication services between the different Spacecraft preparation facilities will be provided for the duration of a standard campaign (including technical assistance for connection, validation and permanent monitoring):

Service	Type	Remarks
RF - Link	S/C/Ku band	1 TM / 1TC through optical fiber
Baseband Link	S/C/Ku band	2 TM / 2TC through optical fiber
Data Link	Romulus Network, V11 and V24	For COTE monitoring & remote control
Ethernet	Planet Network, 10 Mbits/sec	3 VLAN ⏱
Umbilical Link	Copper lines	2x37 Pins for S/C umbilical & 2x37 Pins for Auxiliary Equipment (as per MUA 5 §5.5)
Internet	ADSL	3 connections ⏱
Closed Circuit TV		As necessary
Intercom System		As necessary
Paging System		5 beepers ⏱
CSG Telephone		As necessary
International Telephone Links Œ	With Access Code	As necessary
ISDN (RNIS) links	Subscribed by CUSTOMER	Routed to dedicated CUSTOMER’s working zone
Facsimile in offices Œ		2
Video Conference Œ	Shared with other users	As necessary

Œ Traffic to be paid, at cost, on CSG invoice after the campaign.
⏱ To be shared between the Customer and his subcontractors

1.4 Analyses

Service	Type	Remarks
Chemical Analyses	Propellant except Xenon	[***]
	Gas & fluids particles	[***]
	Clean room organic deposit	Continuous, one weekly report
Particle Count	Clean Room monitoring	Continuous, one weekly report

1.5 Operations

Service	Type	Remarks
S/C Weighing	Weighing performed by CSG (equipment and personnel)	[***]
	Calibrated weights	Available as necessary
Adaptor Fit Check	Mechanical and / or electrical	[***]
		Included in price is the mechanical fit-check at spacecraft arrival in Kourou and electrical verification (no spacecraft power-up)

1.6 Fluid Deliveries

Fluid	Type	Quantity
GN2	NSO dedicated local network	As necessary available at 190 bar
GHe	NSS dedicated local network	As necessary, available from 20 bars up to 360 bars with steps of 20 bar
LN2		As necessary
IPA	MOS-SELECTIPUR	As necessary
Water	Demineralised	As necessary

Any requirement different from the standard fluid delivery (different fluid specification or specific use) is subject to negotiation.

1.7 Additional Services

No-break power	10 UPS 1.4KVA at S1 or S5 offices for CUSTOMER PCs
Campaign Secretary Œ	Included in price
Copy machines	2 in S1 or S5 Area (1 for secretarial duties, 1 for extensive reproduction); paper provided
Technical photos	[***]

Video transmission	[***]
Launch Campaign DVD	Launch Campaign and Launch coverage

Œ Bilingual (English – French)

1.8 Miscellaneous

Room Reservation	Recommended in Kourou Hotels at CUSTOMER's request (cancellation charges, if any, under CUSTOMER's responsibility), through Free-Lance Service support.
CUSTOMER and S/C contractor assistance	For other housing, rental cars, flight reservations, banking, off duty & leisure activities through Free-lance service support.

2. Options price Catalogue

In addition, the following options may be ordered by the Customer:

Prices are given in thousands of Euro (k€), on a firm fixed price basis, for 2009.

Optional Services	Ref. #	Price (k€)	Latest date for option request (in months)
A – Launch Vehicle Hardware			
Redundant pyrotechnic command delivered by VEB to Spacecraft system (one triple command, current > 3A or > 5A)	A 10	[***]	[***]
Redundant electrical command delivered by VEB to spacecraft (One)	A 11	[***]	[***]
Dry loop command delivered by VEB to spacecraft (one)	A 12	[***]	[***]
Spacecraft GN_2, purge	A 13	[***]	[***]
Specific access door	A 14	[***]	[***]
RF transmission through the payload compartment (either RF window or SRP)	A 15	[***]	[***]
Non standard SYLDA +2100	A 16	[***]	[***]
MFD shock damping device	A 17	[***]	[***]

Optional Services	Ref. #	Price (k€)	Latest date for option request (in months)
B – Mission Analysis			
Any additional Mission Analysis study or additional flight program requested or due to any change induced by CUSTOMER :			
Preliminary CLA	B 10	[***]	[***]
Preliminary trajectory and separation	B 11	[***]	[***]
Preliminary EMC	B 12	[***]	[***]
Final CLA	B 13	[***]	[***]
Final trajectory and separation	B 14	[***]	[***]
Final EMC	B 15	[***]	[***]
Thermal analysis	B 16	[***]	[***]
Flight program	B 17	[***]	[***]
RAMP at Customer/Satellite manufacturer’s premises	B18	[***]	[***]

Optional Services	Ref. #	Price (k€)	Latest date for option request (in months)
C – Interface Tests			
Note: Any loan or purchase of equipment (adaptor, clamp-band, bolts, separation pyro set) can be envisaged and is subject to previous test plan acceptance by ARIANESPACE.			
Fit-check (mechanical/electrical) with ground test hardware at CUSTOMER premises, including:	C 10	[***]	[***]
Loan of :			
Flight standard adaptor, mechanically and electrically equipped			
Flight standard separation system			
Set of ground bolts			
Associated ground support equipment			
ARIANESPACE support for interface test (4 days max.).			
For a Fit Check out of Europe, Arianespace provides the equipment CIP (Cost Insurance Paid) airport destination.			
For a fit check out of Europe, the CUSTOMER is responsible for :			
• Equipment reception/delivery at airport from/to the transport company			
• Customs clearance			
• Transport between airport and Fit Check premise (and back)			
Fit-check (mechanical/electrical) with ground test hardware in Kourou, including:	C 11	[***]	
Loan of :			
Flight standard adaptor, mechanically and electrically equipped			
Flight standard separation system			
Set of ground bolts			
Associated ground support equipment			
Fit-check (mechanical/electrical) with ground test hardware and Shock test (one of) at CUSTOMER premises, including**:**	C 15	[***]	[***]
Loan of :			
Flight standard adaptor, mechanically and electrically equipped			
Flight standard separation system			
Set of ground bolts			
Set of clamp-band catchers			
Associated ground support equipment			
Pyrotechnic test hardware			

Spares

Supply of consumable material for one test (separation system) :

Set of igniters

Set of bolt cutters

Set of flight bolts

Set of clamp-band catchers

ARIANESPACE support for interface test (4 days max.).

For a Fit Check out of Europe, Arianespace provides the equipment CIP (Cost Insurance Paid) airport destination.

For a fit check out of Europe, the CUSTOMER is responsible for:

- Equipment reception/delivery at airport from/to the transport company
- Customs clearance
- Transport between airport and Fit Check premise (and back)

Optional Services	Ref. #	Price (k€)	Latest date for option request (in months)
D – Range Operations and services			
Campaign extension above contractual duration			
Per day :	D 10	[***]	[***]
Additional shipment of spacecraft support equipment from Cayenne to CSG, one way (see conditions in the General Range Support description): One trailer for 1 to 3 ten feet pallet or container per trailer.	D 11	[***]	[***]
Extra working shift for S/C and equipment arrival			
Per shift (8 hours) :	D 12	[***]	[***]
Extra working shift, before beginning of hazardous HPF operations :			
Per shift (8 hours) :	D 13	[***]	[***]
Extra working shift, after beginning of hazardous HPF operations :			
Per shift (8 hours) :	D 14	[***]	[***]
Chemical analysis for propellant except Xenon	D 15	[***]	[***]
Chemical analysis for Gas & particles	D 16	[***]	[***]
Spacecraft weighing	D 17	[***]	[***]
Campaign Secretary Œ	D 18	[***]	[***]
Technical photos	D 19	[***]	[***]
Film processing	D 20	[***]	[***]
Transmission of TV Launch coverage to Paris	D 21	[***]	[***]
Transmission of TV Launch coverage to the point of reception requested by CUSTOMER	D 22	[***]	[***]
Additional CSG Site Survey	D 23	[***]	[***]

Œ Bilingual (English – French)

Optional Services	Ref. #	Price (k€)	Latest date for option request (in months)
E – Quality & Periodic Progress Reporting			
Quality Reporting	E 10	[***]	[***]
A dedicated access right and adequate visibility on the Quality Assurance (QA) system can be given through the steps listed below :			
Quality System Presentation			
A Quality System Presentation (**QSP**) is included in the agenda of the contractual Kick-off Meeting. This general presentation explicitly reviews the Product Assurance provisions defined in the ARIANESPACE QUALITY MANUAL.			
Quality Status Meeting:			
A specific Quality Status Meeting (**QSM**) may be organized about 12 months before the Launch with special emphasis on major Quality an Reliability aspects (including failure reporting), relevant to the CUSTOMER Launch Vehicle batch. In addition, visits to main contractor facilities may be organized, if necessary.			
Quality Status Review			
A Quality Status Review (**QSR**) may be organized about four months before the Launch to review the CUSTOMER Launch Vehicle hardware.			
In the same time frame, and if necessary, special assistance is provided to the CUSTOMER to facilitate his understanding of the ARIANE Quality Documentation that builds up progressively.			
Support for Customer Insurance presentations	E20	[***]	[***]
Attendance and provide support by ARIANESPACE for Customer presentations for the insurance community			
Quarterly Progress Meetings	E30	[***]	[***]
Arianespace shall provide for these meetings Quarterly Progress Reports that contain an overall program review and an overview of the Spacecraft integration activities, such as the review of the master schedule, approval of program documentation, review of all outstanding action items, and action item closures since the previous meetings/reviews. The Quarterly Meeting could be combined with other meetings or may be organized through Conference calls.			
The information given to the CUSTOMER is subject to the confidentiality provisions described in Article 16 of the Agreement.			

Optional Services	Ref. #	Price (k€)	Latest date for option request (in months)
F – Miscellaneous			
Shock compatibility analysis		[***]	[***]
Specific ventilation ground support equipment for Satellite ventilation through the fairing		[***]	[***]
Satellite storage		[***]	[***]
Propellant storage beyond the contractual obligations		[***]	[***]

o

3. Options ordered by the Customer

In addition to the deliverables in the GRS, the following options have been ordered by the Customer:

Prices are given in thousands of Euro (k€), on a firm fixed price basis, for 2009.

Optional N°	Item	Price (k€)	Terms of Payment
.			

ANNEX 2

E.S.A./ARIANESPACE Arrangement (Extract)

Certain European Governments, members of the European Space Agency (hereinafter referred to as "the Governments") have committed themselves to take the ESA-developed launchers and the Soyuz launcher operated from the CSG into account when defining and executing their national programmes as well as the European and other international programmes in which they are involved. Arianespace has undertaken to give the European Space Agency and the Governments priority in supplying the launch services and slots that are needed for such programmes. Arianespace has also to ensure that in the event of a launch slot slippage due to the launcher system and/or the launch complex facilities, the relevant payload of the Agency or of a Government shall keep its launch ranking. Furthermore, in the event of the failure of a mission of the Agency or of a Government, they may ask Arianespace, in respect of a new launch, for the first, or failing this, the second launch slot compatible with the availability of the backup payload where the failure was due to the launcher system and/or the complex facilities operated for the launch, and the first compatible slot or, failing this, the first slot within 10 months at the most of the written request for a relaunch where the failure was due to the payload itself. Finally, Arianespace has given the Agency and the Governments an undertaking to pay special attention to the specific constraints imposed by scientific missions.

Commercial in Confidence

EX-10.30 3 ex123120191030echostar.htm EXHIBIT 10.30

CONTRACT

BETWEEN

ECHOSTAR XXIV L.L.C.

AND

SPACE SYSTEMS/LORAL, LLC

FOR THE

JUPITER 3 SATELLITE PROGRAM

The attached Contract and information contained therein are confidential and proprietary to EchoStar XXIV L.L.C. and Space Systems/Loral, LLC and shall not be published or disclosed to any third party except as permitted by the terms and conditions of this Contract.

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*** Certain confidential portions of this exhibit were omitted by means of redacting a portion of the text.

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PREAMBLE

This Contract is made as of April 19, 2017 ("Effective Date of Contract" or "EDC") by and between EchoStar XXIV L.L.C., a limited liability company organized and existing under the laws of Colorado, having an office and place of business at 100 Inverness Terrace East, Englewood, CO 80112 USA (hereinafter referred to as "Purchaser" or "Hughes") and Space Systems/Loral, LLC, a limited liability company organized and existing under the laws of Delaware, having an office and place of business at 3825 Fabian Way, Palo Alto, CA 94303 (hereinafter referred to as "Contractor"; Purchaser and Contractor may be referred to in this Contract collectively as the "Parties" or individually as a "Party") regarding the Jupiter 3 Satellite program.

RECITALS

WHEREAS, among other things, Purchaser desires to procure one (1) communications satellite, to be known as "Jupiter 3," to be delivered *** Deliverable Data, Launch Support Services, Mission Operations Support Services, Support and Training Services, Risk Management Services, a Dynamic Satellite Simulator, as defined herein, and other associated support and training services, to the extent and subject to the terms and conditions set forth herein; and

WHEREAS, among other things, Contractor is willing to furnish such Satellite, Deliverable Data, Launch Support Services, Mission Operations Support Services, Support and Training Services, Risk Management Services, a Dynamic Satellite Simulator and other associated support and training services, to the extent and subject to the terms and conditions set forth herein.

NOW, THEREFORE, in consideration of the Firm Fixed Price and other valid consideration, the receipt and sufficiency of which is hereby acknowledged, and the mutual covenants and agreements contained herein and intending to be legally bound, the Parties hereto agree as follows:

1 DEFINITIONS

Capitalized terms used and not otherwise defined herein shall have the following meanings:

1.1 **"Acceptance" or "Accepted"** (i) with respect to the Satellite shall be as provided in Article 12; and (ii) with respect to any Deliverable Item other than the Satellite shall be as provided in Article 13.

1.2 **"Additional Satellite"** has the meaning set forth in Article 27.2.

1.3 **"Additional Storage Period**" has the meaning set forth in Article 32.7.2.

1.4 **"Affiliate"** means, with respect to a Party, any person or entity directly or indirectly controlling, controlled by or under common control with such Party.

1.5 **"Article"** means an article of this Contract.

*** Certain confidential portions of this exhibit were omitted by means of redacting a portion of the text.

1.6 **"Attachment(s)"** means any and all attachment(s) that are attached to this Contract or to any Exhibit and incorporated in this Contract or any Exhibit by reference in their entirety, as may be amended from time to time in accordance with the terms hereof.

1.7 **"Attributable to Purchaser"** means an event or occurrence solely caused by an act or omission of Purchaser or Purchaser's representatives, consultants or subcontractors unless such act or omission was performed in accordance with direction or instruction provided by Contractor.

1.8 **"Business Day"** means any day other than a Saturday, Sunday or any other day on which national banks are authorized to be closed in New York City, New York.

1.9 **"Candidate Launch Vehicles"** means the following launch vehicles: ***

1.10 **"Change of Control"** means: (i) the transfer (in one transaction or a series of related transactions) of all or substantially all of the assets of Contractor to any individual, entity or group (here and hereinafter, as such term is used in Section 13(d)(3) or 14(d)(2) of the Securities Exchange Act of 1934, as amended); (ii) the liquidation or dissolution of Contractor or the adoption of a plan by the stockholders of Contractor relating to the dissolution or liquidation of the Contractor; (iii) the acquisition by any individual, entity or group, directly or indirectly, of the power to direct the management and policies of Contractor whether through the ownership of voting securities, by contract or otherwise; or (iv) the acquisition by any individual, entity or group of beneficial ownership, directly or indirectly, of more than *** of the voting power of the total outstanding voting stock of Contractor or any Affiliate that controls Contractor.

1.11 ***

1.12 ***

1.13 **"Component"** means each unit, system and subsystem of the Satellite and all other Satellite hardware and software required to be provided by Contractor hereunder.

1.14 **"Contract"** means the articles of this executed contract and all exhibits and attachments hereto, which are hereby incorporated by reference in their entirety, as any of the foregoing may be amended from time to time in accordance with the terms and conditions hereof.

1.15 **"Contractor"** has the meaning set forth in the Preamble and includes any of the Contractor's successors or assignees permitted hereunder.

1.16 **"Cure Letter"** has the meaning set forth in Article 9.8.

1.17 **"Defect"** means (i) with respect to the Satellite or Deliverable Items of Hardware other than the Satellite, any defect or nonconformance in design, material or workmanship, or failure to meet or perform in accordance with the applicable specification of this Contract; or (ii) with respect to any Deliverable Services, any failure to meet the applicable specification or requirements set forth in this Contract in Article 16.4.

*** Certain confidential portions of this exhibit were omitted by means of redacting a portion of the text.

1.18 **"Deliverable Data"** means the data and documentation required to be Delivered to Purchaser as specified in the Statement of Work. In the event that Purchaser terminates this Contract for Contractor's default pursuant to Article 22, or in the event of a termination by Contractor under Article 22.5 that is determined to have been wrongful, the definition of "Deliverable Data" shall be expanded to include copies (machine readable and hard copy) of: (i) all source code, object code and VHDL code owned by Contractor; and (ii) all other source code, object code and VHDL code for which Contractor has the ability to grant a royalty-free license, that in each case is necessary or useful to support the remaining design, manufacturing, testing and delivery of the Satellite and the Launch and in-orbit operation of the Satellite.

1.19 **"Deliverable Item"** means any of the items listed in Article 3.1 and any Additional Satellites, Replacement Satellites or other items ordered by Purchaser pursuant to Article 27 and, collectively, the **"Deliverable Items"**.

1.20 **"Delivery"** or **"Deliver"** or "**Delivered"** (i) with respect to the Satellite, has the meaning provided in Article 11; and (ii) with respect to any Deliverable Item other than the Satellite has the meaning provided in Article 11.

1.21 **"Designated Orbital Location"** means the geostationary orbital slot at 95.2° west longitude.

1.22 **"DSS Performance Specification"** means the dynamic satellite simulator's performance specification attached as Exhibit F, as such Exhibit may be amended from time to time in accordance with the terms of this Contract.

1.23 **"Effective Date of Contract"** or **"EDC"** has the meaning set forth in the Preamble.

1.24 ***

1.25 **"Exhibit(s)"** means the exhibit(s) identified in Article 2.1 and attached hereto and incorporated in this Contract by reference in their entirety, as may be amended from time to time in accordance with the terms hereof.

1.26 **"FCC"** means the U.S. Federal Communications Commission.

1.27 **"Firm Fixed Price"** or **"FFP"** has the meaning set forth in Article 4.

1.28 **"Force Majeure"** has the meaning set forth in Article 23.1.

1.29 ***

1.30 **"Ground Insurance"** has the meaning set forth in Article 28.2.1.

*** Certain confidential portions of this exhibit were omitted by means of redacting a portion of the text.

1.31 **"Ground Storage"** means that period where the Satellite is held in storage on the ground at a Contractor controlled facility for an extended period after completion of SPSR and prior to Launch.

1.32 ***

1.33 ***

1.34 ***

1.35 ***

1.36 ***

1.37 ***

1.38 *** means, with respect to the Satellite, the period commencing at 12:01 a.m. Greenwich Mean Time on the day following the IOT Complete Date for the Satellite and ending on the last day of the Satellite Stated Life.

1.39 **"Intellectual Property"** has the meaning set forth in Article 24.1.

1.40 **"Intellectual Property Claim"** has the meaning set forth in Article 19.1.

1.41 ***

1.42 **"In-Orbit Testing"** or **"IOT"** means the testing of the Satellite in-orbit in accordance with the Satellite Test Plan.

1.43 "**Intentional Ignition**" means, with respect to the Satellite, ***. This definition shall be replaced by the definition of "Intentional Ignition" in the Launch Services Agreement applicable to Launch of the Satellite and/or any launch insurance policy placed by the Purchaser.

1.44 **"IOT Review"** or **"IOTR"** has the meaning set forth in the Statement of Work.

1.45 **"IOT Complete Date"** has the meaning set forth in Article 12.3.

1.46 **"Joint Intellectual Property"** has the meaning set forth in Article 24.3.

1.47 ***

1.48 **"Key Personnel"** has the meaning set forth in Article 34.

1.49 ***

1.50 **"Launch Agency"** means the provider ultimately responsible for conducting the Launch Services for the Satellite.

*** Certain confidential portions of this exhibit were omitted by means of redacting a portion of the text.

1.51 **"Launch Services"** means those services provided by the Launch Agency pursuant to the Launch Services Agreement.

1.52 **"Launch Services Agreement"** or **"LSA"** means the contract between Purchaser, or an Affiliate of Purchaser, and the Launch Agency, which provides for Launch Services for the Satellite, as such contract may be amended from time to time in accordance with its terms.

1.53 **"Launch Site"** means the location that will be used by the Launch Agency for purposes of launching the Satellite. This definition will be replaced by the definition of "Launch Site" from the Launch Service Agreement applicable to the Launch of the Satellite.

1.54 **"Launch Support"** or **"Launch Support Services"** means those services specified in the Statement of Work to be provided by Contractor in support of Launch.

1.55 **"Launch Vehicle"** means the launch vehicle selected by Purchaser and used for Launch of the Satellite.

1.56 **"LIBOR"** means the rate of interest per annum, at any relevant time, at which thirty (30) day U.S. dollar deposits are offered at such time in the London interbank market. LIBOR for any calendar week (through and including Sunday of such week) shall be at the applicable LIBOR rate set forth in the Wall Street Journal (and if a range the average of such range) on the first Business Day of such week and shall remain the rate used in this Contract as LIBOR until the first Business Day of the following week. In the event the Wall Street Journal does not publish such a rate, the Party to whom an amount is owed shall select a reputable alternate source, as determined in such Party's reasonable judgment, from which LIBOR shall be ascertained and used under this Contract.

1.57 **"Losses"** has the meaning set forth in Article 20.1.1.

1.58 **"Major Subcontract" and "Major Subcontractors"** have the meaning set forth in Article 33.1.

1.59 **"Milestone"** means a portion of the Work upon completion of which a payment is to be made in accordance with Exhibit E.

1.60 "**Mission Assurance Plan"** means the mission assurance plan attached as Exhibit C, as such Exhibit may be amended from time to time in accordance with the terms of this Contract.

1.61 **"Mission Operations Support Services"** means the orbit-raising, IOT and related services specified in the Statement of Work to be performed by Contractor for the Satellite.

1.62 ***

1.63 ***

1.64 **"NSP"** means not separately priced.

*** Certain confidential portions of this exhibit were omitted by means of redacting a portion of the text.

1.65 **"Partial Loss"** means, with respect to the Satellite on or after Intentional Ignition, that Transponder Failure(s) have occurred, but the Satellite is not a Total Loss.

1.66 **"Party"** or **"Parties"** has the meaning set forth in the Preamble.

1.67 **"Payment Plan"** means the payment plan, as set forth in Exhibit E, as may be amended from time to time in accordance with the terms of this Contract.

1.68 **"Performance Specification"** means either the Satellite Performance Specification or the DSS Performance Specification.

1.69 ***

1.70 **"PMO"** means the Purchaser's program management office.

1.71 **"Proprietary Information"** has the meaning set forth in Article 25.1.

1.72 **"Purchaser"** or **"Hughes"** has the meaning set forth in the Preamble and includes any of the Purchaser's successors or assignees permitted hereunder.

1.73 **"Purchaser Associate(s)"** means Purchaser's Affiliates and Purchaser's and its Affiliates' duly appointed consultants, agents and representatives (who are not Competitor of Contractor).

1.74 **"Purpose of IOT Review"** has the meaning set forth in Article 12.3.

1.75 **"Raw Materials, Work-in-Process and Finished Goods"** means (i) the Satellite; (ii) all Components; (iii) all Deliverable Items; and (iv) all rights in Intellectual Property, Proprietary Information and other data and information that are to be and/or actually are delivered to Purchaser under this Contract. The foregoing shall constitute "Raw Materials, Work-in-Process and Finished Goods" as the same shall be in the process of performance, manufacture, assembly, integration, testing, delivery or completion at any given point in time, whether raw materials, work in process or finished goods, whether now owned or after-acquired and whether now existing or hereafter coming into existence; but, in each case, only to the extent identified to this Contract, which shall be deemed to occur only when such goods have been installed on the Satellite or designated for the Satellite. Contractor shall install goods on the Satellite and designate goods for the Satellite in a manner consistent with Contractor's customary practices. In furtherance and without limitation of the foregoing, such installation and designation shall be performed and administered by Contractor on a non-discriminatory basis as compared to the other satellites that Contractor is building.

1.76 **"Replacement Satellite"** has the meaning set forth in Article 27.1.1.

1.77 **"Required SPSR Complete Date"** means *** prior to the date scheduled for the Satellite Delivery in Article 3.1.

*** Certain confidential portions of this exhibit were omitted by means of redacting a portion of the text.

1.78 **"Risk Management Services"** means the risk management services to be provided by Contractor in accordance with the Statement of Work and Article 28.

1.79 **"Satellite"** means a communications satellite that is to be manufactured by Contractor pursuant to this Contract.

1.80 "**Satellite Anomaly**" means, with respect to the Satellite following Launch, a condition or occurrence that has or may have a material adverse impact on the Satellite Stated Life or performance of such Satellite.

1.81 **"Satellite Performance Specification"** or **"Specification"** means the Satellite performance specification attached as Exhibit B, as such Exhibit may be amended from time to time in accordance with the terms of this Contract.

1.82 **"Satellite Pre-Shipment Review"** or **"SPSR"** has the meaning set forth in Article 9.1.

1.83 **"Satellite Replacement Option"** has the meaning set forth in Article 27.1.1.

1.84 **"Satellite Replacement Option Exercise"** has the meaning set forth in Article 27.1.1.

1.85 **"Satellite Stated Life"** or **"Mission Life"** means *** from completion of the IOT Review.

1.86 **"Satellite Test Plan"** means the satellite test plan attached as Exhibit D, as such Exhibit may be amended from time to time in accordance with the terms of this Contract.

1.87 **"SCF"** means satellite control facility that performs TT&C for the Satellite.

1.88 ***

1.89 ***

1.90 "**SPSR Complete Date**" has the meaning set forth in Article 9.6.

1.91 **"Statement of Work"** or **"SOW"** means the statement of work attached as Exhibit A, as such Exhibit may be amended from time to time in accordance with the terms of this Contract.

1.92 ***

1.93 **"Subcontract"** means a contract or purchase order awarded by Contractor to a Subcontractor or a contract or purchase order awarded by a Subcontractor at any tier for performance of any Work.

1.94 **"Subcontractor"** means any person or business entity that has been awarded a Subcontract.

1.95 **"Technical Data and Information"** has the meaning set forth in Article 24.1.

*** Certain confidential portions of this exhibit were omitted by means of redacting a portion of the text.

1.96 **"Terminated Ignition"** means, with respect to the Satellite, ***. This definition will be replaced by the equivalent definition from the Launch Service Agreement applicable to the "Launch" of the Satellite and/or any launch insurance policy placed by the Purchaser.

1.97 **"Termination Default"** has the meaning set forth in ***

1.98 **"Test Bed"** means the equipment to be supplied by Contractor (if Purchaser exercises the Test Bed Option) in accordance with Section 9.0 of Exhibit A and meeting the technical requirements set forth in Appendix E.1 to Exhibit B.

1.99 **"Test Bed Option"** has the meaning set forth in Article 27.3.

1.100 **"Total Loss"** means with respect to the Satellite on or after Launch: (i) the complete loss, destruction or failure of such Satellite; or (ii) as defined in Purchaser's insurance policy regarding risks relating to the Launch and/or in-orbit operation of the Satellite in place at the time of Launch (if any) if defined differently therein.

1.101 **"Training Services"** means the training to be provided by Contractor in accordance with the Statement of Work.

1.102 **"Transaction Document"** has the meaning set forth in Article 5.6.

1.103 **"Transponder"** means the equipment ***

1.104 **"Transponder Failure"** means the failure of a Transponder, for reasons not Attributable to Purchaser, at any time to meet any of the following requirements of Exhibit B, Satellite Performance Specification:

11.104.1 ***, as set forth in Exhibit B, Satellite Performance Specification;

11.104.2 *** as set forth in Exhibit B, Satellite Performance Specification, under all operating conditions ***

11.104.3 *** as set forth in Exhibit B, Satellite Performance Specification; or

11.104.4 *** as set forth in Exhibit B, Satellite Performance Specification.

***

1.105 **"TT&C"** means telemetry, tracking and control.

1.106 **"UCC"** means the Uniform Commercial Code of the State of New York or, ***, the State of Delaware, in either case as in effect from time to time.

1.107 ***

1.108 **"Work"** means all design, development, construction, manufacturing, labor and services, including without limitation tests to be performed and any and all Deliverable Items, including without limitation the Satellite, Deliverable Data, Launch Support Services, Mission Operations Support Services, Support and Training Services, Risk Management

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Services, a Dynamic Satellite Simulator, shipment and transportation of the Satellite to *** transit insurance and such other insurance as is required by Article 28 and equipment, materials, articles, matters, services and things to be furnished and rights to be transferred to Purchaser under this Contract.

2. SCOPE OF WORK

2.1 Provision of Services and Materials.

Contractor shall provide Purchaser with the Deliverable Items complete in all respects in accordance with the provisions of this Contract. Without limiting the generality of the foregoing, Contractor shall provide the necessary personnel, material, services and facilities to perform the Work, including without limitation to design, manufacture, test, ship the Satellite to *** provide Launch Support Services for, and Deliver to Purchaser the Satellite, together with all other Deliverable Items referred to in Article 3.1, in accordance with the provisions of this Contract, including without limitation, the following Exhibits, which are attached hereto and incorporated in this Contract by reference in their entirety:

(i) Exhibit A, Statement of Work, dated April 19, 2017;
(ii) Exhibit B, Satellite Performance Specification, dated April 19, 2017;
(iii) Exhibit C, Mission Assurance Plan, dated April 19, 2017;
(iv) Exhibit D, Satellite Test Plan, dated April 19, 2017;
(v) Exhibit E, Payment Plan, dated April 19, 2017;
(vi) Exhibit F, Dynamic Satellite Simulator Performance Specification, dated April 19, 2017; and
(vii) ***

2.2 Satellite Configuration.

The parties agree that requirements and elements of the satellite design specified in *** Exhibit A, Statement of Work, ***

3. DELIVERABLE ITEMS AND DELIVERY SCHEDULE

3.1 Deliverable Items.

Subject to the other terms and conditions of this Contract, the items to be Delivered under this Contract are specified in the table below. Contractor shall Deliver such Deliverable Items on or before the corresponding Delivery schedules and at locations as follows:

*** Certain confidential portions of this exhibit were omitted by means of redacting a portion of the text.

Item	Description	Delivery Schedule	Delivery Location
1.	Satellite	***	***
2.	Deliverable Data	Per Exhibit A, SOW	Contractor-designated web site
3.	Support and Training Services	Per Exhibit A, SOW	Contractor's facilities and Purchaser's SCF
4.	Launch Support Services	Per Exhibit A, SOW	Per Exhibit A, SOW
5.	Mission Operations Support Services	Per Exhibit A, SOW	Per Exhibit A, SOW
6.	Risk Management Services	Per Exhibit A, SOW and Article 28	Contractor's facilities and per Exhibit A, SOW
7.	Dynamic Satellite Simulator	Per Exhibit A, SOW	Purchaser's SCF or Purchaser designated facility
8.	Scale Models	Per Exhibit A, SOW	PMO

Delivery of the Satellite shall be as set forth in Article 11.

* In addition, subject to Article 14, the Satellite shall ***

3.2 Avoidance and Mitigation of Delays.

As provided in Exhibit A, Statement of Work and the Program Management Plan, Contractor shall notify Purchaser promptly by telephone and confirm in writing any event, circumstance or development that will likely result in a non-conformance of the Delivery schedules and *** established hereunder. ***

4. PRICE

The total price to be paid by Purchaser to Contractor for the Deliverable Items 1 through 8 set forth in Article 3.1 within the scope of work detailed in the Statement of Work, shall be a firm fixed price of *** (the "Firm Fixed Price" or "FFP"). The prices for those Deliverable Items subject to an option under this Contract, if any, are described in the particular Articles that set forth those options.

Except as otherwise expressly provided in this Contract, the Firm Fixed Price is not subject to any escalation or to any adjustment or revision. The Firm Fixed Price stated above includes all fees, charges, expenses, costs and other amounts payable by Purchaser to Contractor for the Work, including without limitation the design, manufacturing, tests, ***, Deliverable Data, Support and Training Services, ***, Launch Support Services, Mission Operations Support Services, a Dynamic Satellite Simulator, Risk Management Services, scale models, shipment and transportation of the Satellite to *** transit insurance and such other insurance as is required by Article 28 (but does not include Launch Services, or any insurance coverage for loss or damage to the Satellite from and after Launch), all in accordance with the terms and conditions of this Contract, as specified herein. ***

*** Certain confidential portions of this exhibit were omitted by means of redacting a portion of the text.

5. PAYMENT TERMS

5.1 Payment Plan.

Absent a bona fide dispute, payments by Purchaser to Contractor of the Firm Fixed Price set forth in Article 4 and of the amounts for options, if any, exercised by Purchaser pursuant to this Contract, shall be in accordance with Exhibit E, Payment Plan.

5.2 Payment Conditions.

5.2.1 Milestone Payments. Absent a bona fide dispute, each Milestone payment specified in Exhibit E, Payment Plan, shall in each case become payable upon Contractor's completion of each Milestone in accordance with the Contract and satisfaction of the criteria for Milestone completion set forth in the Reference column of Table 6.1 of Exhibit A, after which Contractor shall submit an invoice for payment. *** Contractor's invoice for any payment due from Purchaser upon the completion of a Milestone described in Exhibit E, Payment Plan, shall be accompanied by (i) a certification that the Milestone has been completed in accordance with the requirements of this Contract, and (ii) the necessary or appropriate supporting data and documentation as required hereunder, if any, or as Purchaser may reasonably request within *** after receipt of invoice. Purchaser shall pay in full such invoice (or, if applicable, the undisputed portion thereof) within *** after receipt of the required invoice, certification and (as applicable) data and documentation.

5.2.2 Non-Warranty Payments. Absent a bona fide dispute, all amounts payable to Contractor with respect to non-warranty work performed pursuant to Article 16.3 shall be paid no later than *** after submission of an invoice by Contractor certifying that such non-warranty work has been completed.

5.3 Late Payment.

Except in the case of a bona fide dispute in the event that any payment owed by one Party to the other Party is not made when due hereunder, without prejudice to the second Party's other rights and remedies under this Contract, at law or in equity, the first Party shall pay the other Party interest at the rate of LIBOR plus ***, on the unpaid balance thereof beginning on the day that such payment becomes delinquent until such time as payment is made. In the event that a payment due to Contractor from Purchaser is not made ***. In such case, if Contractor subsequently resumes performance in lieu of termination pursuant to Article 22.5, and such prior cessation causes an increase or decrease in the cost of, or the time required for the performance of this Contract, then *** or any or all, as applicable, and this Contract shall be modified in writing in accordance with and subject to Article 18 ***. Notwithstanding the foregoing, in the event of a bona fide dispute between the Parties regarding a payment due hereunder, then such dispute shall be resolved pursuant to Article 29, ***.

5.4 Invoices.

Invoices required to be delivered by Contractor hereunder shall be submitted to Purchaser (original plus one (1) copy) at the following address:

*** Certain confidential portions of this exhibit were omitted by means of redacting a portion of the text.

EchoStar XXIV L.L.C.
c/o Hughes Network Systems, LLC
11717 Exploration Lane
Germantown, Maryland 20876
***

or to such other address as Purchaser may specify in writing to Contractor.

5.5 Payment Bank.

All payments made to Contractor hereunder shall be in U.S. currency and shall be made by electronic funds transfer to the following account:

***

or by check to:

Space Systems/Loral, LLC
3825 Fabian Way
Palo Alto, CA 94303-4604
***

or to such other account or address as Contractor may specify in writing to Purchaser.

5.6 ***

***

5.7 Audit Rights and Procedures.

Contractor shall keep complete, true and accurate books of account and records pursuant to its standard accounting system for the purpose of showing the derivation of all costs where any payments to be made by Purchaser are based on costs (including without limitation termination charges pursuant to Articles 21, 22 and 23 and changes pursuant to Article 18). Contractor will keep such books and records at Contractor's principal place of business ***. Purchaser may direct an audit of any costs claimed by Contractor pursuant to this Contract to be performed by an independent auditor reasonably acceptable to Purchaser and Contractor. *** The independent auditor will be directed to report reasons for its findings and the independent auditor's findings will be binding upon Purchaser and Contractor, ***.

6. PURCHASER FURNISHED ITEMS

6.1 Purchaser-Furnished Support.

*** Certain confidential portions of this exhibit were omitted by means of redacting a portion of the text.

To enable Contractor to perform Launch Support and Mission Operations Support Services, Purchaser shall timely make available to Contractor the Purchaser-furnished equipment, facilities, and services described in the Statement of Work. Such equipment, facilities and services shall be in good working condition and adequate for the required purpose and shall be made available free of charge for Contractor's use during the period commencing *** prior to Launch and continuing through completion of the IOT Review. Purchaser and Contractor will conduct an interface meeting approximately *** prior to Launch to confirm the availability and adequacy of Purchaser-furnished equipment, facilities, and services.

6.2 Communications Authorizations.

Consistent with industry standards, Contractor shall, ***, provide all cooperation, assistance, and active support reasonably necessary in support of Purchaser's preparation, coordination and filing of applications, registrations, reports, licenses, permits, technical filings, and authorizations with the FCC or other U.S. or foreign governmental agencies having jurisdiction over Purchaser for the Launch and in-orbit operation of the Satellite and the operation of any earth stations or gateways to be used by Purchaser with the Satellite. *** For the avoidance of doubt, Contractor shall have no obligation under this Contract to obtain or maintain any such registrations, licenses, permits, or authorizations with the FCC or any other U.S. or foreign governmental agency having jurisdiction over Purchaser for the Launch and/or in-orbit operation of the Satellite and/or the operation of any earth stations or gateways to be used by Purchaser with the Satellite.

6.3 Radio Frequency Coordination.

Consistent with industry standards, Contractor shall, ***, provide all cooperation, assistance, and active support reasonably necessary in support of Purchaser's efforts in the preparation and submission of all filings required by the International Telecommunication Union (or any successor agency thereto) and all relevant communications regulatory authorities regarding radio frequency and orbital position coordination having jurisdiction over Purchaser. For the avoidance of doubt, Contractor shall have no obligation under this Contract to prepare or submit any such filings to the International Telecommunication Union (or any successor agency thereto) or any relevant communications regulatory authorities regarding radio frequency or orbital position coordination having jurisdiction over Purchaser.

6.4 Licenses and Permits.

Except as set forth in Articles 6.2 and 6.3, Contractor shall be responsible, *** for securing and maintaining any and all permits and licenses for the: (i) construction; and/or (ii) transportation to *** of the Satellite (other than FCC construction permits for the Satellite), including without limitation any required export authorizations, which Contractor shall be responsible for obtaining and maintaining as provided in Article 7.3. In the event Purchaser terminates this Contract as permitted under Article 22, or in the event of a termination by Contractor under Article 22.5 that is determined to have been wrongful, and Purchaser desires to complete the construction of the Satellite, then all such permits and licenses acquired by Contractor shall be assigned, *** to Purchaser or its successor or assigns, to the maximum extent permitted by law. The provisions of this Article 6.4 shall survive and remain in full force and effect, notwithstanding the expiration or termination of this Contract.

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6.5 Satellite Performance Data.

In the event of a Satellite Anomaly, Purchaser shall timely provide Contractor with or give Contractor access to any data which Purchaser has in its possession or has the right to disclose and which Contractor may reasonably require to investigate or correct (if Contractor is able to do so) such Satellite Anomaly. For purposes of this Article 6.5, Purchaser shall use reasonable best efforts to obtain the right to disclose any such data.

6.6 Late Delivery of Purchaser-Furnished Support.

The late delivery of Purchaser-furnished equipment, facilities or services, individually or combined, shall be considered an event beyond the reasonable control of Contractor, and in the event that such a late delivery causes an increase or decrease in the cost of, or the time required for the performance of this Contract, *** and this Contract shall be modified in writing in accordance with and subject to Article 18, provided that: ***

6.7 Launch Services.

6.7.1 Selection of Launch Vehicle. Purchaser shall be responsible for the provision of Launch Services for the Satellite. Contractor shall provide engineering and other customary services pursuant to Exhibit A to maintain compatibility of the Satellite for Launch with the list of Candidate Launch Vehicles. *** Purchaser shall notify Contractor in writing of its down-selection to the *** Candidate Launch Vehicles. At all times prior to the Final Launch Vehicle Selection Date, Contractor shall to maintain Satellite compatibility with Launch on both of the *** Candidate Launch Vehicles and shall provide customary launch vehicle integration activities for both of the *** Candidate Launch Vehicles in support of the then-currently scheduled Launch date. In the event there are *** Purchaser does not notify Contractor of its down-selection to *** Candidate Launch Vehicles on or before *** or changes its selection of either of the *** Candidate Launch Vehicles after *** and such failure or change causes an increase or decrease in costs of, or the time required for, the performance of this Contract, *** and this Contract shall be modified in writing in accordance with and subject to Article 18. *** For the avoidance of doubt, in the event that Purchaser notifies Contractor of its down-selection to *** Candidate Launch Vehicles on or before ***, then notwithstanding anything to the contrary set forth herein, ***

6.7.2 Final Launch Vehicle Selection. On or before *** prior to the later of: *** Purchaser shall notify Contractor in writing of its final selection of a Launch Vehicle for the Launch of the Satellite from the *** Candidate Launch Vehicles, and shall use reasonable commercial efforts to select a Launch date compatible with Contractor's then-currently scheduled Satellite Delivery date; provided that in no event shall Purchaser select a Launch date that is earlier than Contractor's then-currently scheduled Satellite Delivery date. In the event Purchaser does not notify Contractor of its final selection of a Launch Vehicle for the Launch of the Satellite on or before *** or changes its final selection of a Launch Vehicle after *** and such failure or subsequent change causes an increase or decrease in costs of, or the time required for, the performance of this Contract, *** and this Contract shall be modified in writing in accordance with and subject to Article 18. For the avoidance of doubt, in the event that Purchaser notifies Contractor of its final selection of a Launch Vehicle for the

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Launch of the Satellite on or before *** then notwithstanding anything to the contrary set forth herein, ***.

6.7.3 ***

6.7.4 Launch Support. Contractor shall provide all reasonably necessary assistance to, and shall communicate and cooperate with, the Launch Agency so as to support the successful, on-time completion of the Work and integration of the Satellite with the Launch Vehicle and the provision of the Launch Support Services in accordance with the terms of this Contract. Purchaser shall provide all reasonably necessary assistance to Contractor so as to ensure Contractor and any affected Subcontractors have the necessary access and information from the Launch Agency to perform as specified. *** All communications of Contractor and its Subcontractors with the Launch Agency are subject to any required export authorizations, which Contractor shall be responsible for obtaining and maintaining as provided in Article 7.3.

6.8 Consignment.

All Purchaser-furnished equipment and facilities provided to Contractor hereunder as specified in the Statement of Work shall remain the property of Purchaser, and Contractor shall not sell, assign, or otherwise encumber such Purchaser-furnished equipment and facilities. ***

7. COMPLIANCE WITH LAWS; EXPORT LICENSES

7.1 General.

Each Party shall, at its expense, perform its obligations hereunder in accordance with all applicable laws, regulations, and policies of the United States and the conditions of all applicable United States government approvals, permits, or licenses.

7.2 Compliance with U.S. Laws.

Any obligation of Contractor hereunder to provide hardware, software, Deliverable Data, other technical information, technical services, Training Services, or any access to facilities to Purchaser and its personnel and/or its representatives and Purchaser Associates shall be subject to applicable government (including, but not limited to the U.S. Government) laws, regulations, policies and license conditions/provisos (including, but not limited to those related to export controls, economic sanctions and security). Any obligation of Purchaser hereunder, including the provision of Purchaser furnished equipment, facilities, and services items or any access to facilities of Contractor by its personnel and/or its representatives, shall be subject to applicable government (including, but not limited to the U.S. Government) laws, regulations, policies and license conditions/provisos (including, but not limited to those related to export controls, economic sanctions and security). The Parties shall work cooperatively and in good faith to implement this Contract in compliance with such laws, regulations, policies and license conditions. If and to the extent required by U.S. law, Contractor and Purchaser (and if applicable, each Affiliate and each Purchaser Associate) and its personnel and/or representatives shall enter into U.S. Government-approved agreement(s), including without limitation a Technical Assistance Agreement(s), separate from this Contract,

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governing Contractor's provision of hardware, software, Deliverable Data, other technical information, technical services, Training, Launch Support, Mission Operations Support Services or access to facilities in connection with this Contract.

7.3 Licenses and Other Approvals.

Contractor shall use reasonable efforts to obtain and maintain all applicable approvals, permits, and licenses as may be required by any government, foreign or domestic, for the performance of the Work including but not limited to all authorizations required for the import or export of any Deliverable Item, or any part thereof, including but not limited to Delivery of the Satellite and Launch Support equipment that is Contractor's obligation to provide hereunder to *** and transferring title to the Satellite to Purchaser and any agreements and other approvals necessary to perform Launch Vehicle integration activities, Launch Support Services and Mission Operations Support Services, as well as any agreements and other approvals of the U.S. Government that are required for Purchaser, Purchaser Associates and Purchaser's Affiliates and "foreign person" personnel and/or representatives of Purchaser and its Affiliates (including, but not limited to, foreign subsidiaries and related entities of Purchaser involved with the procurement) as well as Purchaser's and its Affiliates' insurance providers, to have access to Contractor facilities, hardware, software, Deliverable Data, Training Services, other technical information or technical services in connection with the performance of this Contract, and shall promptly notify Purchaser of any occurrence or change in circumstances of which it becomes aware that is relevant to or affects such export licenses, agreements and approval. In addition, Contractor shall provide reasonable support to Purchaser and each Purchaser Affiliate in obtaining any necessary approvals, permits, and licenses for the performance of Purchaser's obligations hereunder and any other approvals, permits and licenses Purchaser and/or a Purchaser Affiliate pursues associated with the Satellite and/or any services provided using the Satellite, as well as support all reasonable regulatory efforts of the Purchaser. A "foreign person" shall be as defined in the U.S. International Traffic in Arms Regulations ("ITAR"), 22 C.F.R. §120.16 or as defined under the Export Administration Regulations ("EAR"), 22 C.F.R. Parts 730-774, whichever is applicable. Purchaser (on behalf of itself and Affiliates) shall provide such reasonable cooperation and support as necessary for Contractor to apply for and maintain such required U.S. export licenses, agreements and other approvals, and shall promptly notify Contractor of any occurrence or change in circumstances of which it becomes aware that is relevant to or affects such export licenses, agreements and approvals. Contractor shall review with Purchaser, its Affiliates and Purchaser Associates (and related entities involved with the procurement) any application Contractor makes to any government department, agency or entity for any permit, license, agreement or approval that will be signed by Purchaser as may be required for performance of the Work, prior to submission of such application. Contractor shall provide Purchaser, Purchaser Affiliates and Purchaser Associates a minimum of *** to review such application prior to submission to such governmental entity, and Contractor shall in good faith consider any comments and proposed revisions made by Purchaser for incorporation into such application. Contractor shall include Purchaser, its Affiliates and Purchaser Associates (and related entities involved with the procurement) as a named party(ies) in any application to the U.S. Government for approval of such export licenses, agreements and other approvals so as to permit Purchaser, its Affiliates and Purchaser Associates (and related entities involved with the procurement) to be present during any discussion with or meetings where Purchaser's Affiliates or

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related entities, or insurance providers, may receive from, or discuss with, Contractor any export-controlled items and/or services. Contractor shall provide Purchaser, Purchaser Affiliates and Purchaser Associates copies of the export licenses and agreements, including without limitation any U.S. Government approvals and provisos related to same.

NOTWITHSTANDING ANY PROVISION IN THIS CONTRACT, IN NO EVENT SHALL EITHER PARTY BE OBLIGATED UNDER THIS CONTRACT TO PROVIDE ACCESS TO ITS OR ITS SUBCONTRACTOR FACILITIES, PROVIDE ACCESS TO OR FURNISH HARDWARE, SOFTWARE, DELIVERABLE DATA OR OTHER TECHNICAL INFORMATION, OR PROVIDE TECHNICAL/DEFENSE SERVICES OR TRAINING, TO ANY PERSON EXCEPT IN COMPLIANCE WITH ALL APPLICABLE LAWS, REGULATIONS, POLICIES AND LICENSE CONDITIONS.

7.4 No Unauthorized Exports or Retransfers.

NEITHER PARTY SHALL RE-EXPORT OR RE-TRANSFER TO ANY FOREIGN PERSON THIRD-PARTY ANY HARDWARE, SOFTWARE, DELIVERABLE DATA, OTHER TECHNICAL INFORMATION OR TECHNICAL SERVICES FURNISHED HEREUNDER, EXCEPT AS EXPRESSLY AUTHORIZED BY THE U.S. GOVERNMENT IN ACCORDANCE WITH THE EXPORT LICENSES, AGREEMENTS AND OTHER APPROVALS REFERENCED IN ARTICLES 7.2 AND 7.3 OR AS OTHERWISE EXPRESSLY AUTHORIZED UNDER APPLICABLE LAWS.

8. INSPECTION; ACCESS TO WORK

8.1 Work in Progress at Contractor’s Plant.

Subject to Article 7 and Contractor’s safety and security procedures to which Contractor, its employees, consultants and agents are also subject, Purchaser personnel and Purchaser Associates shall be allowed access to Work being performed at Contractor’s facility for the Satellite and other Deliverable Items, for the purpose of observing the progress of such Work and otherwise confirming Contractor’s compliance with this Contract. Notwithstanding anything to the contrary set forth herein, the fact that Purchaser and/or Purchaser Associates has observed Work performed hereunder shall not be deemed Purchaser’s acceptance or approval of such Work. Subject to Article 7 and Contractor’s safety and security procedures to which Contractor, its employees, consultants and agents are also subject, Purchaser and Purchaser Associates personnel shall have reasonable access, for evaluation, inspection, and use in connection with the planned operation of the Satellite, to (i) Deliverable Data; (ii) work-in-progress and technical and schedule data and documentation relevant to the Work; *** Subject to Article 7, Contractor shall provide Purchaser (and Purchaser Associates identified by Purchaser) access to a program web site (from which Purchaser and any of its authorized Purchaser Associates) will be permitted to download, print, and save documents to serve as a repository for such information and Contractor shall provide a typical site map or index to the contents of that web site. All Purchaser and Purchaser Associates personnel who are “U.S. persons” (as defined under the ITAR or EAR, as applicable) and otherwise meet the requirements for access set forth in this Article ***. For the avoidance of doubt, any communication between

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Purchaser or Purchaser Associates personnel and any foreign Subcontractor shall be conducted through Contractor. Contractor shall obtain and maintain any such authorizations pursuant to Article 7 necessary for any communications between Purchaser or Purchaser Associates personnel and any foreign Subcontractor.

8.2 Work in Progress at Subcontractors' Plants.

Subject to Article 7, to the extent permitted by Contractor's Subcontractors supplying goods or services in connection with the Satellite and other Deliverable Items and subject to each such Subcontractors' reasonable safety and security procedures, Contractor shall allow, or cause its Subcontractors to allow, Purchaser's employees and Purchaser Associates access to Work being performed with respect to the Satellite and other Deliverable Items in each such Subcontractor's plants for the purpose of observing the progress of such Work and otherwise confirming Contractor's compliance with this Contract, subject to the right of Contractor to accompany Purchaser on any such visit to a Subcontractor's plant; ***.

8.3 Remedy for Non-Compliance.

Purchaser may inform Contractor in writing of any particulars in which Purchaser observes that work being performed under this Contract is non-compliant and Contractor shall remedy such non-compliance ***, promptly upon receipt of notice thereof.

8.4 On-Site Facilities for Purchaser's Personnel.

For the purpose of monitoring the progress of the Work to be performed by Contractor hereunder and otherwise confirming Contractor's compliance with this Contract, Contractor shall provide private office facilities at or proximate to Contractor's plant (which private office facilities shall in all cases at least be co-located with Contractor's program management office) *** of Purchaser and Purchaser Associates through a reasonable period of time after the completion of the IOT Review for the last Satellite ordered hereunder. The office facilities to be provided shall include a reasonable amount of private office space, office furniture, local and reasonable long distance telephone service, broadband Internet access, access to copy machines, to the extent necessary to enable such personnel to monitor the progress of Work and otherwise confirm Contractor's compliance with this Contract. Contractor shall use reasonable efforts to provide Purchaser and Purchaser Associates suitable office facilities at the plants of Contractor's Subcontractors where Contractor has been provided with office space.

8.5 Foreign Persons as Purchaser Representatives.

*** shall apply for and, once issued, maintain all U.S. Government export licenses and approvals needed for Purchaser's employees and Purchaser Associates who are "foreign persons" (consistent with the requirements of the International Traffic in Arms Regulations (22 C.F.R. Parts 120-130)), to *** shall cooperate with *** and provide the support necessary for *** to apply for and maintain such export licenses and approvals, and shall promptly notify *** of any occurrence or change in circumstances of which it becomes aware that is relevant to or affects such export license and approvals. *** shall include *** (and related entities involved with the procurement) as a named party(ies) in any application to the U.S. Government for approval of such export licenses, agreements

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and other approvals *** shall provide the parties to such export licenses and agreements copies of the export licenses and agreements, including without limitation any U.S. Government approvals and provisos related to same.

8.6 Meetings and Presentations.

Purchaser shall be entitled to reasonable prior written notice of and to attend (accompanied by Purchaser Associates): (i) all formal program-specific meetings; and (ii) reviews required in Exhibit A, Statement of Work. Purchaser, and any attendant Purchaser Associates, shall have the right to participate in and to make recommendations in all such meetings and reviews at the system, subsystem and unit level. In addition, Contractor and Purchaser shall mutually agree on which informal program-specific meetings to which Purchaser (accompanied by Purchaser Associates) will be invited to attend. Copies of presentations or other documents utilized during these meetings shall be furnished or made available to Purchaser and Purchaser Associates. Purchaser's management personnel and Purchaser Associates, as may be deemed appropriate by Purchaser, shall be invited to the Quarterly Reviews. Contractor shall be represented by its Program Manager and such other personnel as are required to support the particular presentation. Contractor shall provide to Purchaser, upon request, copies of all documentation utilized during and/or a summary of informal program-specific meetings of a material nature for which Contractor cannot provide prior notice and where Purchaser's or Purchaser Associates' personnel are not otherwise aware.

8.7 Interference with Operations.

Purchaser shall exercise its rights under this Article 8 in a manner that does not unreasonably interfere with Contractor's or its Subcontractors' normal business operations or Contractor's performance of its obligations under this Contract or any agreement between Contractor and its Subcontractors.

8.8 Notification.

Notwithstanding any other provision of this Contract, Contractor shall advise Purchaser immediately by telephone and confirm in writing any event, circumstance or development which materially threatens the quality of, or the Delivery schedule *** the Satellite or any Component part thereof, as well as any other Deliverable Items to be provided hereunder.

8.9 Purchaser Inspection Not Acceptance.

The inspection, examination, or observation by Purchaser with regard to any portion of Work produced under this Contract, and Purchaser's or Purchaser Associates' participation in, and comment at, meetings with Contractor, shall not constitute any Acceptance of the Work, nor shall it relieve Contractor from fulfilling its contractual obligations hereunder.

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8.10 Electronically-Generated Information.

With regard to electronically generated information, Contractor will provide Purchaser and Purchaser Associates with an electronic copy thereof and/or electronic access (via the internet or Purchaser e-mail) to information regarding program performance and documentation that will advise Purchaser, on a current basis, of program specific issues, decisions and problems. Contractor shall establish data links between Contractor's and Purchaser's facilities such that ***. Subject to Article 7, ***.

9. SATELLITE PRE-SHIPMENT REVIEW

9.1 Contractor to Conduct a Review of the Satellite Prior to Shipment.

Contractor shall conduct a detailed and comprehensive review of the Satellite with Purchaser (and Purchaser Associates designated by Purchaser) prior to Contractor's shipment of the Satellite to the Launch Site or its entering into storage. This review shall be conducted in accordance with the terms of this Article 9 and Exhibit A, Statement of Work to accomplish the purposes set forth in Article 9.3 (a "Satellite Pre-Shipment Review" or "SPSR").

9.2 Time, Place, and Notice of SPSR.

The SPSR shall take place at Contractor's facility. Contractor shall notify Purchaser in writing on or before *** prior to the date that the Satellite will be available for the SPSR, which shall be the scheduled date for commencement of such SPSR. If Purchaser cannot attend the SPSR on such initially scheduled date, Contractor shall make reasonable efforts to accommodate Purchaser's availability, taking into consideration the requirement to Deliver the Satellite on or before the date set forth in Article 3.1.

9.3 Conduct and Purpose of SPSR.

The SPSR shall be conducted in accordance with the terms of this Article 9 and Exhibit A, Statement of Work. The purpose of the SPSR shall be to: (i) review test data and analyses for the Satellite; (ii) demonstrate testing has been completed in accordance with the applicable portions of Exhibit D, Satellite Test Plan; and (iii) determine whether the Satellite meets applicable Exhibit B, Satellite Performance Specification requirements (except those that have been waived pursuant to Article 9.4 below) and is therefore ready for shipment to ***.

9.4 Waivers and Deviations.

Contractor shall timely submit requests for waivers of, or deviation from, provisions of the Performance Specification applicable to the Satellite or other Deliverable Item or the Satellite Test Plan, and, in the notice provided to Purchaser for scheduling of the SPSR as provided in Article 9.2, Contractor shall include: (i) a summary of waiver and/or deviation requests that have been submitted to Purchaser and which are still pending; and (ii) submittals of any new or additional

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requests for waivers of, or deviation from, provisions of the Performance Specification applicable to the Satellite or other Deliverable Item or the Satellite Test Plan at the time of such notice and for which Contractor desires relief. A request for waiver or deviation shall be deemed granted only if it has been approved in writing by a duly authorized representative of Purchaser. Each such waiver or deviation approved by Purchaser shall be deemed an amendment to the Performance Specification for such Satellite or Deliverable Item or the Satellite Test Plan, permitting such waiver thereof, or deviation therefrom, effective on or after the date of such approval for the Satellite or Deliverable Item. ***

9.5 Purchaser's Inspection Agents.

Purchaser and any Purchaser Associates designated by Purchaser shall, subject to Article 7, be entitled to participate in the SPSR pursuant to this Article 9.

9.6 SPSR Results.

In the event that the SPSR demonstrates that: (i) testing has been performed in accordance with the applicable sections of Exhibit D, Satellite Test Plan (including without limitation, any waivers or deviations approved by Purchaser pursuant to Article 9.4), and (ii) the Satellite conforms to the applicable requirements of Exhibit B, Satellite Performance Specification (including without limitation, any waivers or deviations approved by Purchaser pursuant to Article 9.4), Contractor shall provide written notification to Purchaser of completion of the SPSR. Purchaser, *** shall provide Contractor written notice of either (a) its concurrence with the results of the SPSR (including without limitation any waiver of its right to compel correction of those non-conformances to the requirements of Exhibit B, Satellite Performance Specification, specified by Purchaser in such notice), and the Satellite shall be deemed ready for shipment to *** or to be placed in storage (the date of such notice of concurrence, the "SPSR Complete Date") or (b) its non-concurrence with the results of the SPSR as provided in Article 9.7.

9.7 SPSR Results Find Non-Conformance.

In the event that such SPSR discloses (i) any failure to conduct testing in accordance with the applicable sections of Exhibit D, Satellite Test Plan, or (ii) any non-conformance of such Satellite to the requirements of Exhibit B, Satellite Performance Specification, and such failure or non-conformance has not been resolved by waivers or deviations approved by Purchaser pursuant to Article 9.4, a written notification of non-conformance to Contractor shall state each such non-conformance required to be corrected or repaired (with reference to the relevant provision of Exhibit D, Satellite Test Plan, or Exhibit B, Satellite Performance Specification, deemed not met).

9.8 Repairs or Replacement for Non-Conformance.

In the event that Purchaser provides Contractor with a notice of non-conformance, Contractor shall correct or repair each such Purchaser notified non-conformance promptly and thereafter conduct additional testing and/or a "delta" SPSR, in accordance with the provisions of this Article 9, to the extent necessary to demonstrate that the Satellite has been tested in accordance with Exhibit D, Satellite Test Plan, or conforms to the requirements of Exhibit B, Satellite Performance Specification, after which Contractor shall provide a written notification to Purchaser of completion

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of the supplemental SPSR. Purchaser shall, ***, provide Contractor with written notice of either (i) its concurrence with the results of the supplemental SPSR (including without limitation any waiver of its right to compel correction of those non-conformances to the requirements of Exhibit B, Satellite Performance Specification, specified by Purchaser in such notice), and the Satellite shall be deemed ready for shipment to *** or to be placed in storage, or (ii) its non-concurrence with the results of the supplemental SPSR and Contractor shall be required to repeat the process described in this Article 9.8 until Purchaser provides Contractor with a written notice of its concurrence pursuant to the requirements of this Article 9.

If Purchaser fails to provide written notification required above within the time specified above, *** the Satellite shall be deemed ready for shipment to ***.

Upon receipt of Purchaser's notification in accordance with this Article 9, Contractor shall thereafter transport such Satellite in accordance with Contractor's standard commercial practices to *** and Contractor shall proceed or continue in the performance of the Launch Support Services. Contractor shall not ship the Satellite to *** until all non-conformances are corrected or repaired or have a Purchaser-approved waiver or deviation. Purchaser shall have no obligation to authorize shipment of the Satellite to *** prior to the SPSR Complete Date.

9.9 Inspection Costs ***.

All costs and expenses incurred *** in the exercise of inspection rights under this Article 9, including without limitation ***.

9.10 Correction of Deficiencies after SPSR.

If at any time following the SPSR Complete Date of the Satellite and prior to Launch (or in the event of a Terminated Ignition, prior to any subsequent Launch), it is discovered that the Satellite has a Defect or fails to meet the requirements of Exhibit B, Satellite Performance Specification, as they may be modified as of such time pursuant to Article 9.4, Contractor shall, *** promptly correct such deficiencies prior to Launch (or in the case of a Terminated Ignition, prior to any subsequent Launch) in accordance with the applicable terms of this Contract. Contractor shall use reasonable efforts to avoid and minimize delays associated with any such Defects as further described in Article 3.2. In addition, in the event of a Terminated Ignition, Contractor and Purchaser shall proceed in accordance with Article 15.1.2 for those actions necessary to prepare the Satellite for relaunch.

9.11 Warranty Obligations.

In no event shall Contractor be released from any of its warranty obligations as set forth in Article 16 as a result of any Satellite having successfully passed the pre-shipment inspection set forth in this Article 9.

9.12 Repaired or Replaced Satellite.

Without limitation to the Satellite, the provisions of this Article 9 shall also apply to the corrected, repaired or replaced Satellite.

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10. INFORMATION REGARDING CORRECTIVE MEASURES; OTHER SIMILAR SATELLITES

10.1 Defect in Contractor's Satellites.

If the data from any satellite manufactured by Contractor (whether in-orbit or on the ground) or other information known to Contractor shows that such satellite will not or may not meet the performance specification for such satellite at any time during its mission, then Contractor shall, if applicable to the Satellite, without prejudice to Purchaser's other rights and remedies under this Contract, at law, in equity, or otherwise: (i) promptly notify Purchaser in writing thereof, together with such supporting detail as is known to Contractor and not prohibited by Contractor's obligations of confidentiality to any third-party; *** For the avoidance of doubt, the restriction on providing information that is confidential to any third-party does not relieve Contractor of its obligation to provide Purchaser notice of a Defect or potential Defect as contemplated under this Article 10. ***

10.2 Correction of Defects.

If the data available from any satellite manufactured by Contractor (whether in-orbit or on the ground) or other information known to Contractor shows that the launched Satellite Delivered under this Contract contains *** a Defect or Satellite Anomaly, Contractor shall promptly notify Purchaser in writing and proceed in accordance with Article 16.2.1.

In addition, and without limitation to any other obligations of Contractor, Contractor shall notify Purchaser promptly by telephone and confirm in writing any event, circumstance or development ***. Contractor shall use reasonable best efforts to avoid and/or mitigate the effect of such event, circumstance or development.

11. DELIVERY OF THE SATELLITE AND OTHER DELIVERABLE ITEMS

Delivery of each Deliverable Item, except the Satellite, shall occur upon arrival of such Deliverable Item at the location specified in Article 3.1, after having successfully completed any required reviews, testing and acceptance procedures. In the case of the Satellite, Delivery of the Satellite shall ***.

12. ACCEPTANCE OF THE SATELLITE AND IOT

12.1 Satellite Acceptance

Acceptance of the Satellite by Purchaser shall ***.

12.2 Launch Support and Mission Operations Support Services.

Upon arrival of the Satellite ***, Contractor shall proceed with the provision of Launch Support Services in accordance with Exhibit A, Statement of Work. After Launch of the Satellite by the Launch Agency, Contractor shall proceed with the provision of Mission Operations Support Services in accordance with Exhibit A, Statement of Work.

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12.3 IOT

*** prior to Launch of the Satellite, Contractor shall notify Purchaser of the IOT schedule. Purchaser may observe the IOT at Purchaser's or Contractor's facilities, at Purchaser's election, subject to applicable U.S. Government export restrictions and Contractor's reasonable security restrictions. When, in the reasonable assessment of Contractor, the IOT has been completed for the Satellite, Contractor shall submit the IOT results to Purchaser. Within *** after Contractor provides the certified IOT results to Purchaser with respect to the Satellite, Contractor and Purchaser shall hold the IOT Review. Contractor may elect to conduct from Contractor's facilities the IOT eclipse test set forth in the Satellite Test Plan with respect to the Satellite during the first eclipse season after IOT is otherwise completed. The results of the later IOT eclipse test will be provided to Purchaser for Satellite performance characterization and insurance purposes only. The purpose of the IOT Review is to confirm that: (i) the test program has been completed per Exhibit D, Satellite Test Plan; and (ii) the IOT results are properly documented (items (i) and (ii) being the "Purpose of IOT Review"). Upon written confirmation by Purchaser that the Purpose of IOT Review has been met, *** the IOT Review shall be complete (the date of such written confirmation, the "IOT Complete Date") and handover of the Satellite to the Purchaser shall proceed in accordance with Exhibit A, Statement of Work. Unless Purchaser provides written notice *** of the IOT Review that the Purpose of IOT Review has not been met, IOT Complete Date shall be deemed to have occurred.

12.4 TT&C

In the event that the Satellite experiences a Satellite Anomaly at or after Launch but prior to the point in time when Purchaser actually assumes responsibility for performing telemetry, tracking and control services for the relevant Satellite, then ***.

12.5 Warranty Obligation.

In no event shall Contractor be released from any of its warranty obligations applicable to the Satellite under Article 16 as a result of the Satellite having been Accepted as set forth in this Article 12.

13. ACCEPTANCE INSPECTION FOR DELIVERABLE ITEMS OTHER THAN THE SATELLITE

13.1 Inspection of Deliverable Items of Hardware Other Than The Satellite.

With respect to each Deliverable Item of hardware other than the Satellite, Purchaser shall perform Acceptance inspection within *** after Contractor has notified Purchaser that such Deliverable Item has been Delivered. Such Acceptance inspection shall be conducted in accordance with the procedures described in the Statement of Work. The purpose of the Acceptance inspection shall be to determine whether each such Deliverable Item meets applicable Performance Specification requirements as of the date of such Delivery, as such requirements may have been modified pursuant to Article 13.3.

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13.2 Purchaser's Inspection Agents.

Purchaser may, upon giving prior written notice to Contractor, cause any Purchaser Associate designated by Purchaser to conduct the Acceptance inspection pursuant to this Article 13 in whole or in part; provided, however, that the provisions of Article 7 shall apply to any such Purchaser Associate and such Purchaser Associate shall comply with Contractor's reasonable safety and security regulations provided to Purchaser in writing in advance of such inspection.

13.3 Pending Waivers.

Waivers of or deviations from the Performance Specification applicable to any Deliverable Item subject to Acceptance inspection pursuant to this Article 13 shall be addressed in the same manner as set forth in Article 9.4.

13.4 Acceptance Inspection Results.

Within a reasonable time not to exceed *** after completion of Acceptance inspection pursuant to this Article 13 for any Deliverable Item, Purchaser shall notify Contractor in writing of the results of such Acceptance inspection. In the event that such Acceptance inspection demonstrates conformity of such Deliverable Item to the applicable requirements of the Performance Specification, such Deliverable Item shall be deemed accepted by Purchaser for all purposes hereunder ("Acceptance" or "Accepted" with respect to each such Deliverable Item other than the Satellite). In the event that such Acceptance inspection discloses any non-conformance of such Deliverable Item to the applicable requirements of the Performance Specification, Purchaser's notice shall detail each such non-conformance (with reference to the applicable requirement of the Performance Specification deemed not met) and Contractor shall promptly initiate the correction or repair of such non-conformance and resubmit such Deliverable Item for Acceptance inspection in accordance with this Article 13 as to each such corrected or repaired element.

13.5 Acceptance Inspection; Equipment and Facilities.

Contractor shall make available to Purchaser such equipment and facilities as Purchaser may require to conduct any preshipment inspections. All costs and expenses incurred ***.

13.6 Warranty Obligations.

In no event shall Contractor be released from any of its warranty obligations applicable to any Deliverable Item as a result of such Deliverable Item having been Accepted as set forth in this Article 13.

13.7 Repair or Replace Deliverable Items.

The provisions of this Article 13 shall apply to corrected, repaired or replaced Deliverable Items other than the Satellite.

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13.8 Deliverable Data.

Purchaser shall, within *** of Delivery by Contractor to the location designated in Article 3.1 of Deliverable Data requiring Purchaser approval pursuant to the Statement of Work, notify Contractor in writing that such Deliverable Data has been accepted in accordance with the Statement of Work ("Acceptance" or "Accepted" with respect to each such item of Deliverable Data), or advise Contractor in writing that such Deliverable Data does not comply with the applicable requirements of the Statement of Work, identifying each particular of such non-compliance. Contractor shall promptly correct any non-compliant aspect of such Deliverable Data described in such Notice from Purchaser and re-submit it to Purchaser for inspection pursuant to this Article 13.8.

14. LIQUIDATED DAMAGES ***

14.1 Liquidated Damages.

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15. TITLE AND RISK OF LOSS

15.1 Satellite.

15.1.1 Passage of Title and Risk of Loss. Except as provided in Articles 22.2, 22.3 and 23.2, and subject to Article ***, title and risk of loss to the Satellite shall pass from Contractor to Purchaser, upon ***.

15.1.2 Terminated Ignition. In the event of a Terminated Ignition, once the launch pad has been declared safe and the Launch Agency authorizes the start of the demating operations, Contractor shall, upon Purchaser's request, immediately take all necessary actions to prepare the Satellite for a relaunch, including without limitation: (i) supporting the Launch Agency in demating the Satellite from the Launch Vehicle and conducting defueling operations; (ii) directly performing inspection and testing, refurbishment, storage, repair and replacement of damaged Component(s) (damaged as a result of the Terminated Ignition or related activities) and transportation of the Satellite to and from the Launch Site; and (iii) providing additional Launch support services for the subsequent Launch of the Satellite. *** Upon Purchaser's request, the Parties shall establish a new due date for the repaired/refurbished Satellite.

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15.1.3 Remedies. ***. CONTRACTOR MAKES NO WARRANTY AS TO THE PERFORMANCE OF ANY LAUNCH VEHICLE. THE FOREGOING SHALL NOT PREJUDICE OR LIMIT EITHER PARTY'S RIGHTS AND OBLIGATIONS WITH RESPECT TO ARTICLE 25, DISCLOSURE AND HANDLING OF PROPRIETARY INFORMATION AND ARTICLE 24, INTELLECTUAL PROPERTY.

15.2 Deliverable Items Other Than The Satellite.

Delivery and risk of loss of, and title to, each Deliverable Item of hardware other than the Satellite shall pass from Contractor to Purchaser upon Acceptance of such Deliverable Item pursuant to Article 13.4. Purchaser's rights in Deliverable Data are as set forth in Article 24.

5.3 Loss, Destruction or Damage of the Satellite ***

In the event of loss, destruction or damage of the Satellite ***

16. WARRANTIES

16.1 Terms and Period of Warranty.

16.1.1 Satellite. ***

16.1.2 Deliverable Items of Hardware Other Than The Satellite. Contractor warrants that each Deliverable Item of hardware other than the Satellite Delivered under this Contract shall be manufactured and will perform in conformity with the Performance Specification (as may be waived pursuant to Article 13.3) applicable to such Deliverable Item in every respect and will be free from Defects ***

16.1.3 Disclaimer. EXCEPT AND TO THE EXTENT PROVIDED IN ARTICLE 16.1 AND ARTICLE 16.4, CONTRACTOR HAS NOT MADE NOR DOES IT HEREBY MAKE ANY REPRESENTATION OR WARRANTY, WHETHER WRITTEN OR ORAL, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF DESIGN, OPERATION, CONDITION, QUALITY, SUITABILITY OR MERCHANTABILITY OR FITNESS FOR USE OR FOR A PARTICULAR PURPOSE, ABSENCE OF LATENT OR OTHER DEFECTS, WHETHER OR NOT DISCOVERABLE, WITH REGARD TO ANY SATELLITE OR ANY OTHER DELIVERABLE ITEM.

16.2 Repair or Replacement.

16.2.1 Satellite Anomalies. Without limiting its obligations under Article 10, Contractor shall investigate any Satellite Anomaly arising during the life of the Satellite, and *** to promptly correct any such anomaly that is correctable by Contractor from Purchaser's SCF using the facilities and equipment available at such site or is otherwise correctable in accordance with the Satellite Anomaly resolution support services set forth in Section 7 of Exhibit A, Statement of Work. Such reasonable efforts shall be conducted *** to resolve Defects or Satellite Anomalies by on-ground means, including software patches or updates, or

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transmission by Contractor of commands to the Satellite to eliminate or mitigate any adverse impact resulting from any such Satellite Anomalies or Defects, to establish work-around solutions, or to otherwise resolve such Defects or Satellite Anomalies. Contractor shall coordinate and consult with Purchaser concerning such on-ground resolution of Defects or Satellite Anomalies in the launched Satellite. If for any reason any such Satellite Anomaly or Defect cannot be or is not corrected as set forth above, and as a result thereof, such Satellite suffers any loss, including loss of Transponders or becomes a Total Loss, ***. In the event and to the extent that the occurrence of a Satellite Anomaly is not attributable to Contractor ***.

16.2.2 Deliverable Items of Hardware Other Than The Satellite. Without prejudice to Purchaser's rights and Contractor's duties and obligations under Articles 4 (solely with respect to Contractor's indemnification obligations), 6 (solely with respect to Contractor's indemnification obligations), 12.4, 12.5, 16 (except as expressly limited therein), 19, 20 and 31.3, during the applicable period specified in Article 16.1.2 for any Deliverable Item of hardware other than the Satellite, ***, any Defect in such Deliverable Item discovered by Purchaser, shall be remedied by Contractor *** by repair or replacement of the defective Component (at Contractor's election). For any such Deliverable Item, Contractor shall determine if repair or replacement is required to be performed at Contractor's plant. If required, Purchaser shall ship to Contractor's designated facility any such Deliverable Item. Contractor shall be responsible, in accordance with its standard commercial practice, *** for any such Deliverable Item once repaired or replaced to Purchaser at the location designated therefor in Article 3.1 ***. Risk of loss for any such Deliverable Item shall transfer to Contractor upon Delivery of such Deliverable Item to the shipping carrier by Purchaser, and risk of loss shall transfer to Purchaser for any such Deliverable Item once repaired or replaced pursuant to this Article 16.2.2 upon receipt thereof by Purchaser at the location designated therefor in Article 3.1. ***

16.3 Use Conditions Not Covered by Warranty.

With respect to Deliverable Items of hardware other than the Satellite, the warranty under this Article 16 shall not apply if adjustment, repair, or parts replacement is required as a result, directly or indirectly, of accident, unusual physical or electrical stress beyond the unit's designed tolerances, negligence, misuse, failure of environmental control prescribed in operations and maintenance manuals, repair or alterations by any party other than Contractor or its agents (unless Contractor or one of its Subcontractors (with the knowledge and consent of Contractor) specifically recommended such repair or alterations), or by causes other than normal and ordinary use. The warranty provided pursuant to this Article 16 is conditioned upon Contractor being given access, if required, to Deliverable Items delivered at Purchaser's facility in order to effect any repair or replacement thereof. ***

16.4 Warranty for Training and Services.

Contractor warrants that the Training Services and other services it provides to Purchaser pursuant to this Contract will conform to reasonable industry standards at the time such Training Services or other services are provided. In the event Contractor breaches this warranty, ***, Contractor shall

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apply reasonable efforts to correct the deficiencies in the provision of such Training Services and other services where it is practicable to do so.

16.5 Software.

In addition to the warranties set forth in Article 16.2.2, ***.

16.6 Subcontractor Warranties.

Contractor shall pass through and assign (and provide copies thereof, no later than Satellite Acceptance) to Purchaser all applicable warranties on goods and services given by Subcontractors to the extent Contractor is permitted by the terms of its purchase contracts with such suppliers or manufacturers and further to the extent that such assignment does not interfere with Contractor's performance of its obligations hereunder. ***

***

18. CHANGES

18.1 Right to Adjustment.

Purchaser may from time to time, in writing, request a change within the general scope of this Contract in drawings, designs, specification, method of shipment or packing, quantities of items to be furnished, place of Delivery, ***, require work in addition to the Work provided for herein, request the omission of Work or modify the whole of any part of the Work provided for herein.

In the event that such change or other triggering event *** or the time required for the performance of this Contract, *** and this Contract shall be modified in writing accordingly ***. Nothing in this Article 18 shall excuse Contractor from promptly proceeding with this Contract as changed pursuant to this Article 18.1.

18.2 Cost Adjustments.

In the event that Contractor or Purchaser claims a right to adjustment pursuant to Article 18.1 above, Contractor shall prepare and furnish to Purchaser the evidence reasonably necessary to establish the amount of any increase or decrease in the cost of, or the time required for, the performance of this Contract caused by the relevant change order. Subject to Article 18.3 below, the amount of any such cost increase or decrease will be calculated in accordance with Contractor's regularly established accounting practices ***.

18.3 Equitable Adjustment.

The Parties shall attempt to reach agreement as to any equitable adjustment that is appropriate pursuant to Article 18.1 above. Without relieving Contractor of the obligation to proceed promptly with this Contract as changed, in the event that the Parties are unable to reach agreement as to an equitable adjustment, the matter shall be determined in accordance with Article 29. During the

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pendency of such proceedings, Contractor shall proceed with the Work required under this Contract as changed and Purchaser shall pay Contractor all amounts not in dispute.

19. INTELLECTUAL PROPERTY ***

***

19.2 Infringing Equipment.

If Contractor's performance of the Work or the design or manufacture of any Deliverable Item or any part thereof or the normal intended use, lease or sale or other disposition of any Deliverable Item or any part thereof under this Contract is enjoined as a result of an Intellectual Property Claim or is otherwise prohibited, ***.

19.3 Combinations and Modifications.

Contractor shall have no liability under this Article 19 for any Intellectual Property Claim arising from ***

19.4 ***

For purposes of this Article 19, ***. The Parties agree that *** shall be considered as third-party beneficiaries entitled to enforce this Article 19 directly against Contractor. ***

20. INDEMNIFICATION

20.1 Contractor's Indemnification of Purchaser for Bodily Injury and Property Damage.

20.1.1 Contractor, at its sole cost and expense, shall defend, indemnify and hold harmless Purchaser and its Affiliates and its and their respective directors, officers, employees, shareholders (excluding claims for diminution in share value), agents and representatives, from and against any losses, damages, liabilities, suits and expenses as well as costs and expenses, including without limitation court costs and reasonable attorneys' fees (collectively, "Losses") attributable to third party claims for: (i) death or bodily injury to or damage to the property of such third-party, but only if such Losses were caused by, or resulted from, a negligent act or omission or willful misconduct of Contractor and/or its employees, subcontractors, agents, or representatives at any tier, or any of them; or (ii) any loss of or damage to or destruction of, Purchaser-furnished equipment and facilities while in Contractor's possession or control. For the avoidance of doubt, and except for Losses attributable to third party claims for bodily injury or property damage resulting from the Gross Negligence or willful misconduct of Contractor, Contractor shall have no indemnity obligation under this Article 20.1 for any Losses with respect to the operation or use of the Satellite after Launch, even if such Losses are attributable to an act or omission of Contractor or its employees prior to Launch. *** For purposes of this Article 20.1.1, ***

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20.1.2 Contractor, at its own expense, shall defend, indemnify and hold harmless the Indemnified Companies and their respective shareholders, directors, officers and employees, from and against all Losses in connection with claims arising out of, or relating to, Contractor's breaches of its obligations in Article 4.

20.2 Purchaser's Indemnity.

Purchaser, at its own expense, shall defend, indemnify and hold harmless Contractor, and its Affiliates and its and their respective directors, officers, employees, shareholders (excluding claims for diminution in share value), agents and representatives from and against any Losses for death or bodily injury to or damage to the property of a third-party claimant, but only if such Losses were caused by, or resulted from, negligent acts or omissions or willful misconduct of Purchaser or its employees, agents, subcontractors, consultants or representatives. The term "third parties" shall not be interpreted as including Contractor or any of its directors, officers and employees.

20.3 Conditions to Indemnification.

The right to any indemnity specified in Articles 19, 20.1 and 20.2 shall be subject to the following conditions:

(i) Purchaser shall be the only party entitled to enforce Articles 19 and 20 on behalf of itself and any of the Indemnified Companies, and the Parties agree that none of the Indemnified Companies shall be considered as third-party beneficiaries entitled to enforce Articles 19 and 20 directly against Contractor. The Party seeking indemnification shall promptly advise the other Party in writing of the filing of any suit or of any written or oral claim upon receipt thereof (provided that any delay in providing such notice to Contractor shall relieve Contractor of its indemnity obligations only to the extent that the delay materially prejudices Contractor with respect to defense of such claim) and shall provide the other Party, at its request and at the Indemnifying Party's expense, with copies of all documentation relevant to such suit or claim;

(ii) The Party seeking indemnification shall not make any admission nor shall it reach a compromise or settlement without the prior written approval of the other Party, which approval shall not be unreasonably withheld, conditioned or delayed; and

(iii) The indemnifying Party shall assist and assume, when not contrary to the governing rules of procedure, the defense of any claim or suit in settlement thereof and shall satisfy any judgments rendered by a court of competent jurisdiction in such suits and shall make all settlement payments. The Party seeking indemnification may participate in any defense at its own expense, using counsel reasonably acceptable to the indemnifying Party, provided there is no conflict of interest and that such participation would not adversely affect the conduct of the proceedings.

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20.4 Waiver of Subrogation.

Each Party shall use reasonable efforts without incurring cost or expense to obtain a waiver of subrogation and release of any right of recovery against the other Party and its Affiliates, contractors and subcontractors at any tier (including without limitation suppliers of any kind) and their respective directors, officers, employees, shareholders and agents, that are involved in the performance of this Contract, from any insurer providing coverage for the risks subject to indemnification by the insured Party under this Article 20.

21. TERMINATION FOR CONVENIENCE

21.1 Reimbursement of Contractor.

21.1.1 Purchaser may terminate this Contract without cause, in whole or in part, at any time prior to Launch by giving Contractor written notice of such termination. In the event of such termination, Contractor will immediately cease work as directed in the termination notice. The parties agree that the termination charges pursuant to this Article 21.1 shall be negotiated by the parties, ***

(i) ***

(ii) ***

***

21.1.2 With respect to inventory items not desired by Purchaser, Contractor shall upon Purchaser's request use its reasonable best efforts to reuse and resell such items, and ***. Title to inventory items not desired by Purchaser that are reused and/or resold by Contractor shall remain with Contractor.

***

21.1.5 The remedies set forth in this Article 21 shall be *** in the event Purchaser exercises a termination for convenience.

21.2 Partial Termination.

If the termination by Purchaser is partial, the price for the non-terminated portion of this Contract shall be ***, which must be borne by such portion because of the partial termination, ***.

21.3 Title Transfer.

In the event of a termination pursuant to this Article 21, a termination settlement meeting shall be held at a mutually agreed time and place no later than *** after submission of a claim by Contractor pursuant to Article 21.1. At or prior to the date of such termination settlement meeting, Contractor shall provide Purchaser with such documentation *** set forth in Articles 21.1 and 21.2 as Purchaser may reasonably request. Upon mutual agreement of the termination settlement, ***. Upon mutual agreement of the termination settlement, subject to applicable U.S. Government export laws, ***.

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21.4 Minimize Termination Costs.

In the event of termination pursuant to this Article 21, Contractor shall take all actions necessary to *** including without limitation the immediate discontinuance of the terminated Work under this Contract and the placing of no further orders for labor, materials or services required under the terminated portion of this Contract. Contractor agrees to take such action as may be necessary or as Purchaser may direct for protection of property in Contractor's possession in which Purchaser may have acquired an interest.

21.5 Continued Efforts.

Contractor shall continue performance of the portion of this Contract not terminated. Purchaser shall have no obligations to Contractor with respect to the terminated portion of this Contract except as set forth in this Article 21.

***

22. TERMINATION FOR DEFAULT

22.1 Failure to Perform by Contractor.

Subject to Article 22.4, and other than as a result of (a) a Force Majeure event, or (b) any cause or causes Attributable to Purchaser, if: *** Contractor does not cure, or provide a cure plan and make substantial progress towards curing, such failure within *** after receipt from Purchaser of written notice of such failure, Purchaser may terminate this Contract in whole or in part by written notice to Contractor. For the avoidance of doubt, the cure period set forth in the immediately preceding sentence does not apply to ***.

22.2 Termination Liability.

In the event of a termination for default pursuant to Article 22.1, Contractor shall ***. In all cases Contractor's liability shall be ***. Upon payment in full of all amounts due in accordance with the preceding sentences of this Article 22.2, ***. In such event Purchaser shall, *** take all action reasonably requested by Contractor to ***. In the event that this Contract is terminated as provided in this Article 22, Contractor shall protect and preserve property in the possession of Contractor in which Purchaser has an interest.

22.3 Partially Completed Items and Work In Process; Contractor's Reimbursement for Terminated Work.

In the event of termination pursuant to Article 22.1, upon Purchaser's request, Contractor shall deliver to Purchaser full title and possession, in either case, of (i) the Satellite, or (ii) all Raw Materials, Work-in-Process and Finished Goods, parts and other material together with any associated warranties, and any subcontracted items which Contractor has specifically produced or acquired or contracted for in accordance with this Contract associated with the uncompleted Satellite, provided that Purchaser shall have paid to Contractor the unpaid balance of any amounts due in accordance with the immediately following paragraph under this Article 22.3.

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In the event of termination pursuant to Article 22.1, ***

***

22.5 Contractor Termination.

Contractor may terminate this Contract upon written notice to Purchaser *** after receiving written notice thereof from Contractor ***. For the avoidance of doubt, Contractor shall not be entitled to terminate this Contract for Purchaser's *** and (ii) prior to Purchaser having received the written notice required above and being given at least *** prior to the termination hereunder to cure such failure. Termination pursuant to this Article 22.5 shall be on the same terms and conditions (including without limitation payment of Contractor) ***. The foregoing provisions of this Article 22.5 shall be ***. If, after termination pursuant to this Article 22.5, it is finally determined by arbitration, legal proceeding or mutual agreement that Purchaser ***. Purchaser timely cured any such failure, or such failure was excusable pursuant to Article 23 ***.

Upon completion of all payments to Contractor in connection with termination under this Article 22.5, Purchaser may, subject to Article 7 hereof, require Contractor to transfer to Purchaser in the manner and to the extent directed by Purchaser, title to and possession of any items comprising all or any part of the Work terminated (including without limitation all Work-in-progress, but not including any other portion of the Work to which Contractor would not have otherwise been obligated to transfer title hereunder had the Contract been completed) not used or disposed of by Contractor pursuant to the foregoing sentence. Contractor shall, upon direction of Purchaser, protect and preserve such items *** in the possession of Contractor or its Subcontractors and shall facilitate access to and possession by Purchaser of items comprising all or part of the Work terminated. ***

22.6 Survival.

The provisions of this Article 22 shall survive and remain in full force and effect, notwithstanding the expiration or termination of this Contract.

22.7 No Right to Terminate.

Neither Party shall have the right to terminate this Contract pursuant to this Article 22 ***.

23. FORCE MAJEURE

23.1 Force Majeure Event.

In the event that a Force Majeure event has occurred and is continuing, the performance obligations of a Party under this Contract that are directly affected by such Force Majeure event shall be tolled for the duration of such Force Majeure event, and the Party whose performance is affected shall not be liable to the other Party by reason of any delay in performance of this Contract that arises out of such Force Majeure event; provided that the Party whose performance is affected shall promptly take and continue to take all reasonable actions to abate such Force Majeure event as soon as possible. "Force Majeure" means any event beyond the reasonable control, and without the fault

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or negligence, of the affected Party and/or its suppliers and/or Subcontractors and includes, without limitation: (i) acts of God; (ii) acts of a public enemy; (iii) acts of a government in its sovereign capacity ***; (iv) war and warlike events; (v) catastrophic weather conditions such as hurricanes, tornadoes and typhoons; (vi) fire, earthquakes, floods, epidemics, quarantine restrictions, labor strikes, sabotage, riot and embargoes; ***. For an event to qualify for Force Majeure relief hereunder: (a) the event must be beyond the control and without fault or negligence of the Party whose performance is affected and/or its suppliers and/or Subcontractors; (b) the resulting delay cannot be circumvented by reasonable efforts to establish work-around plans, payment of expedited fees, alternate sources, or other means; and (c) the affected Party must provide the other Party with written notice thereof as soon as possible but in no event later than within *** after the affected Party becomes aware of the occurrence of such an event (except in the case of Contractor, with respect to Article 23.1(vii)). Notwithstanding anything to the contrary in the foregoing, any failure by a ***. The Parties shall use reasonable efforts to minimize the effect of any Force Majeure event. In the event a Party claims a Force Majeure event, such Party's written notice called for above shall include a detailed description of the portion of the Work (or other obligations) known to be affected by such delay ***. Upon the occurrence of Force Majeure event that causes an increase in the time required for the performance of this Contract, *** this Contract shall be modified in writing in accordance with and subject to Article 18; provided, however, ***.

23.2 Termination for Force Majeure.

In the event that a Force Majeure event *** occurs that extends for *** Purchaser shall have the right to terminate this Contract *** upon delivery of written notice to Contractor. In the event of a termination pursuant to the immediately preceding sentence: (i) upon Purchaser's request (provided that Purchaser shall have no obligation to make such request), the Parties' respective rights and obligations with respect to partially completed items and work-in-process as set forth in Article 22.3 shall apply; (ii) except to the extent that Purchaser exercises its rights set forth in subpart (i) above with respect to such Deliverable Items and/or work-in-progress, *** and (iii) Purchaser shall have no further obligation to make any further payments of the Firm Fixed Price to Contractor.

24. INTELLECTUAL PROPERTY RIGHTS; LICENSES

24.1 Intellectual Property Rights.

"Intellectual Property" means: (i) trademarks, logos, trade dress, trade names; (ii) all inventions (whether or not patentable), discoveries, improvements, ideas, know-how, formula methodology, research and development, processes and technology and software; (iii) all rights in Technical Data and Information; (iv) all common law, statutory and intangible proprietary rights and interests in and to the all of the foregoing, including without limitation, patents, copyrights, trade secrets, mask work registration and similar legally protected ownership interests. "Technical Data and Information" means documented information that is directly related to the design, development, manufacture, testing, launch, use, operation and maintenance of the Satellite. This term includes, for example, information in the form of drawings, photographs, technical writings, pictorial reproductions and specifications. This term also includes all source code, object code and VHDL code that would be necessary or useful in the design, development, manufacture, testing, launch,

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use, operation and maintenance of the Satellite. This term does not include financial reports, cost analysis and information incidental to Contract administration.

Contractor hereby grants to Purchaser and any successor owner of the Satellite and their respective Affiliates and contractors, a fully-paid up, royalty free, irrevocable and non-exclusive license to use, and sublicense the use of, and practice and have practiced throughout the world and in space, Intellectual Property exclusively for the purpose of: *** To the extent not previously provided to Purchaser, subject to U.S. export regulations and applicable export restrictions, Contractor shall provide all such Intellectual Property and Deliverable Data to Purchaser immediately following any termination of this Contract by Purchaser under Article 22 and *** and shall thereafter immediately provide Purchaser with all updates, supplements and additions to such Intellectual Property and Deliverable Data. The provisions of this paragraph shall survive and remain in full force and effect, notwithstanding the expiration or termination of this Contract.

*** proprietary hardware or software included within a Deliverable Item by Purchaser and its subcontractors to, operate, use, lease maintain, repair and replace the Satellite. Notwithstanding the foregoing, ***

24.2 Rights in Data.

Except as otherwise provided in Article 24.3, Contractor shall retain title to all Deliverable Data utilized or developed by Contractor during the performance of this Contract. Subject to U.S. export regulations and applicable export restrictions, Purchaser and any successor owner of the Satellite, and their respective officers, directors, employees, consultants, contractors and representatives, shall have the non-exclusive right to obtain and use the Deliverable Data for any and all purposes related to *** Purchaser's or any such successor's officers, directors, employees, consultants, contractors and representatives shall not disclose Deliverable Data to other companies, organizations or persons without the express prior written consent of Contractor, which consent shall not be unreasonably withheld, conditioned or delayed; provided that Purchaser shall have the right to disclose Deliverable Data to third parties to the extent reasonably necessary to ***. Except as otherwise provided in Article ***, Purchaser shall have no rights in Deliverable Data other than as expressly stated in this Contract, and title to Deliverable Data shall not pass to Purchaser or any other entity pursuant to the terms hereof. The provisions of this paragraph shall survive and remain in full force and effect, notwithstanding the expiration or termination of this Contract.

24.3 Purchaser and Joint Intellectual Property.

Purchaser owns all rights, title and interest in: (i) all Intellectual Property developed by, *** Purchaser prior to this Contract; and (ii) all Intellectual Property developed during this Contract by, *** Purchaser ***.

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With respect to Intellectual Property that is created during this Contract jointly by material contributions of employees and/or agents of both Parties ("Joint Intellectual Property"), Contractor and Purchaser shall ***. The expenses for preparing, filing and securing each Joint Intellectual Property patent application, and for issuance of the respective patent, shall be ***. *** shall furnish *** with all documents or other assistance that may be necessary for the filing and prosecution of each application. ***

The foregoing shall not prevent Contractor from offering or manufacturing any products or technology that it currently offers or manufactures.

24.4 Purchaser Intellectual Property.

Purchaser hereby grants to Contractor, and its Affiliates and contractors, a limited royalty-free and non-exclusive license to use Intellectual Property of Purchaser that Purchaser provides to Contractor ***. All right, title and interest in and to such Intellectual Property provided by Purchaser shall be and remain the sole and exclusive property of Purchaser. The license granted under this Article 24.4 is a limited license ***. Neither Contractor nor any of its Affiliates or Subcontractors shall have the right ***. Contractor shall maintain the confidentiality of Purchaser's Intellectual Property (which shall constitute Proprietary Information subject to the provisions of Article 25).

24.5 Survival of Intellectual Property Rights.

The licenses to Intellectual Property and Deliverable Data and the grant of rights to obtain the same as herein provided shall survive any termination of this Contract by Purchaser under Article 22 and any termination by Contractor under Article 22.5 that is determined to have been wrongful until the end of life of the Satellite, and shall not be affected by any disposition of assets by Contractor.

25. DISCLOSURE AND HANDLING OF CONFIDENTIAL INFORMATION

25.1 Definition of Proprietary Information.

For the purpose of this Contract, "Proprietary Information" means all information (other than Deliverable Data, which is subject to the provisions of Article 24), in whatever form transmitted, that is disclosed or made available directly or indirectly by one Party (hereinafter referred to as the "disclosing party") to the other Party hereto (hereinafter referred to as the "receiving party") relating to the performance by the disclosing party of this Contract and: (i) is identified as proprietary by means of a written legend thereon, or (ii) if disclosed orally, is identified as proprietary at the time of initial disclosure. Proprietary Information shall not include any information disclosed by a Party that: (a) is already known to the receiving party at the time of its disclosure, as evidenced by written records of the receiving party, without an obligation of confidentiality at the time of disclosure; (b) is or becomes publicly known through no wrongful act of the receiving party; (c) is independently developed by the receiving party; (d) such Party is legally compelled to disclose; or (e) is obtained from a third party without restriction and without breach of this Contract.

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25.2 Terms for Handling and Use of Proprietary Information.

For a period of *** after receipt of any Proprietary Information, the receiving party shall not disclose Proprietary Information that it obtains from the disclosing party to any person or entity except its employees, representatives and agents (including Purchaser's Associates) and its Affiliates and their employees, representatives and agents who have a need to know in order to perform under this Contract and who have been informed of and have agreed to abide by the receiving party's obligations under this Article 25. The receiving party shall use not less than the same degree of care to avoid disclosure of such Proprietary Information as it uses for its own Proprietary Information of like importance; but in no event less than a reasonable degree of care. Proprietary Information shall be used only for the purpose of performing the obligations under this Contract, or as the disclosing party otherwise authorizes in writing.

25.3 Disclosure to Competitors.

In no event may Purchaser disclose Contractor Proprietary Information ***.

25.4 Legally Required Disclosures.

Notwithstanding the foregoing, in the event that the receiving party becomes legally compelled to disclose Proprietary Information of the disclosing party, including without limitation this Contract or other supporting document(s), the receiving party shall, to the extent practicable under the circumstances, provide the disclosing party with written notice thereof so that the disclosing party may seek a protective order or other appropriate remedy, or to allow the disclosing party to redact such portions of the Proprietary Information as the disclosing party deems appropriate. In any such event, the receiving party will disclose only such information as is legally required, and will cooperate with the disclosing party (at the disclosing party's expense) to obtain confidential and proprietary treatment for any Proprietary Information being disclosed.

25.5 Title; Return.

All Proprietary Information disclosed under this Contract in tangible form (including without limitation information incorporated in computer software or held in electronic storage means) shall be and remain the property of the disclosing party. All notes, memoranda or other materials created or fabricated by the receiving party, including without limitation evaluations, based upon Proprietary Information or prepared by the receiving party which include Proprietary Information shall be considered Proprietary Information for all purposes under this Contract. Subject to Purchaser's rights under Article *** upon request of the disclosing party, all such Proprietary Information shall be returned to the disclosing party or shall be destroyed by the receiving party and shall not thereafter be retained in any form by the receiving party. Upon request of the disclosing party, the receiving party shall certify in writing that such party has either returned or destroyed all Proprietary Information previously received from the disclosing party. The rights and obligations of the Parties under this Article 25 shall survive any such return or destruction of Proprietary Information.

25.6 Disclosure of Contract Terms.

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Notwithstanding anything to the contrary in this Article 25, and subject to applicable export restrictions, the terms and conditions of this Contract may not be disclosed by either Party to any person except with the prior written consent of the other Party, provided, in each case, that the recipient of such information agrees to treat such information as confidential and executes and delivers a confidentiality agreement reasonably acceptable to both Parties or is otherwise subject to confidentiality obligations reasonably satisfactory to both Parties. Notwithstanding the foregoing, either Party shall have the right to disclose this Contract or any or all of the terms and conditions of this Contract: (i) as is required under applicable law or the binding order of a court or government agency; (ii) to United States and foreign governmental agencies for licensing and regulatory purposes; (iii) with respect to Purchaser ***; provided that: (a) the disclosure of such information shall be made in compliance with all applicable export control laws and (b) ***, the recipient of such information agrees to treat such information as confidential and executes a confidentiality agreement on terms substantially similar to those in this Contract or is otherwise subject to confidentiality obligations that are substantially similar to the confidentiality obligations set forth in this Contract. Both Parties hereby confirm that it will consider in good faith any reasonable and timely requests for redaction from the other Party.

26. PUBLICITY; PUBLIC RELEASE OF INFORMATION

Either Party intending to disclose publicly whether through the issuance of news releases, articles, brochures, advertisements, prepared speeches or other information releases concerning this Contract or the transactions contemplated herein shall obtain the prior written approval of the other Party with respect to the content and timing of such issuance. *** The obligations set forth in this Article 26 shall not apply to the following:

(i) information that is publicly available from any governmental agency or that is or otherwise becomes publicly available without breach of this Contract; and

(ii) disclosure required by applicable law or regulation, including without limitation, disclosure required by the Securities and Exchange Commission or the Nasdaq Stock Market or any other securities exchange on which the securities of a Party or its Affiliate is then trading.

For the avoidance of doubt, this Article 26 shall not preclude either Party from disclosing any internal publications or releases which are clearly marked or otherwise identifiable as confidential to a parent company or Affiliate of the disclosing party, provided that such parent company or Affiliate is bound by a non-disclosure agreement or is under confidentiality obligations with terms substantially similar to that of Articles 25 and 26.

27. OPTIONS

27.1 Replacement Satellite.

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27.1.1 Satellite Replacement Option. In the event of loss, destruction or damage of the Satellite following Launch, or as described in Section 15.3, *** Purchaser may exercise such option in writing ("Satellite Replacement Option Exercise") at any time during the period from EDC until the later of *** and (c) the period of time for Purchaser's election as set forth in Article 15.3. Upon Satellite Replacement Option Exercise, ***.

27.1.2 Satellite Replacement Price. *** provided however, that such price shall be subject to the provisions set forth in Article 39. *** For the avoidance of doubt, Purchaser shall be responsible for the provision of Launch Services for the Replacement Satellite.

27.1.3 Exercise of Satellite Replacement Option. The Parties shall promptly incorporate the exercise of this option into the Contract through an amendment in accordance with Article 36.5.

27.1.4 Changes to the Replacement Satellite. Purchaser may modify the Performance Specification and/or the Work for the Replacement Satellite, provided that any such modification shall be treated as a change pursuant to Article 18.

27.2 Additional Satellites.

Purchaser shall have the option (but shall not be obligated), which Purchaser may exercise in writing at any time, ***.

In the event Purchaser exercises an option set forth in this Article 27.2, ***.

*** For the avoidance of doubt, Purchaser shall be responsible for the provision of Launch Services for the Additional Satellite.

27.3 Test Bed.

Purchaser shall have the option (but shall not be obligated), which Purchaser may exercise in writing no later than ***. If Purchaser exercises the Test Bed Option, Contractor shall develop, test and supply the Test Bed in accordance with Section 9.0 of Exhibit A and to meet the specifications set forth in Appendix E.1 of Exhibit B. The delivery schedule and delivery location for the Test Bed shall be set forth in Section 9 of Exhibit A, Statement of Work. The payment terms are set forth in Section 2 of Exhibit E, Payment Plan.

28. INSURANCE AND RISK MANAGEMENT SERVICES

28.1 Insurance Support.

Contractor shall, ***, timely perform the various insurance support activities described in the Statement of Work and in this Article 28.1. Subject to Article 25 and Article 7, upon Purchaser's request, Contractor, ***, shall furnish to Purchaser and/or Purchaser Associates, their respective brokers, underwriters and insurers, such information regarding the Satellite as is requested by Purchaser, Purchaser Associates and their respective brokers, underwriters and insurers in connection with obtaining and maintaining insurance regarding risks relating to the Launch and/or

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in-orbit operation of the Satellite. Such information may include, without limitation: (i) providing a comprehensive presentation package on the Satellite suitable for presentation to the space insurance brokers and underwriters; (ii) supporting all necessary associated presentations (oral, written or otherwise), including without limitation attendance and participation in such presentations where requested by Purchaser; (iii) providing on a timely basis all reasonable and appropriate technical information, data and documentation; (iv) providing documentation and answers to insurer and underwriter inquiries; and (v) obtaining and maintaining any agreements and other approvals that are required (e.g., those agreements and approvals required pursuant to Article 7.3) for Purchaser's potential insurance providers to have access to all information required by such potential providers. Notwithstanding Articles 25 and 26, but subject to Article 7, Purchaser may disclose this Contract to its brokers and insurers without Contractor's consent, provided that Purchaser has entered into binding agreements with such brokers and insurers that limit the disclosure and use of such Contract on terms comparable to those contained herein.

Subject to Article 25 and Article 7, Contractor, *** shall cooperate with and provide reasonable and customary support to Purchaser and Purchaser Associates in making and perfecting claims for insurance recovery and as to any legal proceeding as may be brought by Purchaser associated with any claim for Satellite insurance recovery. Contractor shall furnish Purchaser (including without limitation Purchaser Associates) with any information that may be reasonably required to prepare and present any insurance claim regarding the Satellite and shall otherwise timely provide all reasonable assistance requested by Purchaser in connection with the procurement of insurance for the Satellite.

28.2 Contractor's Insurance.

28.2.1 Ground Insurance. During the period from EDC until Launch, Contractor shall obtain and maintain, ***, insurance coverage (the "Ground Insurance") against all risks of loss, including without limitation earthquake and other natural disasters and damage to the Satellite and its Components in an amount sufficient to cover the greater of: (i) the Contractor's full replacement value of the Satellite; and (ii) the amounts paid by Purchaser with respect to the Satellite. Such insurance shall be on reasonable and customary terms and shall include: (a) coverage for removal of debris, and insuring the structures, machines, equipment, facilities, fixtures and other properties constituting part of the project; (b) transit coverage, including without limitation ocean marine coverage (unless insured by the supplier); (c) off-site coverage for any key equipment; and (d) off-site coverage covering any property or equipment not stored on the construction site. The deductible for such insurance shall not exceed *** Contractor shall have Purchaser and/or its designees named as an additional named insured and additional loss payee on such insurance policy(ies) to the extent of their interest(s). Prior to commencing the Work, and whenever requested by Purchaser, Contractor agrees to furnish to Purchaser certificates of insurance evidencing that insurance required under this Article 28.2.1 is in full force and effect.

28.2.2 CGL Insurance. During the period from EDC until Launch, Contractor shall obtain and maintain, ***, Comprehensive General Liability Insurance (CGL) and other insurances to provide coverage of *** for bodily injury and/or property damage. Coverage shall include but not necessarily be limited to, premises and operations, products and completed operations

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and contracts. Contractor shall have Purchaser and/or its designees named as an additional named insured on such insurance policy(ies) to the extent of their interest(s). Prior to commencing the Work, and whenever requested by Purchaser, Contractor agrees to furnish to Purchaser certificates of insurance evidencing that insurance required under this Article 28.2.2 is in full force and effect.

28.2.3 Changes to Ground and CGL Insurance. Without limiting the generality of the foregoing, and to the extent Contractor is required to change material terms and conditions of such Ground Insurance or CGL, *** Contractor shall provide certificates of insurance which shall contain an endorsement setting forth that *** Contractor shall use commercially reasonable efforts to cause such insurance policies to contain a waiver of subrogation rights by the insurer against Purchaser, its Affiliates and their owners, officers, directors, employees, agents, subcontractors and customers. ***

The provisions of this Article 28.2 shall survive and remain in full force and effect, notwithstanding the expiration or termination of this Contract.

29. DISPUTE RESOLUTION

Any dispute, claim, or controversy between the Parties arising out of or relating to this Contract ("Dispute"), including any Dispute with respect to the interpretation, performance, termination, or breach of this Contract or any provision thereof shall be resolved as provided in this Article 29.

29.1 Informal Dispute Resolution.

Prior to the initiation of litigation, the Parties shall first attempt to resolve their Dispute informally, in a timely and cost-effective manner, as follows:

(i) If, during the course of the Work, a Party believes it has a Dispute with the other Party, the disputing Party shall give written notice thereof, which notice will describe the Dispute and may recommend corrective action to be taken by the other Party. Contractor's program manager shall promptly consult with Purchaser contract manager in an effort to reach an agreement to resolve the Dispute;

(ii) In the event that agreement cannot be reached within *** of receipt of written notice, either Party may request that the Dispute be escalated, and the respective positions of the Parties shall be forwarded to an executive level higher than that under paragraph (i) above for resolution of the Dispute;

(iii) In the event agreement cannot be reached within *** of receipt of written notice, either Party may request that the Dispute be escalated, and the respective positions of the Parties shall be forwarded to the Chief Executive Officer (CEO) or equivalent of each Party for resolution of the Dispute; and

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(iv) In the event agreement is not reached as provided in paragraphs (i), (ii), or (iii) above within a total of *** after receipt of the written notice described in Paragraph A above, either Party may proceed in accordance with Article 29.2.

29.2 Litigation.

Either Party shall be entitled to forego or terminate prematurely the informal dispute resolution process specified in Article 29.1 in the event such Party makes a good faith determination that (i) that amicable resolution through continued negotiation of the Dispute does not appear likely, (ii) a breach by the other Party is such that a temporary restraining order or other preliminary injunctive relief to enforce its rights or the other Party's obligations under the provisions of this Contract is necessary or (iii) litigation is appropriate to avoid the expiration of an applicable limitations period or to preserve a superior position with respect to creditors.

Any suit brought shall be brought in any court of competent jurisdiction in the State of New York sitting in the Borough of Manhattan, and the Parties hereby waive any objection to that venue and that court's exercise of personal jurisdiction over the case. The Parties hereby irrevocably consent to the exercise of personal jurisdiction by the state and federal courts in the State of New York sitting in the Borough of Manhattan concerning any Dispute between the Parties. If, for any reason, neither the state nor federal courts in New York sitting in the Borough of Manhattan will exercise jurisdiction over the Dispute, then litigation as permitted herein may be brought in any court of competent jurisdiction in the United States of America.

If a dispute arises as to whether or not a Party has committed or acted with gross negligence or willful misconduct, that issue alone shall be resolved by a New York court ***, and the court shall resolve such issue by applying the laws of the State of New York without regard to its conflict of law rules. ***

Nothing in this Contract precludes a Party that prevails on any claim from initiating litigation in any appropriate forum to enter or enforce a judgment based on the court's award on that claim.

Pending final resolution of any dispute (including the informal dispute resolution process and litigation), Contractor shall, unless otherwise directed by Purchaser in writing, perform all its obligations under this Contract, provided that Purchaser continues to make undisputed payments as they come due. For purposes of clarification, Contractor shall not be entitled to stop work under this Contract for Purchaser's failure to make payment hereunder to the extent Purchaser has disputed such payments in good faith pursuant to Article 5.2.

30. INTER-PARTY WAIVER OF LIABILITY FOR A LAUNCH

30.1 Launch Services Agreement Inter-Party Waiver of Liability.

Each Party hereby agrees to be bound by the no-fault, no-subrogation inter-party waiver of liability and related indemnity provisions required by the Launch Services Agreement with respect to the Launch and to cause their respective contractors and subcontractors at any tier (including without limitation suppliers of any kind) that are involved in the performance of this Contract and any other person having an interest in the Satellite or any Transponder thereon (including without limitation

***

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customers of Purchaser) to accede to such waiver and indemnity, which in every case shall include claims against the Launch Agency, either Party and their respective contractors and subcontractors at any tier (including without limitation suppliers of any kind) that are involved in the performance of this Contract. The Parties shall execute and deliver any instrument that may be reasonably required by the Launch Agency to evidence their respective agreements to be bound by such waivers.

30.2 Waiver of Subrogation.

The Parties also shall use reasonable efforts to obtain from their respective insurers, and shall require their respective contractors and subcontractors at any tier (including without limitation suppliers of any kind) that are involved in the performance of this Contract and any other person having an interest in the Satellite or any Transponder thereon (including without limitation non-consumer customers of Purchaser), to use reasonable efforts to obtain from their respective insurers, an express waiver of such insurers' rights of subrogation with respect to any and all claims that have been waived pursuant to this Article 30 (such reasonable efforts not to include payment of additional amounts or additional premiums for such waiver).

30.3 Indemnity Related to the Inter-Party Waiver of Liability.

Each Party shall indemnify and hold harmless the other Party and/or its contractors and subcontractors at any tier (including without limitation suppliers of any kind) that are involved in the performance of this Contract, from and against any claim made by the indemnifying Party and/or any of its contractors and subcontractors (including without limitation suppliers of any kind) that are involved in the performance of the Contract, or by any person having an interest in the Satellite or Transponder thereon (including without limitation customers of Purchaser), or by insurer(s) identified in Article 31.1, resulting from the failure of the indemnifying Party to waive any liability against, or to cause any other person the indemnifying Party is obligated to cause to waive any liability against, the Launch Agency, the other Party or either of their contractors and subcontractors at any tier (including without limitation suppliers of any kind) involved in the performance of this Contract. The Parties shall execute and deliver any instrument that may be reasonably required by the Launch Agency to evidence their respective agreements to be bound by such indemnifications.

30.4 Survival of Obligations.

The waiver, indemnification and hold harmless obligations provided in this Article 31 shall survive and remain in full force and effect, notwithstanding the expiration or termination of this Contract.

30.5 Third-Party Claims Coverage.

With respect to third party liability for death or bodily injury or for the loss of or damage to property that may be sustained, and any consequences thereof, resulting from, or arising in connection with the performance of the Launch Services for the Satellite, ***.

*** Certain confidential portions of this exhibit were omitted by means of redacting a portion of the text.

31. LIMITATION OF LIABILITY

31.1 Limitation.

*** NEITHER PARTY SHALL BE LIABLE DIRECTLY OR INDIRECTLY TO THE OTHER PARTY, TO ITS OFFICERS, DIRECTORS, EMPLOYEES, CONTRACTORS OR SUBCONTRACTORS AT ANY TIER (INCLUDING WITHOUT LIMITATION SUPPLIERS OF ANY KIND), AGENTS OR CUSTOMERS, TO ITS PERMITTED ASSIGNEES OR SUCCESSOR OWNERS OF ANY SATELLITE OR OTHER DELIVERABLE ITEM OR TO ANY OTHER PERSON CLAIMING BY OR THROUGH SUCH OTHER PARTY, FOR ANY AMOUNTS REPRESENTING LOSS OF PROFITS, LOSS OF BUSINESS, OR INDIRECT, SPECIAL, INCIDENTAL, EXEMPLARY, CONSEQUENTIAL OR PUNITIVE DAMAGES, INCLUDING WITHOUT LIMITATION LOST PROFITS, LOST REVENUES *** ARISING FROM OR RELATING TO THE PERFORMANCE OR NONPERFORMANCE OF THIS CONTRACT OR ANY ACTS OR OMISSIONS ASSOCIATED THEREWITH OR RELATED TO THE USE OF ANY ITEMS DELIVERED OR SERVICES FURNISHED HEREUNDER, WHETHER THE BASIS OF SUCH LIABILITY IS BREACH OF CONTRACT, TORT (INCLUDING NEGLIGENCE OF ANY TYPE *** STATUTE OR OTHER LEGAL OR EQUITABLE THEORY.

31.2 Liability.

***, IN NO EVENT SHALL CONTRACTOR'S TOTAL LIABILITY ARISING OUT OF OR RELATING TO THIS CONTRACT EXCEED THE SUM OF: ***

***

31.5 Survival.

THIS ARTICLE 31 SHALL SURVIVE THE EXPIRATION OR TERMINATION OF THIS CONTRACT FOR WHATEVER CAUSE.

32. GROUND STORAGE

32.1 Notification.

Purchaser may direct Contractor to store the Satellite after completion of SPSR.

32.2 Location.

Ground Storage shall be performed at a Contractor controlled facility and shall be conducted in accordance with the satellite storage plan Section(s) of the Statement of Work.

32.3 Charges.

Except as set forth in Article 32.7, the firm fixed price for Ground Storage of the Satellite shall be *** while the Satellite is in Ground Storage, and in addition, ***.

*** Certain confidential portions of this exhibit were omitted by means of redacting a portion of the text.

32.4 Payments.

Payments shall be made on ***

32.5 Title and Risk of Loss.

Title and risk of loss to the Satellite shall remain with Contractor at all times until Launch, including while the Satellite is in Ground Storage. Contractor shall assume full responsibility for any loss or damage to the Satellite during Ground Storage.

32.6 Notification of Intention to Launch a Previously Stored Satellite.

Purchaser shall notify Contractor in writing that the Satellite in Ground Storage should be removed from Ground Storage and delivered ***. This notification must be received by Contractor not less than ***, or such shorter period as is reasonably acceptable to Contractor, prior to the scheduled date for Delivery to *** of the Satellite. Failure to notify Contractor in a timely manner will result in *** for such Satellite.

***

33. SUBCONTRACTS

***

33.2 No Privity of Contract.

Subject to the provisions of this Article 33, Contractor shall have the right to use such Subcontractors as may be necessary to perform the Work under this Contract. Nothing in this Contract shall be construed as creating any contractual relationship between Purchaser and any Subcontractor. Contractor is fully responsible to Purchaser for the acts or omissions of Subcontractors and of any other parties used by Contractor or a Subcontractor in connection with the performance of the Work. Any failure by a Subcontractor to meet its obligations to Contractor shall not constitute a basis for Force Majeure (except where such failure is itself a Force Majeure event), and shall not relieve Contractor from meeting any of its obligations under this Contract. Notwithstanding anything to the contrary herein, ***

34. KEY PERSONNEL

Contractor will assign properly qualified and experienced personnel to the program contemplated under this Contract. Personnel assigned to the following positions shall be considered “Key Personnel:”

***

*** Contractor shall provide a chart to Purchaser of the program Key Personnel and shall keep such chart current. Contractor shall promptly inform Purchaser upon becoming aware that any of the Key Personnel will be leaving the program.

*** Certain confidential portions of this exhibit were omitted by means of redacting a portion of the text.

35. NOTICES

35.1 Written Notification.

Each notice or correspondence required or permitted to be given hereunder shall be given in writing (except where oral notice is specifically authorized) to the respective addresses and to the attention of the individuals set forth below by overnight courier, charges prepaid, or first class registered or certified mail, return receipt requested, postage prepaid or electronic mail, upon confirmation of an electronic notice that the transmission has been delivered. The sending of such notice with confirmation of successful receipt of such notice shall constitute the giving thereof.

In the case of Purchaser:

EchoStar XXIV L.L.C.
c/o Hughes Network Systems, LLC
11717 Exploration Lane
Germantown, Maryland 20876
***

With a copy (sent via separate mailing) to:

Hughes Network Systems, LLC
11717 Exploration Lane
Germantown, Maryland 20876
Attn: General Counsel
***

In the case of Contractor:

Space Systems/Loral, LLC
3825 Fabian Way
Palo Alto, CA 94303-4697
Attn: Contract Manager

With a copy (sent via separate mailing) to:
Space Systems/Loral, LLC
3825 Fabian Way
Palo Alto, CA 94303-4697
Attn: Program Manager

35.2 Change of Address.

Either Party may, from time to time, change its notice address and/or fax number or the persons to be notified by giving the other Party written notice (as provided above) of such new information and the date upon which such change shall become effective.

*** Certain confidential portions of this exhibit were omitted by means of redacting a portion of the text.

36. GENERAL

36.1 Binding Effect; Assignment.

This Contract shall be binding upon and inure to the benefit of the Parties hereto and their respective successors and assigns as permitted hereunder. Except as otherwise expressly set forth to the contrary herein, this Contract, and the Parties' respective rights and obligations hereunder, may not be assigned, either in whole or in part, by either Party without the express written approval of the other Party *** In addition to, and without limitation of the foregoing, in no event shall Purchaser be obligated to accept an assignment of this Contract if such assignment would result in: ***.

36.2 Severability.

If any provision of this Contract is declared or found to be illegal, unenforceable or void, the Parties shall negotiate in good faith to agree upon a substitute provision that is legal and enforceable and is as nearly as possible consistent with the intentions underlying the original provision. If the remainder of this Contract is not materially affected by such declaration or finding and is capable of substantial performance, then the remainder shall be enforced to the extent permitted by law.

36.3 Captions.

The captions contained herein are for purposes of convenience only and shall not affect the construction of this Contract.

36.4 Relationships of the Parties.

It is expressly understood that Contractor and Purchaser intend by this Contract to establish the relationship of independent contractors only, and do not intend to undertake the relationship of principal and agent or to create a joint venture or partnership or any other relationship, other than that of independent contractors, between them or their respective successors in interests. Except as expressly set forth to the contrary herein, neither Contractor nor Purchaser shall have any authority to create or assume, in the name or on behalf of the other Party, any obligation, expressed or implied, or to act or purport to act as the agent or the legally empowered representative of the other Party, for any purpose whatsoever.

36.5 Entire Agreement.

This Contract, including all Exhibits and the Attachments hereto, represents the entire understanding and agreement between the Parties hereto with respect to the subject matter hereof, and supersedes all prior negotiations and agreements with respect to the subject matter hereof. This Contract may not be modified or amended, and the Parties' rights and obligations may not be waived, except by the written agreement of both Parties.

36.6 Standard of Conduct.

*** Certain confidential portions of this exhibit were omitted by means of redacting a portion of the text.

Both Parties agree that all their actions in carrying out the provisions of this Contract shall be in compliance with applicable laws and regulations and neither Party will pay or accept bribes, kickbacks or other illegal payments, or engage in unlawful conduct.

36.7 Construction.

This Contract, the Exhibits and the Attachments hereto have been drafted jointly by the Parties and in the event of any ambiguities in the language hereof, there shall be no inference drawn in favor of or against either Party.

36.8 Counterparts.

This Contract may be signed by facsimile and in any number of counterparts with the same effect as if the signature(s) on each counterpart were upon the same instrument.

36.9 Applicable Law.

Except as expressly set forth to the contrary in Article 29, this Contract shall be interpreted, construed and governed, and the rights of the Parties shall be determined, in all respects, according to the laws of the State of New York without regard to its conflict of law rules.

36.10 Survival.

Termination or expiration of this Contract for any reason shall not release either Party from any liabilities or obligations set forth in this Contract that: (i) the Parties have expressly agreed shall survive any such termination or expiration; or (ii) remain to be performed or by their nature would be intended to be applicable following any such termination or expiration.

36.11 U.N. Convention on the International Sales of Goods.

The U.N. Convention on the International Sales of Goods shall not apply or otherwise have any legal effect with respect to this Contract.

36.12 Waiver.

No delay or omission by either Party to exercise any right or power shall impair any such right or power or be construed to be a waiver thereof. No payment of money by any person or entity shall be construed as a waiver of any right or power under this Contract. A waiver by any Party of any of the covenants, conditions or contracts to be performed by the other Party or any breach thereof shall not be construed to be a waiver of any succeeding breach thereof or of any other covenant, condition or contract herein contained. No change, waiver or discharge hereof shall be valid unless in writing and signed by a duly authorized representative of the Party against which such change, waiver or discharge is sought to be enforced.

36.13 Third-Party Beneficiaries.

*** the provisions of this Contract are for the exclusive benefit of the Parties hereto, and nothing in this Contract, express or implied, is intended, or shall be deemed or construed, to confer upon any

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third-party *** any rights, benefits, duties, obligations, remedies or interests of any nature or kind whatsoever under or by reason of this Contract.

36.14 Specific Performance.

Each Party recognizes that any material breach of the terms of this Contract would give rise to irreparable harm to the other Party for which money damages would not be an adequate remedy, and accordingly agrees that, any term of this Contract to the contrary notwithstanding, in addition to all other remedies available to it, each Party shall be entitled to enforce the terms of this Contract by a decree of specific performance against the other Party, in each case without the necessity of proving the inadequacy of money damages, provided that neither Party shall be entitled to receive the benefit of such specific performance with respect to any action by the other Party that would result in a violation by such other Party of any applicable law or regulation. Such remedy shall not be deemed the exclusive remedy for breach of this Contract, but shall be in addition to all other remedies that a Party may have at law, in equity, under contract or otherwise. The provisions of this Article 36.14 shall survive expiration or termination of this Contract indefinitely.

36.15 Order of Precedence.

In the event of any conflict or inconsistency among the terms of the Preamble, Articles 1 to 40 to this Contract and the Exhibits, the following order of decreasing precedence shall apply:

***

40. PURCHASER DELAY OF WORK

Except in the case of a Force Majeure event, in the event the performance of all or any part of the Work is delayed or interrupted by Purchaser's failure to perform its contractual obligations set forth in this Contract within the time specified in this Contract or within a reasonable time if no time is specified, or an act by Purchaser that unreasonably interferes with Contractor's performance of its obligations under this Contract or because of Purchaser's failure to obtain the authorizations contemplated in Article 6.2 (each a "Purchaser Delay"), ***. In the event that *** and this Contract shall be modified in writing in accordance with and subject to Article 18. Contractor shall use reasonable best efforts to avoid and/or mitigate the effect of such Purchaser Delay.

(signature page follows)

IN WITNESS THEREOF, the Parties have executed this Contract by their duly authorized officers as of the date set forth in the Preamble.

Space Systems/Loral, LLC

By: _____
Name: Jeremy Anderson
Title: Vice President and Chief Financial Officer

EchoStar XXIV L.L.C.

By: _____

Name: Dean Manson
Title: Executive Vice President, General Counsel
and Secretary

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EX-10.2 2 d527434dex102.htm EX-10.2

Exhibit 10.2

SPACE EXPLORATION TECHNOLOGIES CORP.

LAUNCH SERVICES AGREEMENT

This Falcon 9 Launch Services Agreement, including all attachments hereto (this "***Agreement***"), is entered into as of December 21, 2012 ("***Effective Date***") by and between Space Exploration Technologies Corp., a Delaware corporation with principal offices at 1 Rocket Road, Hawthorne, CA 90250 ("***SpaceX***") and ORBCOMM Inc., a Delaware corporation with principal offices at 2115 Linwood Avenue, Fort Lee, NJ 07024 ("***Customer***").

WHEREAS, pursuant to the Termination Agreement between SpaceX and Customer, dated as of the date hereof, the Parties have mutually determined to terminate any and all obligations or claims under the Falcon 1e Commercial Launch Services Agreement, dated August 28, 2009 (the "***Falcon 1e Agreement***");

WHEREAS, Customer desires SpaceX to launch up to eighteen (18) of its Satellites into orbit, in two (2) batches of Satellites (each a "***Satellite Batch***"), where each Satellite Batch provided by Customer to be launched by SpaceX shall consist of no fewer than [***…***] Satellites (or total Payloads) and no more than [***…***] Satellites (or total Payloads); and

WHEREAS, SpaceX desires to provide Launch Services for eighteen Satellites with its Falcon 9 launch vehicle, [***…***].

NOW THEREFORE, the Parties agree as follows:

1. Definitions. Capitalized terms used herein and not defined herein shall have the meanings given such terms on attached **Exhibit A**.

2. Services.

2.1 Launch Services. SpaceX shall furnish Customer two (2) Launch Services for two Satellite Batches consisting of up to eighteen (18) Satellites (or total Payloads) in the aggregate, to be launched from the Launch Site as contemplated herein and in the Statement of Work attached hereto as **Exhibit B** ("***SOW***"). A Launch Service shall be considered complete upon Launch, but not complete in the event of a Terminated Ignition. Additional services may be provided as set forth in the SOW, or subject to mutual written agreement of the Parties. With respect to each Launch Service, SpaceX reserves the right to sell any remaining payload capacity on the Launch Vehicle to other customers of SpaceX on a Non-Interference Basis. Customer agrees to reserve at least one (1) meter of height above the 1575 interface plane of the Dispenser in order to enable SpaceX to utilize for third-party payloads, to be reflected in the Interface Control Document.

2.2 Initial Flight of Launch Vehicle. [***…***], provided that such delay (counted from the day after the last day of the First Launch Period) shall not be attributable to either Customer or SpaceX pursuant to Sections 9.2 (Customer Delays) and 9.3 (SpaceX Delays), respectively, provided however, that Customer's rights and remedies under Sections 14.2(b) (Termination for Delay) and 14.2(d) (Special Termination Right), as well as SpaceX's rights and remedies under Section 14.3(b) shall continue to apply.

3. Price. The Contract Price shall be Forty-Two Million Six Hundred Thousand U.S. dollars ($42,600,000) ("***Contract Price***"). The price for each Launch Service shall be [***…***] ("***Launch Price***"), with Milestone Payments to be made in accordance with Section 4 (*Payment Terms*). For the avoidance of doubt, the Launch Price does not include the Dispenser, services associated with the Dispenser that are not reflected in the SOW, or other additional services that might be agreed by the Parties (or a third party contracting with Customer) to be provided, on a time and materials basis, pursuant to a separate agreement.

4. Payment Terms.

4.1 Down Payment. The Parties acknowledge that [***…***] of the aggregate [***…***] in payments made by Customer to SpaceX pursuant to the Falcon 1e Agreement shall be applied as a down payment under this Agreement, to be equally between the first Launch Service and the second Launch Service (individually or together, as applicable, the "***Down Payment***"), as reflected below, against the aggregate Forty-Two Million, Six Hundred Thousand U.S. dollars ($42,600,000) payable under this Agreement. The Parties further acknowledge and agree that, by virtue of execution of this Agreement, any claim, obligation, or liability, or refund that may be owed, under the Falcon 1e Agreement is waived or terminated, as applicable.

4.2 Milestone Payments. In addition to the Down Payment, upon the completion of any milestone set forth in below (each a "Milestone"), SpaceX shall be entitled to the payment (each a "*Milestone Payment*"), and Customer shall pay the applicable invoice issued by SpaceX in accordance with Section 4.3 (*Payment Obligation*), and pursuant to the following schedule:

[***…***]

The Parties acknowledge and agree that where SpaceX requires cooperation or information from Customer to accomplish a given Milestone, if a Customer failure or delay in furnishing such cooperation or information delays accomplishment of such Milestone, after written notice thereof by SpaceX to Customer, the corresponding Milestone Payment shall nevertheless be due to SpaceX upon the originally scheduled Due Date and paid by Customer to SpaceX accordingly.

4.3 Payment Obligation.

(a) Customer shall be obligated to make all payments to SpaceX hereunder regardless of the outcome of a Launch. Payments shall be made regardless of Launch Vehicle readiness status reports or Satellite / Satellite Batch readiness status reports.

(b) Upon the occurrence of each Launch, regardless of outcome, any payments made under this Agreement to the extent directly attributable to the corresponding Launch Service as set forth above (whether received by SpaceX or due and owing to SpaceX) shall be considered earned and nonrefundable by SpaceX.

4.4 Invoices. Excluding Milestone Payment "Launch 1-A," which shall be paid no later than two (2) days after the date of this Agreement, SpaceX shall submit an invoice to Customer for payment after completion of a Milestone, on or after the completion thereof, including [***…***]. Payment shall be made by Customer to SpaceX, for any Milestone Payment within [***…***] of submission of an invoice by SpaceX in accordance with the requirements of this Section 4 (*Payments*). SpaceX shall invoice Customer at the address set forth in Section 18 (*Notices*) and Customer shall make payments via electronic deposit of funds to the SpaceX Account.

4.5 Late Fees. Any payment due under this Agreement that shall remain unpaid after its date due as set forth herein, and if the Party owed such payment has provided the other Party written notice thereof and a [***…***] period to cure, then the non-paying Party shall pay interest to the other Party at a rate equal to the lesser of: (i) [***…***] per annum (applied on an annual basis); or (ii) the maximum amount permitted by applicable law. Interest will be computed commencing as of the business day after the original due date until and including the date payment is actually made, unless paid during the cure period, in which case no interest shall be due.

5. Launch Schedule.

5.1 Scheduling. The date of the first Launch ("***First Launch Date***") shall occur within a [***…***] period between June 15, 2013 and [***…***] ("***First Launch Period***"), and the date of the second Launch ("***Second Launch Date***") shall occur within a [***…***] period beginning [***…***] and ending June 30, 2014 ("***Second Launch Period***"). Notwithstanding the timeframes established for the First Launch Period, the parties understand and agree that SpaceX shall use commercially reasonable efforts to perform the first Launch within [***…***] of receipt from Customer of a complete and correct finite element model representative of the integrated payload stack configuration, per Appendix B of the SOW, and any other information reflected in the SOW for joint integration analyses. Any delays or noncompliance to the SOW attributable to Customer or its Related Third Parties with respect to delivery of the foregoing to SpaceX shall toll SpaceX's obligations to perform the first Launch Service day-for-day and shall not affect SpaceX's rights or remedies pursuant to Sections 9.2 or 14.3(b).

The Parties shall determine, no later than: (i) [***…***] prior to the start of a First Launch Period, a [***…***] period within the First Launch Period ("***First Launch Slot***") during which the First Launch Date will occur; (ii) [***…***] prior to the start of a First Launch Slot, a [***…***] period within the First Launch Slot ("***First Launch Interval***") during which the First Launch Date will occur; and (iii) at least [***…***] prior to the start of a First Launch Interval, the estimated First Launch Date. The Parties shall determine, no later than: (i) [***…***] after the actual first Launch Date, a [***…***] period within a Second Launch Period ("***Second Launch Slot***") during which the Second Launch Date will occur; (ii) [***…***] prior to the start of a Second Launch Slot, a [***…***] period within the Second Launch Slot ("***Second Launch Interval***") during which the Second Launch Date will occur; and (iii) at least [***…***] prior to the start of a Second Launch Interval, the Second Launch Date. The above-referenced dates and time frames shall be determined by mutual written consent of the Parties (such consent not to be unreasonably withheld, conditioned or delayed), based on Launch Range availability, Launch Vehicle readiness, Satellite Batch readiness, weather and similar factors.

5.2 Satellite Batch Configuration and Delivery.

(a) Configuration. Customer shall furnish SpaceX with written notice of the quantity of Satellites and/or Satellite Mass Simulators that shall form the Satellite Batch to be supplied by Customer for a specific Launch Service, and SpaceX shall likewise notify Customer of secondary payload configuration, if any, as follows: (i) with respect to the Launch Service for the first Satellite Batch, no later than [***…***] after the Effective Date; and (ii) with respect to the Launch Service for the second Satellite Batch, no later than [***…***] prior to the first day of the Second Launch Period; provided, however, that in no case shall either Satellite Batch provided by Customer for either Launch Service consist of more than [***…***] Payloads and that in no case shall SpaceX be obligated to Launch a total of more than eighteen (18) Payloads over both Launch Services. For the avoidance of doubt, following the first Launch Service, SpaceX shall be deemed to have discharged its obligation with respect to no fewer than [***…***], regardless of whether Customer elects to substitute mass ballast for one or more Satellites in the initial Satellite Batch.

(b) Delivery to Launch Site. In any case, Customer shall deliver the relevant Satellite Batch and Dispenser to the Launch Site at least four (4) weeks and not more than six (6) weeks prior to the applicable Launch Date, fully tested (with the exception of standard post-shipment testing) and ready for integration with the Launch Vehicle.

5.3 Periodic Certifications. Beginning [***…***] 2013, and every [***…***] thereafter until the relevant Launch, for each Launch Service, each Party shall certify (in writing) to the other if production of the Launch Vehicle or Satellite Batch (as applicable) is on schedule for the relevant Launch Date or not. With respect to a Satellite Batch, the [***…***] certification must include the launch readiness date as well as the status of each Satellite of the relevant Satellite Batch as of the date of certification. With respect to the Launch Vehicle, the certification must include the launch readiness date as well as the status of the relevant Launch Vehicle prior to the relevant Launch. In the event of an anticipated delay in production of the Launch Vehicle or a Satellite Batch (as applicable), the Party experiencing the delay shall provide a *bona fide* estimate of the duration of the delay. Notwithstanding the foregoing, the Parties acknowledge and agree that any delay fees (described in Section 9 (*Delays*)) shall apply only to actual Launch delays beyond the First Launch Period or Second Launch Period, as applicable, and not anticipated production or other delays.

5.4 Launch Manifest. SpaceX seeks to avoid launch scheduling conflicts when allocating launch slots on the SpaceX manifest. [***…***] With respect to a manifest conflict affecting Customer's second Launch Service, SpaceX will manage manifest, production and launch date decision making per the following priorities:

[***…***]

Following a launch displacement by a higher-priority launch at the Launch Site, and subject to the terms and conditions of this Agreement, SpaceX shall retain the pre-existing launch order (rather than move the displaced mission to a subsequent vacant launch period).

In the event of a launch delay by SpaceX, and subject to the other terms and conditions of this Agreement, the pre-existing order of launches at the Launch Site shall be maintained, unless the reason for the SpaceX delay is unique to the interface of the Satellite Batch and the Launch Vehicle, subject to the other terms and conditions of this Agreement, SpaceX shall reschedule Customer's Launch Date during any subsequent unoccupied time period selected by Customer of at least [***…***], as indicated on the schedule to be provided by SpaceX.

5.5 Launch Vehicle Upgrades. Beginning on [***…***], through [***…***], SpaceX shall use commercially reasonable efforts to accommodate up to [***…***] individual U.S. person direct employees of Customer to attend, solely as a passive observer, design briefings held for commercial customer(s) of SpaceX (subject to the consent of such customer(s)), involving development of the Falcon 9 launch vehicle, [***…***]; specifically, the [***…***]. For the avoidance of doubt, Customer's attendance as a passive observer shall not give rise to any concurrence or approval authority for Customer with respect to any of the Falcon 9 launch vehicle, [***…***], nor shall it obligate SpaceX to seek Customer's concurrence or approval with respect to any aspect of the Falcon 9 launch vehicle, [***…***], development.

6. Taxes. Should Taxes be levied on the services or payments contemplated herein (other than Taxes on the income of the Parties), Customer shall be responsible for all Taxes related to the Satellite Batch and every Satellite ("***Customer Taxes***") and SpaceX shall be responsible for all Taxes related to the Launch Vehicle and the Launch Services. Customer Taxes are not included in the Contract Price and shall be borne by Customer in addition to the Contract Price. Where SpaceX is required by law to withhold Customer Taxes, SpaceX shall notify and provide Customer evidence of such requirement and Customer shall pay SpaceX the full amount of such withheld Customer Taxes in addition to the Contract Price.

7. Third Party Liability for Launch Activities.

7.1 Insurance. SpaceX shall satisfy (at its own expense) third party launch liability insurance requirements in the amounts and consistent with applicable United States federal regulations and statutes governing commercial space launch. SpaceX shall name as additional insureds (among others), Customer, any customer of Customer directly involved in Launch Activities, Customer's Related Third Parties directly involved in Launch Activities, any third party payload customers, any customers of a third party payload customer directly involved in Launch Activities, and SpaceX's Related Third Parties directly involved in Launch Activities. Such insurance shall cover death, bodily injury, property loss and damage to third parties for such launch activities as are prescribed by the CSLA and the terms of the launch license issued to SpaceX pursuant thereto ("***Launch Activities***"). Third-party launch liability insurance does not cover any loss or damage to the Satellite Batch or any Satellite, or any Customer property, equipment, or personnel (or the property, equipment, or personnel of Customer's Related Third Parties). Any insurance coverage for the Satellite Batches (including any and all Satellite(s) grouped therein), Customer property, equipment, and personnel (and the property, equipment, or personnel of Customer's Related Third Parties) at any time during the Agreement, including any static fires of the Launch Vehicle, shall be the sole responsibility of Customer and shall be purchased no later than the applicable Satellite Batch arriving at the Launch Site. Launch or On-orbit insurance policies shall be purchased by Customer at least [***…***] prior to the applicable Launch Date, and Customer shall initiate discussions with insurance providers for Launch or On-orbit insurance policies at least [***…***] prior to the applicable Launch Date. All insurance policies purchased by Customer shall expressly waive rights of subrogation as to SpaceX and its Related Third Parties. Copies of Customer policies under this Section 7.1 (*Insurance*) shall be provided to SpaceX no later than [***…***] after the purchase of such policies.

7.2 Excess Third Party Liability for Launch Activities. To the extent not covered by third party launch liability insurance or eligible for coverage by the United States Government pursuant to the CSLA, SpaceX shall be exclusively liable to third parties for any death, injury, loss or damage arising from the Launch Activities caused by SpaceX or its equipment (including the Launch Vehicle or parts or components thereof), and Customer shall be exclusively liable to third parties for any death, injury, loss or damage arising from the Launch Activities caused by Customer or its equipment (including the Satellite Batch or any Satellite or parts or components thereof).

8. Cross-Waivers; Indemnification.

8.1 Waivers. Each Party hereby agrees not to sue or otherwise bring a claim against the other Party, such Party's Related Third Parties or the U.S. Government or its contractors or subcontractors for any injury, death, property loss or damage (including loss of or damage to the Satellite Batch or any Satellite, the Launch Vehicle, or other financial loss), sustained by it or its employees, officers, directors or agents, arising in any manner out of or in connection with activities relating to the performance of this Agreement.

8.2 Extension of Waivers. Each Party hereby agrees to extend the waiver of claims and release of liability herein to their respective contractors, subcontractors and insurers, requiring them to waive (in writing) the right to sue or otherwise bring a claim against the other Party or that Party's Related Third Parties for any injury, death, property loss or damage (including loss of or damage to the Satellite Batch or any Satellite, the Launch Vehicle, or other financial loss) sustained by them or any of their employees, officers, directors or agents, arising in any manner out of or in connection with activities relating to the performance of this Agreement.

8.3 Indemnification. Each Party hereby agrees that it shall indemnify and hold harmless the other Party from and against any liability or expense, including attorneys' fees, resulting from any suit or claim by the indemnifying Party's Related Third Parties for any injury, death, property loss or damage (including loss of or damage to the Satellite Batch or any Satellite, the Launch Vehicle, or other financial loss) sustained by it or any of its employees, officers, directors or agents, arising in any manner out of or in connection with activities relating to the performance of this Agreement.

8.4 Applicability. The obligation to waive claims shall apply to the Parties' contractors, subcontractors and insurers (at every tier) that are involved in activities relating to the performance of this Agreement. The waivers shall apply regardless of the theory of liability, whether based in contract, tort, equity or otherwise, including negligence, product liability, strict liability, or any other theory of liability. Each Party agrees to obtain insurance as it deems necessary to cover death, injury, loss or damage for which it has waived the right to sue or bring a claim against the other Party, and each Party agrees to obtain a waiver of subrogation rights from any insurer providing such insurance coverage. Nothing in this Section 8 (*Cross-Waivers; Indemnification*) shall preclude either Party from suing or otherwise bringing a claim against its own Related Third Parties. The Parties agree to memorialize certain of the rights and obligations described in this Section 8 (*Cross-Waivers; Indemnification*) in an agreement advised or required by the appropriate U.S. regulatory authorities, to include execution of the form of cross-waivers substantially in the form of attached **Exhibit C**.

9. Delays. For the avoidance of doubt in Sections 9.2 and 9.3 only, any delays attributable to one party shall not toll or otherwise affect concurrent delays attributable to the other party.

9.1 Excusable Delays. Neither Party shall be liable for any delay or failure in the performance of its obligations under this Agreement in the event such delay or failure is due to an Excusable Delay. Failure by either Party timely to obtain any required governmental license, permit or authorization shall not be an Excusable Delay. Subject to this Section 9.1 (*Excusable Delays*) and Section 14 (*Termination*), the period of performance for each Party under this Agreement shall be extended by the duration of any Excusable Delay. A Party seeking to invoke this Section 9.1 shall notify the other Party writing within fifteen (15) days of the occurrence of an Excusable Delay, including a reasonable description of the causes thereof and such Parties' efforts to avoid the Excusable Delay or mitigate the impact thereof, and a reasonable extension period will be agreed to by both Parties in writing. Notwithstanding the foregoing, in the event one or more Excusable Delays result in an aggregate Excusable Delay attributable to a Party in excess of [***…***] for a Launch Service, the other Party shall have the right to terminate either or both of the Launch Services without further obligation or liability. In the event of a termination of a Launch Service by Customer for Excusable Delay by SpaceX, SpaceX shall [***…***], within thirty (30) days of any such termination. In the event of a termination by SpaceX for Excusable Delay by Customer, SpaceX shall fully retain [***…***] and [***…***] of any remaining amounts paid by Customer hereunder for [***…***], or [***…***] and [***…***] of any remaining amounts paid by Customer for [***…***], without further obligation or liability to Customer and shall [***…***], within [***…***] of any such termination. For the avoidance of doubt, any delay attributable to failure on the part of Customer's or SpaceX's contractor(s) or subcontractor(s) timely delivery of any Satellite or Dispenser or component, other than an Excusable Delay on the part of such contractor(s) or subcontractor(s), shall for purposes of this Agreement be considered a delay caused or requested by Customer or SpaceX, as relevant, and shall not be considered an Excusable Delay hereunder.

9.2 Customer Delays. Excluding Excusable Delays and irrespective of SpaceX launch readiness, if Customer's actual launch readiness is delayed for a period exceeding one hundred eighty (180) days (in the aggregate) beyond the last day of an applicable Launch Period (or if Customer requests such delay), Customer agrees to pay SpaceX delay fees based on the following schedule: [***…***]. Any fractional month(s) shall be calculated on a *pro rata* basis and nothing in this Section 9.2 (*Customer Delays*) shall be construed as permitting delayed payment of any amounts owed by Customer hereunder. [***…***]. SpaceX shall not be responsible for Satellite Batch, Dispenser or other Customer equipment storage costs in the event of a delayed Launch, whether or not such delay is an Excusable Delay. For the avoidance of doubt, [***…***].

9.3 SpaceX Delays. Excluding Excusable Delays and irrespective of Customer's launch readiness, if SpaceX's actual launch readiness is delayed for a period exceeding one hundred eighty (180) days (in the aggregate) beyond the last day of the applicable Launch Period (or if SpaceX requests such a delay), SpaceX agrees to pay Customer delay fees based on the following schedule: [***…***]. Any fractional month(s) shall be calculated on a pro rata basis.

9.4 Payment. Any delay fees owed hereunder shall be payable monthly in arrears.

10. Intellectual Property. At no time shall either Party have any ownership rights, other rights or license to any Inventions of the other Party (or the other Party's Related Third Parties) including, without limitation, any Inventions conceived and first reduced to practice during performance of this Agreement. The Parties do not intend to jointly develop any Inventions hereunder.

11. Confidentiality.

11.1 Confidentiality of Agreement. Neither Party shall disclose any terms of this Agreement to any third party without the prior written consent of the other Party, except as necessary in the reasonable judgment of a Party to comply with judicial or other governmental requirement, or when disclosure is required by a governmental agency or under applicable laws, including by the U.S. Securities and Exchange Commission or any securities exchange on which the securities of a Party or its affiliates are then trading, or as otherwise expressly provided herein, and with reasonable notice provided in writing to the affected Party at least five (5) business days in advance of the disclosure.

11.2 Announcements.

No public announcement, release, or other disclosure of information relating to this Agreement, including the existence of this Agreement or either Party's performance, shall be made except by prior written agreement of the Parties, such agreement not to be unreasonably withheld, conditioned or delayed. Notwithstanding the foregoing, either Party shall be permitted to make disclosures necessary or in good faith determined to be reasonably necessary under the Securities Act of 1933, as amended, and the Securities Exchange Act of 1934, as amended. [***…***].

11.3 Proprietary Information. SpaceX and Customer each agree to retain in confidence all Proprietary Information of the other Party. Each Party agrees to: (i) preserve and protect the confidentiality of the other Party's Proprietary Information; (ii) refrain from using the other Party's Proprietary Information except as contemplated in this Agreement; (iii) disclose the Proprietary Information only to its directors, officers, employees and agents as is reasonably required in connection with the exercise of that Party's rights and obligations under this Agreement and subject to a binding non-disclosure agreement that is at least as protective as this Section 11 (*Confidentiality*); and (iv) not disclose Proprietary Information to any third party, provided, however, that each Party may disclose Proprietary Information of the other Party that is: (a) already in the public domain through no fault of the disclosing Party; (b) discovered or created by the receiving Party without reference to the Proprietary Information of the disclosing Party; (c) otherwise made known to the receiving Party through no wrongful conduct of the receiving Party or the entity providing the information to the receiving Party; or (d) required to be disclosed by judicial or other governmental action, order or regulation. The confidentiality obligations of this Section 11 (*Confidentiality*) shall survive the expiration or termination of this Agreement for a period of five (5) years.

11.4 Exceptions. Notwithstanding any provision of this Section 11 (*Confidentiality*) to the contrary, each Party may, subject to applicable export control laws and regulations, disclose Proprietary Information, including the terms of this Agreement: (i) in confidence, to legal counsel; (ii) in confidence, to accountants, bankers, and other financing sources, solely for the purposes of securing or maintaining financing; (iii) in confidence, to such party's insurance broker and any insurers solely for the purposes of securing insurance and in settling any claim for loss; (iv) in connection with the enforcement of this Agreement; and (v) in confidence, in connection with the due diligence investigation of a merger, acquisition, or similar transaction.

12. Limitations of Liability and Disclaimer of Warranties.

12.1 LIMITATION OF DAMAGES. IN NO EVENT SHALL EITHER PARTY BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, EXEMPLARY, PUNITIVE OR CONSEQUENTIAL DAMAGES, FOR THE COST OF PROCUREMENT OF SUBSTITUTE PRODUCTS OR SERVICES, OR FOR LOST REVENUES OR PROFITS, ARISING OUT OF OR IN CONNECTION WITH THIS AGREEMENT, HOWSOEVER CAUSED AND REGARDLESS OF THE THEORY OF LIABILITY, WHETHER BASED IN CONTRACT, TORT, EQUITY OR OTHERWISE, INCLUDING NEGLIGENCE, PRODUCT LIABILITY, STRICT LIABILITY, OR ANY OTHER THEORY OF LIABILITY.

12.2 LIMITATION OF LIABILITY. TO THE FULL EXTENT PERMITTED BY LAW, SPACEX'S TOTAL AND CUMULATIVE LIABILITY ARISING OUT OF OR IN CONNECTION WITH THIS AGREEMENT HOWSOEVER CAUSED AND REGARDLESS OF THE THEORY OF LIABILITY, WHETHER BASED IN CONTRACT, TORT, EQUITY OR OTHERWISE, INCLUDING NEGLIGENCE, PRODUCT LIABILITY, STRICT LIABILITY, OR ANY OTHER THEORY OF LIABILITY, SHALL IN NO EVENT EXCEED THE AMOUNTS RECEIVED BY SPACEX FROM CUSTOMER FOR THE DISTINCT LAUNCH SERVICE DURING WHICH SUCH LIABILITY AROSE. SPACEX SHALL NOT BE LIABLE FOR ANY DAMAGE TO THE SATELLITE BATCH AND ANY SATELLITE AND SATELLITE-RELATED EQUIPMENT (INCLUDING DISPENSER AND RELATED EQUIPMENT) FROM MANUFACTURE THROUGH DELIVERY, INTEGRATION, STATIC FIRES OF THE LAUNCH VEHICLE AND OTHER PRE-LAUNCH ACTIVITIES, LAUNCH, AND ON-ORBIT OPERATIONS. EXCEPT AS EXPRESSLY SET FORTH IN SECTION 7.1 (INSURANCE), CUSTOMER SHALL BE RESPONSIBLE FOR PROCURING ALL INSURANCES RELATED TO THE SATELLITE BATCH AND EVERY SATELLITE AND DISPENSER (WITH EXPRESS WAIVERS OF SUBROGATION AS TO SPACEX AND ITS RELATED THIRD PARTIES).

12.3 DISCLAIMER OF WARRANTIES. SPACEX HAS NOT MADE, NOR DOES IT MAKE, ANY REPRESENTATION OR WARRANTY, WHETHER WRITTEN OR ORAL, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTY OF DESIGN, OPERATION, QUALITY, WORKMANSHIP, SUITABILITY, RESULT, MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE LAUNCH VEHICLES, THE LAUNCH SERVICES, OR ANY ASSOCIATED EQUIPMENT OR SERVICES. ANY IMPLIED WARRANTIES, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY EXPRESSLY DISCLAIMED.

12.4 Application. The limitations set forth in this Section 12 (*Limitations of Liability and Disclaimer of Warranties*) shall apply even if the Parties have been advised of the possibility of such losses or damages, and notwithstanding any failure of essential purpose of any limited remedy set forth in this Agreement. The Parties acknowledge that the amounts payable hereunder are based in part on the limitations set forth in this Section 12 (*Limitations of Liability and Disclaimer of Warranties*) and that such limitations are a bargained-for and essential part of this Agreement.

13. Destruction of the Launch Vehicle and Satellite Batch. The Launch Range safety official is authorized to destroy a Launch Vehicle and the applicable Satellite Batch, without liability to either Party or either Party's Related Third Parties.

14. Termination.

14.1 Mutual Agreement. This Agreement may be terminated by mutual consent of the Parties in a writing signed by duly authorized representatives of each Party.

14.2 Customer's Right to Terminate. Provided Customer is not currently in default of a material provision of this Agreement, Customer may terminate this Agreement upon [***…***] prior written notice to SpaceX, as follows:

(a) Termination for Convenience. In the case where the first Launch under this Agreement has yet to occur: at Customer's convenience and for any reason, Customer may terminate this Agreement, subject to a termination for convenience fee retained by SpaceX equal to [***…***] of the Down Payment and [***…***] of any Milestone Payments paid or payable as of the effective date of termination, which amounts SpaceX shall retain without further obligation or liability to Customer. Following the occurrence of the first Launch under this Agreement, at Customer's convenience and for any reason: (i) outside of six (6) months prior to the first day of the Second Launch Period (as initially established by the Parties unless the Launch Period has been postponed for reasons attributable to SpaceX, in which case the Launch Period shall be the currently-designated Launch Date), subject to a termination for convenience fee retained by SpaceX equal to [***…***] of the Down Payment and [***…***] of any Milestone Payments paid or payable as of the effective date of termination, which amounts SpaceX shall retain without further obligation or liability to Customer; or (ii) within six (6) months prior to the first day of the Second Launch Period (as initially established by the Parties unless the Launch Period has been postponed for reasons attributable to SpaceX, in which case the Launch Period shall be the currently-designated Launch Date), subject to a termination for convenience fee retained by SpaceX equal to [***…***] of all amounts paid under this Agreement, which amounts SpaceX shall retain without further obligation or liability to Customer. In no case may Customer terminate for convenience if any payments are due and payable to SpaceX hereunder. Any amounts required to be refunded to Customer under this Section 14.2(a) shall be paid by SpaceX to Customer within forty-five (45) days of notice of such termination.

(b) Termination for Delay. In the event SpaceX has delayed or provided notice of delay of either Launch, other than for Excusable Delays, for an aggregate period exceeding three hundred sixty-five (365) days beyond the last day of a Launch Period (not including any coinciding or overlapping period of delay attributable to Customer), Customer shall have the right to terminate in Customer's discretion either or both of the Launch Services (to the extent such Launch Service(s) have not yet been performed) and obtain a refund of payments made under this Agreement in connection with the affected Launch Service(s), such right to be elected by Customer in writing and within [***…***] following the conclusion of such three hundred sixty-five (365) day period. With respect to any Launch Service terminated by Customer, Customer shall have no further obligation or liability to SpaceX for such Launch Service. Unless disputed, any amounts required to be refunded to Customer under this Section 14.2(b) shall be paid by SpaceX to Customer within [***…***] of notice of such termination.

(c) Termination for Cause. In the event of a material breach by SpaceX of its obligations under this Agreement, and if after having been given written notice of the same by Customer, SpaceX fails to cure such material breach within [***…***] of receipt of such notice, Customer shall have the right to obtain a refund of any payments attributable under the terms of this Agreement to any Launch not already performed hereunder or of payments made under this Agreement in connection with the affected Launch Service, such right to be elected by Customer in writing and within [***…***] following the conclusion of such [***…***] period. Other than as provided for in Section 14.2(b) (*Termination for Delay*), delay by SpaceX in achieving a milestone or delay in performing the Launch Service (whether Excusable Delay or not), shall not be deemed a material breach by SpaceX hereunder; and (ii) nothing in this Agreement shall be construed as in any way obligating SpaceX to refund any payments made in connection with any Launch already performed hereunder. Any amounts required to be refunded to Customer under this Section 14.2(c) shall be paid by SpaceX to Customer within [***…***] of notice of such termination.

(d) Special Termination Right. In the event that SpaceX alone has delayed or provided notice of delay of the First Launch Date, for an aggregate period (exclusive of Excusable Delay and/or coinciding delay(s) caused or requested by Customer) exceeding one hundred eight (180) days beyond the last day of the first Launch Period, and Customer can reasonably demonstrate that [***…***], then Customer shall have a special termination right with respect to the first Launch Service only and, should Customer exercise such right, SpaceX shall retain [***…***] attributed to the first Launch Service plus [***…***] of all the Milestone Payments attributable to the first Launch Service. Customer's special termination right must be exercised by a written notice that is executed by a corporate officer. Following such termination, Customer shall have no further obligation or liability to SpaceX for such first Launch Service, and SpaceX shall have no further obligation or liability to Customer for such first Launch Service, and SpaceX's obligation with respect to the remaining Launch Service shall be limited to launching a Satellite Batch consisting of no more than [***…***] with [***…***]. Any amounts required to be refunded to Customer under this Section 14.2(d) shall be paid by SpaceX to Customer within forty-five (45) days of notice of such termination.

14.3 SpaceX's Right to Terminate. Provided SpaceX is not currently in default of a material provision of this Agreement, SpaceX shall have the right to terminate this Agreement and retain all payments made and all payments owed by Customer hereunder as of the date of termination without further obligation or liability to Customer, as follows:

(a) Termination for Cause. In the event of material breach by Customer of its obligations under this Agreement (including any payment obligation hereunder), and if after having been given written notice of the same by SpaceX, Customer fails to cure such material breach within: (i) [***…***] of receipt of such notice in the event the material breach involves a payment obligation; or (ii) [***…***] of receipt of such notice in the event the material breach does not involve a payment obligation, provided that other than as provided for in Section 14.3(b) (*Termination for Delay*) Customer delays shall not be deemed a material breach by Customer hereunder; or

(b) Termination for Delay. In the event Customer has delayed or provided notice of delay of either Launch, other than for Excusable Delays, for an aggregate period exceeding three hundred sixty-five (365) days beyond the last day of a Launch Period (not including any coinciding or overlapping period of delay attributable to SpaceX), then SpaceX shall have the right to terminate the applicable Launch Service, such right to be elected by SpaceX in writing and within [***…***] following the conclusion of such three hundred sixty-five (365) day period. With respect to any Launch Service terminated by SpaceX under this Section 14.3(b), SpaceX shall [***…***] and have no further obligation or liability to Customer for such Launch Service.

15. Licenses. Each Party shall be responsible for obtaining any licenses, authorizations, clearances, approvals or permits necessary to carry out its obligations under this Agreement ("*Licenses"*). Each Party agrees to provide reasonable assistance to the other Party as necessary to obtain such Licenses. SpaceX shall be responsible for obtaining any Licenses required for the Launch of a Launch Vehicle and Customer shall be responsible for obtaining any Licenses required to launch and operate the Satellite Batch and each Satellite. SpaceX and Customer agree to provide information and execute any documentation needed to obtain such Licenses pursuant to applicable U.S. laws and regulations, including the AECA and the CSLA. In the event that either Party is unable to obtain a requisite License, then such Party's inability to obtain a License shall be deemed to be a material breach of this Agreement by such Party.

16. Compliance with Government Requirements. SpaceX and Customer shall comply with the applicable national, federal, state and local laws and regulations, and all Licenses issued in connection with the performance of this Agreement. In addition, SpaceX and Customer shall comply with all U.S. export and import laws, regulations, rules, licenses and agreements related to the Launch of the Satellite Batch, including but not limited to the ITAR and EAR. Customer shall be responsible for registration of the Satellite Batch and every Satellite, and SpaceX shall be responsible for registration of the Launch Vehicles, pursuant to the Convention on Registration of Objects Launched Into Outer Space, done January 14, 1975.

17. Failure Review.

If any configuration of the Falcon 9 launch vehicle, [***…***], or its derivatives, experiences a launch failure, then SpaceX shall only perform subsequent Launch Services under this Agreement once the most probable cause of the failure has been identified and corrective actions have been implemented to the satisfaction of the applicable failure review team convened by SpaceX to evaluate the root cause of such failure. SpaceX shall present to Customer the results of the final investigation by the failure review team including probable cause of failure, corrective action and impact on the Launch Services subject to the confidentiality obligations under this Agreement and other reasonable measures to protect proprietary information and applicable export control laws and regulations.

18. Notices.

18.1 Transmittal. All notices and other transmittals under this Agreement shall be in writing and shall be hand-delivered or sent via express mail, first class mail, or electronic mail to the addresses specified below with written or electronic confirmation of receipt, as applicable.

18.2 Notice Date. The date upon which any such communication is hand-delivered or, if such communication is sent by mail or by electronic transmission, the date upon which the addressee receives it shall be the effective date of such communication.

18.3 Change of Address. Each Party shall promptly notify the other in the event of any change in its address or designated contacts.

For correspondence sent to SpaceX:

Space Exploration Technologies Corp.
1 Rocket Road
Hawthorne, CA 90250
Attn: [***...***]
PH.: [***...***]
Fax: [***...***]
Email: [***...***]

With copies to:

Space Exploration Technologies Corp.
1030 15th Street, NW, Suite 220E
Washington, DC 20005
Attn: [***…***]
PH.: [***…***]
Fax: [***…***]
Email: [***…***]

For correspondence sent to Customer:

ORBCOMM Inc.
2115 Linwood Avenue
Fort Lee, NJ 07024
Attn: [***...***]
PH.: [***...***]
Fax: [***...***]
Email: [***...***]

With a separately delivered copy to:

ORBCOMM Inc.
22265 Pacific Boulevard
Dulles, VA 20166
Attn: [***…***]
PH.: [***…***]
Fax: [***…***]
Email: [***…***]

18.4 Application. All written notices contemplated by this Agreement shall be provided in accordance with this Section 18 (*Notices*).

19. Attachments.

19.1 Incorporation by Reference. The following attachments are incorporated into this Agreement by reference and shall be an integral part of this Agreement: (a) **Exhibit A**, Defined Terms; (b) **Exhibit B**, Statement of Work; (c) **Exhibit C**, Form of Cross-Waiver; (d) **Exhibit D**, Interface Control Document; and (e) **Exhibit E**, Launch Manifest Priority.

19.2 Precedence. In the event of conflict between the terms and conditions of this Agreement and any of its attachments, the terms and conditions of this Agreement shall govern. In the event of a conflict among the attachments, the sequence shall be as follows, in descending order of precedence: [***…***].

20. Severability. If any portion of this Agreement is held invalid, the Parties agree that such invalidity shall not affect the validity of the remaining portions of this Agreement, unless applying such remaining portions would frustrate the purpose of this Agreement.

21. Waiver. The failure of either Party to exercise any right granted in this Agreement or to require the performance of any term of this Agreement (or the waiver by either Party of any breach of this Agreement) shall not prevent a subsequent exercise or enforcement of, or be deemed a waiver of any subsequent breach of, the same or any other term of this Agreement.

22. No Joint Venture or Agency. Nothing in this Agreement shall constitute or create a joint venture, partnership, or similar arrangement between the Parties. No Party is authorized to act as agent for the other Party, except as expressly stated herein.

23. Assignment. Subject to compliance with applicable law, either Party may assign, delegate or otherwise transfer this Agreement, or any rights or obligations under this Agreement, to any successor by way of merger, acquisition or sale of all or substantially all of the assets relating to the performance of this Agreement. SpaceX or its successor may also assign all or part of the right to receive payments under this Agreement, provided that SpaceX or its successor continue to perform the applicable obligations under this Agreement, and if requested, provide to Customer written assurances to such effect. Any assignment, delegation, or transfer of this Agreement made in contravention of the terms hereof shall be null and void. Subject to the foregoing, this Agreement shall be binding on and inure to the benefit of the Parties' respective successors and permitted assigns.

24. Security Interests. Customer, upon prior written notice to SpaceX, may grant security interests in its rights hereunder to lenders that provide financing to Customer. In the event that either Party is sold to or merged into another entity, its responsibilities under this Agreement shall not be altered and the successor organization shall be liable for performance of such Party's obligations under this Agreement. If requested by Customer, SpaceX shall provide its written consent to such assignment (including the execution by SpaceX of a direct agreement or consent and agreement in favor of the facility agent or equivalent on behalf of Customer's lenders and any Financing Entities, in a form reasonably satisfactory to such agent and SpaceX and customary for financings) on terms and conditions as may be requested by Customer's lenders, provided that SpaceX's consent would not impair, create a risk to, or otherwise prejudice its rights and benefits hereunder, increase its liabilities or obligations hereunder unless otherwise specified in this Agreement.

25. Lender Requirements.

The Parties recognize that certain of Customer's payment obligations under this Agreement may be financed through external sources. Notwithstanding anything to the contrary in this Agreement, and except for the restrictions and conditions set forth in Section 11 (*Confidentiality*), and subject to applicable export control laws and regulations, SpaceX shall provide to any of Customer's lenders or Financing Entities any information that such Financing Entity reasonably requires and shall reasonably cooperate with such Financing Entity and Customer to implement such financing. SpaceX agrees to negotiate in good faith and issue such documents as may be reasonably required by any Financing Entity to implement such financing, including a contingent assignment of this Agreement to such Financing Entity, under terms reasonably acceptable to SpaceX, but in no event shall SpaceX be obligated to agree to anything (including agreement to make modifications to this Agreement or the SOW that would impair, create a risk to, or otherwise prejudice its rights and benefits hereunder, increase its liabilities or obligations hereunder unless otherwise specified in this Agreement.

26. Governing Law; Venue. This Agreement and its performance by the Parties shall be governed by and construed in accordance with the laws of the State of New York, U.S.A., without regard to provisions on the conflicts of laws. The provisions of the United Nations Convention for the International Sale of Goods shall not be applicable to this Agreement. The Parties agree that all actions or proceedings arising in connection with this Agreement shall be litigated exclusively in the State and Federal courts located in the State of New York, U.S.A. The aforementioned choice of venue is intended by the Parties to be mandatory and not permissive in nature. Each Party hereby waives any right it may have to assert the doctrine of *forum non conveniens*, to object to venue with respect to any proceeding brought in accordance with this paragraph, or to assert any defense of sovereign immunity in any legal action, suit, proceeding or other claim arising under this Agreement. The Parties further stipulate that the State and Federal courts located in New York shall have *in personam* jurisdiction and venue over each of them for the purpose of litigating any dispute, controversy, or proceeding arising out of or related to this Agreement. Each Party hereby authorizes and accepts service of process sufficient for personal jurisdiction in any action against it as contemplated by this paragraph by registered or certified mail, return receipt requested, postage prepaid, to its address for the giving of notices as set forth in this Agreement. Any final judgment rendered against a Party in any action or proceeding shall be conclusive as to the subject of such final judgment and may be enforced in other jurisdictions in any manner provided by law.

27. Entire Agreement. This Agreement, and all attachments hereto, supersedes all prior communications, transactions, and understandings, whether oral or written, with respect to the subject matter hereof and constitutes the sole and entire agreement between the Parties pertaining to the subject matter hereof. For the avoidance of doubt, any reference herein to the terminated Falcon 1e Agreement is solely for purposes of acknowledging its termination by mutual agreement and providing historical context; nothing in this Agreement is intended to incorporate, preserve, extend, or restate any obligation or liability which may have existed thereunder or arisen therefrom.

28. Modification. No modification or amendment to, or addition, deletion or waiver of any of the terms or conditions of this Agreement shall be binding on either Party unless agreed by both Parties and evidenced by a written document signed by a duly authorized representative of each Party.

29. Insurance Support. Subject to compliance with applicable law, SpaceX shall cooperate with Customer's efforts to obtain and maintain, and to file and settle any claims under, launch insurance for the Satellite Batch, including without limitation, preparing an industry-standard insurance briefing package, responding to insurers' questions, delivering requested information regarding the Launch Vehicle and the Launch Range, conducting insurance briefings and facilitating site inspections as required to obtain and maintain such insurance.

30. Counterparts. This Agreement may be executed in counterparts, each of which shall be deemed an original and all of which together shall constitute one instrument. This Agreement may be executed by facsimile or other equivalent electronic signature which signatures shall constitute original signatures.

31. Fees and Expenses. The late fees (described in Section 4.5 (*Late Fees*)), delay fees (described in Section 9 (*Delays*)) and termination fees (described in Section 14 (*Termination*)) represent the Parties' current, reasonable and good faith estimates of damages to be incurred as a result of delay or termination and do not serve as a penalty.

[SIGNATURES ON FOLLOWING PAGE]

IN WITNESS WHEREOF, the undersigned have executed this Agreement by their duly authorized officers effective as of the Effective Date.

Space Exploration Technologies Corp.	***ORBCOMM Inc.***
By: /S/ Gwynne Shotwell	By: /S/ Marc Eisenberg
Name: Gwynne Shotwell, President	Name: Marc Eisenberg, Chief Executive Officer
Date: December 21, 2012	Date: December 21, 2012

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EXHIBIT A

DEFINED TERMS

"***AECA***" means the Arms Export Control Act of 1976, as amended, 22 U.S.C. § 2778, and the regulations promulgated thereunder, including: ITAR and the regulations for the Importation of Arms, Ammunition and Implements of War, 27 C.F.R. Part 447.

"***Agreement***" shall have the meaning set forth in the introductory paragraph.

"***Contract Price***" shall have the meaning set forth in Section 3 (*Price*).

"***Constructive Total Failure***" means that, due directly to a Deviation, either of the following situations occur, as reasonably determined by available flight telemetry data or other objective evidence: (a) each Satellite's capability to operate in accordance with its performance specifications is reduced by [***…***] or more; or (b) each Satellite's ability to operate for its intended commercial lifetime is reduced by [***…***] or more. A determination of Constructive Total Failure shall be made no later than forty-five (45) days after the Launch Date. For the sake of clarity, measurement of a Satellite's capability to operate shall be determined solely based on [***…***]. For purposes of a Launch and In-Orbit Insurance policy, if any (and not for any other purpose hereunder), this definition may be modified independently of this Agreement to reflect the meaning ascribed to the concept of "constructive total loss" or "constructive total failure", as applicable, in Customer's policy of Launch and In-Orbit Insurance, if any, in place at the time of the applicable Launch.

"***CSLA***" means the Commercial Space Launch Act, as amended, 51 U.S.C. §§ 50901, *et seq.*, and the regulations issued pursuant thereto, including: the Commercial Space Transportation Regulations, 14 C.F.R. Parts 400-460.

"***Customer***" shall have the meaning set forth in the introductory paragraph.

"***Customer Taxes***" shall have the meaning set forth in Section 6 (*Taxes*).

"***Deviation***" means, due primarily to the Launch Vehicle (and not due primarily to the Satellite Batch, any Satellite, Dispenser or separation system), material non-compliance with the specifications included in the Interface Control Document, including its reference documents, applicable documents and annexes, with respect to: [***…***].

"***Dispenser***" means the hardware, including the strongback adaptor and/or ESPA Ring adaptor, to be delivered to the Launch Site for integration with a Launch Vehicle (including all embedded firmware and software) to interface with, integrate the Satellites as a Satellite Batch, and separate and deploy the Satellites into their designated orbit. The Dispenser is not considered an integral part of the Launch Vehicle for purposes of this Agreement and shall be separately procured by Customer.

"***Down Payment***" shall have the meaning set forth in Section 4.1 (*Down Payment*).

"***EAR***" means the Export Administration Regulations administered by the Bureau of Industry and Security, U.S. Department of Commerce, 15 C.F.R. Parts 730-744, in effect under the International Emergency Economic Powers Act, 50 U.S.C. §§ 1701-1707, pursuant to Executive Order 13222 of August 17, 2001.

"***Effective Date***" shall have the meaning set forth in the introductory paragraph.

"***Excusable Delays***" means a delay by a Party in the performance of its obligations or commitments under this Agreement that is beyond the control of such Party and not due to its fault or negligence in reasonably anticipating and avoiding such delays, including acts of God, acts of government in its sovereign capacity, launch range unavailability for Launch, acts or threat of terrorism, earthquake, riot, revolution, hijacking, fire, embargo, sabotage, or interruption of essential services such as electricity, natural gas, fuels and/or water. Notwithstanding the above, other than an Excusable Delay applicable to contractor or subcontractor, failure by a contractor or subcontractor of Customer (including the contractor responsible for manufacture of the Satellites and/or the Dispenser, and its contractors and subcontractors) to timely perform it obligations to Customer and/or deliver any Satellite, Satellite Batch, or component thereof, or Dispenser or component thereof, and/or failure of either Party timely to obtain any required governmental license, permit or authorization shall not be deemed an Excusable Delay.

"***Falcon 1e Agreement***" shall have the meaning set forth in the recitals of this Agreement.

"***Financing Entity(ies)***" means any entity (other than SpaceX or parties related to SpaceX), which has been specifically identified in a written notification to SpaceX as providing financing Customer.

"***First Launch Date***" shall have the meaning set forth in Section 5.1 (*Scheduling*).

"***First Launch Interval***" shall have the meaning set forth in Section 5.1 (*Scheduling*).

"***First Launch Period***" shall have the meaning set forth in Section 5.1 (*Scheduling*).

"***First Launch Slot***" shall have the meaning set forth in Section 5.1. (*Scheduling*).

"***Intentional Ignition***" means any time prior to Launch when the ignition command is given for the purpose of ignition of the first stage of a Launch Vehicle.

"***Interface Control Document***" means that document to be attached as **Exhibit D** to this Agreement, which shall be prepared by SpaceX with data to be supplied by Customer, negotiated in good faith and mutually agreed upon in writing by both Parties prior to the beginning of the first Launch Period.

"***Inventions***" means all ideas, designs, concepts, techniques, inventions, discoveries, works of authorship, modifications, improvements, or derivative works, regardless of patentability.

"***ITAR***" means the International Traffic in Arms Regulations administered by the Directorate of Defense Trade Controls, U.S. Department of State, 22 C.F.R. Parts 120-130, pursuant to the AECA.

"***Launch***" means Intentional Ignition, for the purpose of Satellite Batch carriage, followed by either (i) Lift-Off or (ii) the loss or destruction of the Satellite Batch and/or the Launch Vehicle.

"***Launch Activities***" shall have the meaning set forth in Section 7.1 (*Insurance*).

"***Launch and In-Orbit Insurance***" means insurance purchased by Customer or any affiliate, or Related Third Party of Customer covering either or both of: (i) the risks of loss with respect to the Satellites; and (ii) the value of the Launch Service.

"***Launch Date***" shall mean either the First Launch Date or the Second Launch Date, as the case may be. If a Launch Date has not yet been established in accordance with this Agreement, the Launch Date shall be deemed to be the last day of the applicable Launch Period, Launch Slot, or Launch Interval, as applicable.

"Launch Failure" means either (a) Total Failure or (b) Constructive Total Failure.

"***Launch Interval***" shall mean either the First Launch Interval or the Second Launch Interval, as the case may be.

"***Launch Period***" shall mean either the First Launch Period or the Second Launch Period, as the case may be.

"***Launch Price***" shall have the meaning set forth in Section 3 (*Price*).

"***Launch Range***" means the U.S. Governmental authorities and office with jurisdiction over the Launch Site.

"***Launch Service***" means those services, including the Launch, described in the SOW for a distinct mission to be performed by SpaceX under this Agreement.

"***Launch Site***" means the SpaceX launch facility at Cape Canaveral, Florida, or another site mutually agreed upon by the Parties.

"***Launch Slot***" shall mean either the First Launch Slot or the Second Launch Slot, as the case may be.

"***Launch Vehicle***" shall mean the SpaceX Falcon 9 launch vehicle, [***…***], with a fairing configuration and as configured by SpaceX to perform the Launch of the applicable Satellite Batch.

"***Licenses***" shall have the meaning set forth in Section 15 (*Licenses*).

"***Lift-Off***" means physical separation of the applicable Launch Vehicle from the launch pad and release of the hold-down restraints.

"***Milestone Payment***" shall have the meaning set forth in Section 4.2 (*Milestone Payments*).

"***Non-Interference Basis***" shall mean, with respect to any additional payload, such additional payload does not adversely affect a Satellite with respect to the following parameters: orbit; inclination; envelope; mass; attachment hardware; natural frequency; or launch schedule.

"***Parties***" shall mean Customer and SpaceX.

"***Party***" shall mean Customer or SpaceX.

"***Payload***" shall mean a Satellite or Satellite Mass Simulator.

"***Payloads***" shall mean Satellites and/or Satellite Mass Simulators.

"***Proprietary Information***" means all non-public confidential, proprietary and trade secret information and materials, whether in written, oral, electronic or other format, including all business, technical and other information that is marked as "Confidential" or "Proprietary" or that a reasonable person would assume to be confidential based upon the subject matter of such information or the manner in which it was disclosed.

"***Related Third Parties***" means (**a**) the Parties' respective contractors and subcontractors involved in the performance of this Agreement and their respective directors, officers, employees, and agents; (**b**) the Parties' respective directors, officers, employees, and agents; and (**c**) any entity or person with any valid interest in the Satellite Batches, the Launch Services or the ground support equipment. For the avoidance of doubt, the Related Third Parties of Customer shall be deemed to include the manufacturer of the Dispenser.

"***Satellite***" means any Orbcomm Generation 2 Satellite forming part of a Satellite Batch supplied by Customer for Launch by SpaceX pursuant to this Agreement.

"***Satellite Batch***" shall have the meaning set forth in the recitals of this Agreement. For the avoidance of doubt: a Satellite Batch may consist of Satellites or a combination of Satellites and Satellite Mass Simulators.

"***Second Launch Date***" shall have the meaning set forth in Section 5.1 (*Scheduling*).

"***Second Launch Interval***" shall have the meaning set forth in Section 5.1 (*Scheduling*).

"***Second Launch Period***" shall have the meaning set forth in Section 5.1 (*Scheduling*).

"***Second Launch Slot***" shall have the meaning set forth in Section 5.1 (*Scheduling*).

"***Satellite Mass Simulator***" means mass ballast provided by Customer (at Customer's sole expense) for integration into a given Satellite Batch for Launch by SpaceX, in lieu of an actual Satellite. The mass properties of the simulator shall conform to ICD mass properties and mechanical interface definition for an actual Satellite.

"***SOW***" shall have the meaning set forth in Section 2 (*Services*) of this Agreement.

"***SpaceX***" shall have the meaning set forth in the introductory paragraph.

"***SpaceX Account***" shall mean the following SpaceX bank and account: [***…***].

"***Taxes***" means all taxes, customs, duties, or similar tariffs and fees that may levied or collected upon the services or payments contemplated by this Agreement.

"***Terminated Ignition***" means Intentional Ignition not followed by Lift-Off or Launch Failure. For the avoidance of doubt, a Terminated Ignition shall not constitute a Launch.

"***Total Failure***" means that, due to causes primarily attributable to a Launch Vehicle and Launch Vehicle-related events that occur at any time from Intentional Ignition until separation of a Satellite Batch from a Launch Vehicle, the Satellite Batch is destroyed, permanently lost or unable to be physically separated from the Launch Vehicle. For purposes of a Launch and In-Orbit Insurance policy, if any (and not for any other purpose hereunder), this definition shall be modified to reflect the meaning ascribed to the concept of "total failure" or "total loss", as applicable, in Customer's policy of Launch and In-Orbit Insurance, if any, in place at the time of the applicable Launch.

EXHIBIT B

STATEMENT OF WORK

[ATTACHED]

[*…***]**

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EXHIBIT C

Form of Cross-Waiver Required by the U.S. Licensing Authority

Please see current form United States FAA Cross-Waiver at the following hyperlink:

http://edocket.access.gpo.gov/cfr_2011/janqtr/pdf/14cfr440AppB.pdf

In the event this link is ever deactivated, the Form of Cross Waiver shall be the most recent Form of Cross Waiver published in the United States Code of Federal Regulations.

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EXHIBIT D – INTERFACE CONTROL DOCUMENT

[TBD—TO BE PROVIDED BY SPACEX AND MUTUALLY AGREED]

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EXHIBIT E – LAUNCH MANIFEST PRIORITY [*…***]**

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EXHIBIT 10.1

SPACE EXPLORATION TECHNOLOGIES CORPORATION
FALCON LAUNCH SERVICES AGREEMENT

This Launch Services Agreement ("Agreement") is entered into as of November 15, 2005 ("Effective Date") by and between Space Exploration Technologies Corporation, a Delaware corporation with headquarters at 1310 East Grand Avenue, El Segundo, CA 90245 ("SpaceX") and SpaceDev, Inc., with headquarters at 13855 Stowe Drive, Poway California, 92064 ("Customer"). SpaceX and Customer may hereinafter be referred to individually as "Party" and collectively as "Parties."

WHEREAS, Customer desires to purchase launch services for its spacecraft and its customers' spacecraft with the parameters set forth in Appendix 1, Statement of Work ("Payload") into Earth orbit; and

WHEREAS, SpaceX provides launch services using the Falcon 1 Launch Vehicle ("Falcon");

NOW THEREFORE, the Parties hereby agree as follows:

1. Services to be Provided. SpaceX shall furnish launch services on the Falcon in accordance with Appendix 1, Statement of Work, ("Basic Launch Services"), subject to the terms and conditions of this Agreement. Additional services may be provided by SpaceX on a time and material basis, subject to negotiations, mutual agreement of the Parties, and a separate statement of work ("Additional Services").

2. Contract Price.

The Contract Price is the sum of:
- [***. . .***]
- [***. . .***]
- [***. . .***]

- Purchase with pricing set forth in this section 2 is guaranteed to Customer for up to two additional missions (at the option of Customer); however, a [***. . .***] annual increase in the overall Contract Price will be added to adjust for inflation, starting on Jan 1, 2008.

3. Date of Launch. The expected launch date for contractual and planning purposes is May 15, 2008 ("Estimated Launch Date"). By mutual agreement of the Parties, the Estimated Launch Date may be adjusted up to 18 months in advance of the Estimated Launch date. It is mutually understood that the date when the launch actually occurs ("Actual Launch Date") is dependent upon weather, range availability, government approvals, Falcon readiness, Payload readiness and similar factors.

4. Payment Terms

4.1. Payment Schedule. Customer shall pay to SpaceX the Contract Price in five installments in accordance with the following schedule

- [***. . .***]
- [***. . .***]
- [***. . .***]

- [***. . .***]
- [***. . .***]

4.2. Invoices. SpaceX shall submit invoices to Customer at least thirty (30) days prior to the payment due date for each scheduled payment event set forth in Section 4.1, provided, however, that the executed Agreement shall serve as the invoice for the first scheduled payment. Any payments delayed beyond the payment due date shall be subject to interest at a rate of [***. . .***] per day of delay.

4.3. Invoice Address. SpaceX shall invoice Customer at the following address:

SpaceDev, Incorporated
Accounts Payable
13855 Stowe Drive
Poway, CA 92064

5. Taxes. To the best knowledge of SpaceX on the Effective Date of this Contract, no taxes are due for the activities and transactions contemplated by this Agreement. However, should taxes be levied, Customer alone shall bear any and all national, federal, state or local sales, use, value added or other taxes, customs duties, or similar tariffs and fees that may levied or collected upon the transactions contemplated by this Agreement ("Taxes"). Such Taxes are not included in the Contract Price as defined in Section 2, Contract Price, and shall be borne by Customer in addition to the Contract Price. Where SpaceX is required by law to collect Taxes, SpaceX shall notify Customer of such a requirement, provide evidence of requirement and Customer shall pay SpaceX the appropriate amount in addition to the Contract Price.

6. Best Price Assurance. SpaceX intends that the Customer never pay more than the standard price for Basic Launch Services at the time of the Estimated Launch Date. If SpaceX reduces the single flight, standard price of Basic Launch Services prior to the Estimated Launch Date, the Customer will be entitled to reduce their next payment to SpaceX accordingly by the difference. If all payments for launch have been made or the reduction in price exceeds payments due from the Customer, SpaceX will wire the appropriate rebate to the Customer no later than thirty (30) days in advance of the Actual Launch Date.

7. Reflight Launch Option

7.1. [***. . .***]

7.2. Qualifying Condition. The Parties agree that the Reflight Launch Option is exercisable only in the event of a Launch Failure due to the Falcon launch vehicle. Such a Launch Failure must constitute either delivery of the Payload to an orbit where it cannot reasonably be used for the intended mission, destruction of the Payload as a result of Falcon breakup, or substantial damage to the Payload due to launch loads that materially exceed those defined in the Interface Control Document.

7.3. Sole Remedy. The reflight launch shall be the sole and exclusive remedy available to customer for any launch failure or payload failure whatsoever, including any inability to use the payload for all or part of its intended mission, howsoever caused, and regardless of the theory of liability (with the exception of gross negligence), whether based in contract or tort, including negligence, product liability, and strict liability, or any other theory of liability, provided, however, that this remedy shall be available only when customer has purchased a reflight launch option and customer has made all of the payments and reasonably complied with all of the other conditions of this agreement

8. Third Party Liability

8.1. Insurance. SpaceX shall procure and maintain third party launch liability insurance as prescribed by the Federal Aviation Administration's Associate Administrator for Commercial Space Transportation pursuant to the Commercial Space Launch Act, as amended, 49 U.S.C. Sec.Sec. 70101-70121. SpaceX shall name as additional insureds Customer and its Payload customer, contractors and subcontractors involved in launch services, the U.S. government and its contractors and subcontractors involved in launch services, and SpaceX's contractors and subcontractors involved in launch services. Such insurance will comply with the terms of the Federal launch license.

9. Cross Waivers of Liability

9.1 Third party Liability. SpaceX shall be exclusively liable to third parties for any injury, loss or damage to any third party caused solely by SpaceX or its equipment, including the Falcon or parts thereof. Customer shall be exclusively liable to third parties for any injury, loss or damage to any third party caused solely by Customer or its equipment, including the Payload or parts thereof.

9.2. Waivers. SpaceX and Customer agree to a reciprocal waiver of liability pursuant to which each Party agrees to assume the risk and agrees not to sue or otherwise bring a claim against the other Party or that Party's Related Third Parties or against the U.S. government and its contractors and subcontractors, for any property loss or damage, including loss of or damage to the Payload, or other financial loss it sustains, or for any injury, death, property loss or damage or other financial loss sustained by its employees, officers, directors or agents, arising in any manner out of or in connection with activities relating to the performance of this Agreement.

9.3. Extension of Waivers. SpaceX and Customer agree to extend the waiver of liability to their respective contractors and subcontractors requiring them to waive the right to sue or otherwise bring a claim against the other Party or that Party's Related Third Parties or the U.S. government and its contractors and subcontractors, for any property loss or damage, including loss of or damage to the Payload or Falcon, or other financial loss they may sustain, or for any injury, death, property loss or damage or other financial loss sustained by their employees, officers, directors or agents, arising in any manner out of or in connection with activities relating to the performance of this Agreement.

9.4. Indemnification. SpaceX and Customer agree that each Party shall indemnify and hold harmless the other Party from and against liability or expense, including attorneys' fees, resulting from any suit or claim by the indemnifying Party's Related Third Parties for any property loss or damage, including loss of or damage to the Payload, or other financial loss it sustains or for any injury, death, property loss or damage or other financial loss sustained by its employees, officers, directors or agents, arising in any manner out of or in connection with activities relating to the performance of this Agreement.

9.5. Applicability. When applicable to the Parties' contractors and subcontractors, the waivers shall apply to contractors and subcontractors at every tier that are involved in activities relating to the performance of this Agreement. The waivers shall apply regardless of the theory of liability, whether based in contract or tort, including negligence, product liability, and strict liability, or any other theory of liability. Each Party agrees to obtain insurance as it deems necessary to cover death, injury, loss or damage for which it has waived the right to sue or bring a claim against the other Party, and each Party agrees to obtain a waiver of subrogation rights from any insurer

providing such insurance coverage. Nothing in this Section 9 shall preclude SpaceX from suing or otherwise bringing a claim against its own Related Third Parties, nor shall it preclude Customer from suing or otherwise bringing a claim against its own Related Third Parties. The Parties agree to further memorialize the rights and obligations described in this Section 9 in any agreement that may advised or required by the U.S. government.

9.6. Definition. "Related Third Parties" shall mean: 1) the Parties' respective contractors and subcontractors at every tier that are involved in activities relating to the performance of this Agreement; 2) the Parties' respective directors, officers, employees, and agents; or 3) any entity or person who has any valid right, title or interest in the Payload or the Falcon.

10. Delays.

10.1 Excusable delay. Neither Party shall be liable for any delay or failure to perform under this Agreement in the event such delay or failure to perform is due to a cause beyond the control and not due to the fault of the Party invoking this Section 10.1. Such excusable delays shall include, but not be limited to, Acts of God, acts of government in its sovereign or contractual capacity, acts or threat of terrorism, earthquake, riot, revolution, hijacking, fire, strike, embargo, sabotage, or interruption of essential services or supplies. The period of performance under this Agreement shall be extended by

the duration of the excusable delay. Notification of excusable delay will be provided in writing and the extension period will be agreed to by both parties in writing.

10.2 Payload delays. If the Payload causes launch delays beyond the Estimated Launch Date, the Customer will pay penalties to SpaceX on the following schedule until the Payload is ready and delivered to SpaceX's launch site:

- o [***. . .***]
- o [***. . .***]
- o [***. . .***]

10.3 Launch vehicle delays. If the launch vehicle causes delays beyond the Estimated Launch Date, SpaceX will reimburse the customer on the following schedule until the launch vehicle is ready for shipment to the launch site:

- o [***. . .***]
- o [***. . .***]
- o [***. . .***]

10.4 [***. . .***]

11. Intellectual Property Rights. SpaceX shall exclusively own and retain all right, title and interest in and to all Inventions created, conceived or developed by SpaceX under this Agreement, including all intellectual property rights therein and thereto. Customer shall exclusively own and retain all right, title and interest in and to all Inventions created, conceived or developed by Customer under this Agreement, including all intellectual property rights therein and thereto. The Parties do not intend to jointly develop any Inventions under this Agreement. As used in this Section 11, "Inventions" means all ideas, designs, concepts, techniques, inventions, discoveries, works of authorship, modifications, improvements, or derivative works, regardless of patentability.

12. Confidentiality

12.1. Confidentiality of this Agreement. Neither Party shall disclose any of the terms of this Agreement to any third party without the prior written consent of the other Party, except as compelled by judicial or other governmental action and with reasonable notice provided in writing to the affected Party at least five business days in advance of the disclosure.

12.2. Announcements. No public announcement, release, or other disclosure of information relating to this Agreement, including the existence of this Agreement, shall be made except by prior written agreement of the Parties on the specific content of such disclosure; however, such agreement may not be unreasonably be withheld.

12.3. Confidential Information. SpaceX and Customer each agree to retain in confidence all non-public information, trade secrets, and know-how disclosed pursuant to this Agreement which is either designated as proprietary and/or confidential, or which by the nature of the circumstances surrounding disclosure, should reasonably be understood to be confidential ("Confidential Information"). Each Party agrees to: 1) preserve and protect the confidentiality of the other Party's Confidential Information; 2) refrain from using the other Party's Confidential Information except as contemplated in this Agreement; 3) disclose the Confidential Information only to its directors, officers, employees or agents as is reasonably required in connection with the exercise of that Party's rights and obligations under this Agreement and subject to a binding non-disclosure agreement that is at least as protective as this Section 12; and 4) not disclose Confidential Information to any third party, provided, however, that either Party may disclose Confidential Information of the other Party that is: a) already in the public domain through no fault of the disclosing Party; b) discovered or created by the receiving Party without reference to the Confidential Information of the disclosing Party; c) otherwise made known to the receiving Party through no wrongful conduct of the receiving Party or the entity providing the information to the receiving party; or d) required to be disclosed by judicial or other governmental action (subject to reasonable notice provided in writing to the affected Party at least five business days in advance of the disclosure). The confidentiality obligations of this Section 12 shall survive the expiration or termination of this Agreement for a period of five (5) years.

12.4 Notwithstanding any provision of this Section 12 to the contrary, either Party may disclose the Confidential Information, including the terms of this Agreement: 1) in confidence, to legal counsel; 2) in confidence, to accountants, banks, and financing sources and their advisors solely for the purposes of securing financing; 3) in confidence, to its insurance broker and prospective insurers solely for the purposes of securing insurance for the payload and launch services and in settling any claim for loss; 4) in connection with the enforcement of this Agreement or rights under this Agreement; or 5) in confidence, in connection with an actual or proposed merger, acquisition, or similar transaction solely for use in the due diligence investigation in connection with such transaction.

13. Limitation of Liability

13.1. No Consequential Damages. In no event shall either Party be liable for any indirect, special, incidental, exemplary, punitive or consequential damages of any kind, for the cost of procurement of substitute products or services, or for lost revenues or profits, arising out of or in connection with this Agreement, howsoever caused and regardless of the theory of liability, whether based in contract or tort, including negligence, product liability, and strict liability, or any other theory of liability.

13.2. Total Liability. SpaceX's total and cumulative liability arising out of or in connection with this Agreement howsoever caused and regardless of the theory of liability, whether based in contract or tort, including negligence, product liability, and strict liability, or any other theory of liability, shall in no event exceed the amounts actually paid by Customer and received by SpaceX for Basic Launch Services pursuant to this Agreement.

13.3. Application. The limitations set forth in this Section 13 shall apply even if SpaceX has been advised of the possibility of such losses or damages, and notwithstanding any failure of essential purpose of any limited remedy set forth in this Agreement. The Parties acknowledge that the amounts payable hereunder are based in part on the limitations of this Section 13 and that such limitations are a bargained-for and essential part of this Agreement.

14. Warranties. Except for the Reflight Launch Option (if purchased by Customer), SpaceX has not made, nor does it make, any representation or warranty, whether written or oral, whether express or implied, including, but not limited to, any warranty of design, operation, quality, workmanship, suitability, result, merchantability, or fitness for a particular purpose with respect to the Falcon, launch services, or associated equipment and services. Any implied warranties, including warranties of merchantability and fitness for a particular purpose, are hereby expressly disclaimed.

15. Termination

15.1. Mutual Agreement. This contract may be terminated by mutual consent of the Parties in writing signed by the duly authorized representatives of both Parties.

15.2. Customer's Right to Terminate. If SpaceX is unable to provide Basic Launch Services within twelve (12) months following the Estimated Launch Date (with the exception of additional time resulting from an excusable delay as defined by section 10.1), Customer will, subject to a thirty (30) day written notice to SpaceX, have the option of terminating this Agreement. Separately, in the event of failure by SpaceX to comply with any other material provision of this Agreement after having been given a ninety (90) day period to cure such non-performance, Customer will have the option of terminating this Agreement. Upon such termination, Customer shall be entitled to receive a refund within 30 days of all payments actually made by Customer and received by SpaceX for Basic Launch Services pursuant to this Agreement (minus any penalties paid to SpaceX pursuant to Section 10.2 and any payments attributable to Federal range usage, payload integration fees, or third-party liability insurance fees, if applicable) up to the date of Termination and SpaceX shall have no further obligations or liability to Customer. The right to terminate and receive a refund is Customer's sole and exclusive remedy for termination in the event of delay in the launch of the Payload.

15.3. SpaceX's Right to Terminate. SpaceX shall have the option of terminating this Agreement and retaining all payments without further obligations or liability to Customer for the following reasons: in the event of

a failure by Customer to deliver the Payload for integration within thirty six (36) months following the Estimated Launch Date (with the exception of additional time resulting from an excusable delay as defined by section 10.1); or in the event of failure by Customer to comply with any other material provision of this Agreement after having been given a ninety (90) day period to cure such non-performance.

15.4 [***. . .***]

16. Licenses. Each Party shall be responsible for obtaining any licenses, authorizations, clearances, approvals or permits ("Licenses") necessary to carry out its obligations under this Agreement. Each Party agrees to provide reasonable assistance to the other Party as necessary to obtain such Licenses. SpaceX shall be responsible for obtaining any Licenses required to carry out launch services in the United States, and Customer agrees to provide information and to execute any documentation needed to obtain such Licenses pursuant to the United States International Traffic in Arms Regulations, 22 C.F.R. Parts 120-130, and Regulations for the Importation of Arms, Ammunition and Implements of War, 27 C.F.R. Part 447.

17. Compliance with Government Requirements. SpaceX and Customer agree to comply with their respective national, federal, state and local laws and regulations, and any government licenses, and Customer, in addition, agrees to comply with U.S. export and import laws, regulations, rules, licenses and agreements applicable to the launch of Customer's Payload. Customer shall be responsible for arranging for registration of the Payload pursuant to the Convention on Registration of Space Objects Launched Into Outer Space, done January 14, 1975, T.I.A.S. 8480.

18. Notices

18.1. Transmittal. All notifications and other data transmittals under this Agreement shall be in writing and shall be hand-delivered or sent via express mail, first class mail, or electronic mail to the addresses specified below with confirmation of receipt.

18.2. Effective Date. The date upon which any such communication is hand-delivered or, if such communication is sent by mail or by electronic transmission, the date upon which the addressee receives it, shall be the effective date of such communication.

18.3 Change of Address. Each Party shall promptly notify the other in the event of any change in their respective addresses.

For correspondence sent to SpaceX:

Space Exploration Technologies Corp.
1310 East Grand Avenue
El Segundo, CA 90245
Attn: Gwynne Shotwell
PH. 310-414-6555 X 229
Fax: 310-414-6552
Email: gwynne@spacex.com

For correspondence sent to Customer:

SpaceDev, Inc.
13855 Stowe Drive
Attn: John Cloyd
PH: 858-375-2000
Fax: 858-375-1000
Email: John.Cloyd@spacedev.com

19. Dispute Resolution. All disputes and controversies of every kind and nature arising out of this Agreement including the existence, construction, validity, interpretation, performance, nonperformance, enforcement or breach of any provision of this Agreement, shall be settled by commercial arbitration in accordance with the Commercial Arbitration Rules of the American Arbitration Association. The findings of such Arbitrator shall be final and binding upon all parties. Any award of arbitration shall include attorney fees and costs of arbitration, including but not limited to expert witness fees, payable to the prevailing party in the arbitration, as determined by the Arbitrator.

20. Appendices

20.1. Incorporation by Reference. The following appendices are incorporated into this Agreement by reference and shall be an integral part of this Agreement:

[***. . .***]

[***. . .***]

20.2. Precedence. In the event of conflict between this Agreement and any of the appendices, this Agreement shall govern. In the event of a conflict between Appendices, the sequence of precedence shall be as listed above.

21. Severability. If any portion of this Agreement is held invalid, the Parties agree that such invalidity shall not affect the validity of the remaining portions of this Agreement, unless applying such remaining portions would frustrate the purpose of this Agreement.

22. Waiver. The failure of either Party to exercise any right granted in this Agreement or to require any performance of any term of this Agreement or the waiver by either Party of any breach of this Agreement shall not prevent a subsequent exercise or enforcement of, or be deemed a waiver of any subsequent breach of, the same or any other term of this Agreement.

23. No Joint Venture or Agency. Nothing in this Agreement shall constitute or create a joint venture, partnership, or any other similar arrangement between the Parties. No Party is authorized to act as agent for the other Party hereunder except as expressly stated in this Agreement.

24. Assignment. Customer may not assign, delegate or otherwise transfer this Agreement or any rights or obligations under this Agreement, whether voluntary, by operation of law or otherwise, without the prior written consent of SpaceX, unless to a successor. With the written consent of SpaceX, Customer may use the value of the Agreement in excess of cost as collateral to secure any indebtedness of Customer. SpaceX may assign, delegate or otherwise transfer this Agreement, or any rights or obligations under this Agreement, to any successor by way of merger, acquisition or sale of all or substantially all of the assets relating to the performance of this Agreement. SpaceX or any successor may assign all or part of the right to payments under this Agreement. Any assignment, delegation, or transfer of this Agreement made in contravention of the terms hereof shall be null and void. Subject to the foregoing, this Agreement shall be binding on and inure to the benefit of the Parties' respective successors and permitted assigns.

25. Governing Law. This Agreement and performance by the Parties hereunder shall be construed in accordance with the laws of the State of California, U.S.A., without regard to provisions on the conflicts of laws.

26. Entire Agreement. This Agreement, and all Exhibits and Appendices hereto, supersedes all prior communications, transactions, and understandings, whether oral or written, with respect to the subject matter hereof and constitutes the sole and entire agreement between the Parties pertaining to the subject matter hereof.

27. Modification. No modification, addition or deletion, or waiver of any of the terms and conditions of this Agreement shall be binding on either Party unless made in a non-preprinted agreement clearly understood by both Parties to be a modification or waiver, and signed by a duly authorized representative of each Party.

28. Insurance Support. Parties agree to cooperate with reasonable efforts to obtain and maintain launch insurance and to support filing and settling any claims. This includes responding to insurer questions, delivering requested information regarding the Falcon and the launch range facilities and conducting insurance briefings and facilitating site inspections as required to obtain and maintain such insurance.

CONFIDENTIAL TREATMENT HAS BEEN REQUESTED FOR PORTIONS OF THIS EXHIBIT. THE COPY FILED HEREWITH OMITS THE INFORMATION SUBJECT TO A CONFIDENTIALITY REQUEST. OMISSIONS ARE DESIGNATED [***. . .***]. A COMPLETE VERSION OF THIS EXHIBIT HAS BEEN FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION.

IN WITNESS WHEREOF, the undersigned have executed this Agreement effective as of the Effective Date:

SPACE EXPLORATION TECHNOLOGIES CORP.	CUSTOMER
By: /s/ Elon Musk	By: /s/ Richard B Slansky
Name: Elon Musk	Name: Richard B Slansky
Title: CEO	Title: President
Date: 11/15/2005	Date: 11/15/2005

CONFIDENTIAL TREATMENT HAS BEEN REQUESTED FOR PORTIONS OF THIS EXHIBIT. THE COPY FILED HEREWITH OMITS THE INFORMATION SUBJECT TO A CONFIDENTIALITY REQUEST. OMISSIONS ARE DESIGNATED [***. . .***]. A COMPLETE VERSION OF THIS EXHIBIT HAS BEEN FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION.

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EX-10.2 3 c17586exv10w2.htm EX-10.2

Exhibit 10.2

FOIA CONFIDENTIAL TREATMENT REQUESTED

PORTIONS OF THIS EXHIBIT MARKED BY [**Redacted**] HAVE BEEN OMITTED PURSUANT TO A REQUEST FOR CONFIDENTIAL TREATMENT FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION

WV3 Satellite Purchase Agreement 60150

Document No. 10329664

WorldView 3 Satellite Purchase Agreement # 60150
By and Between
DigitalGlobe, Inc.
and
Ball Aerospace & Technologies Corp.

Document Number	10329664
Release Date:	Aug 20, 2010
Issue/Revision:	Initial Release
Effective Date:	Sept 1, 2010
Prepared by:	Steve Linn
Approved By	Alison Alfers

RESTRICTION ON USE, PUBLICATION, OR DISCLOSURE OF PROPRIETARY INFORMATION

THIS AGREEMENT AND THE INFORMATION CONTAINED THEREIN ARE CONFIDENTIAL AND PROPRIETARY TO DIGITALGLOBE AND BALL AEROSPACE & TECHNOLOGIES CORP (BATC) AND SHALL NOT BE PUBLISHED OR DISCLOSED TO ANY THIRD PARTY WITHOUT THE EXPRESS WRITTEN CONSENT OF A DULY AUTHORIZED REPRESENTATIVE OF DIGITALGLOBE AND BATC.

WV3 Satellite Purchase Agreement 60150

Document No. 10329664

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WORLDVIEW 3 SATELLITE PURCHASE AGREEMENT

THIS SATELLITE PURCHASE AGREEMENT, including the Exhibits referenced in Article 2.1 and incorporated herein, (collectively the "Agreement") is made and entered into as of September 1, 2010) (the "Effective Date"), by and between DIGITALGLOBE, INC., a Delaware corporation with its principal offices located at 1601 Dry Creek Drive, Suite 260, Longmont, Colorado 80503 ("Customer"), and BALL AEROSPACE & TECHNOLOGIES CORP., a Delaware corporation with its principal offices located at 1600 Commerce Street, Boulder, Colorado 80301 ("Contractor"). As used in this Agreement, "Party" means either Customer or Contractor, as appropriate, and "Parties" means Customer and Contractor.

RECITALS

WHEREAS, Customer desires to procure one (1) remote sensing Satellite and related data and documentation and services as more specifically set forth in Exhibits A and B hereto;

WHEREAS, Contractor is in the business of providing satellites and related data and documentation and services on a commercial basis;

WHEREAS, Customer is willing to purchase the Satellite and other Work (as such terms are defined in Section 1) per the terms and conditions set forth herein.

NOW, THEREFORE, in consideration of the mutual covenants and agreements contained herein and intending to be legally bound hereby, the Parties agree as follows:

WV3 Satellite Purchase Agreement 60150

Document No. 10329664

1. DEFINITIONS AND CONSTRUCTION

1.1. CERTAIN DEFINITIONS.

In this Agreement, the following terms shall have the meaning stated hereunder:

(a) Reserved “

(b) “AFFILIATE” means, with respect to an entity, any other entity controlling or controlled by or under common control with such entity.

(c) “AVAILABLE FOR SHIPMENT” means that a Satellite has successfully passed all in-plant acceptance tests, has successfully undergone a Pre-Ship Review and has been declared, by both Customer and Contractor, to be ready to be shipped to the designated launch site.

(d) “BUSINESS DAY” means any day other than the following: a Saturday, Sunday, and any other day on which national banks are authorized to be closed in Colorado. Unless specified in this Agreement as a “Business Day”, all references to “day” or “days” shall mean calendar days.

(e) “CONTRACT DELIVERABLE(S)” has the meaning set forth in Section 3 of Exhibit 1.

(f) “CONTRACT PRICE” means the firm fixed price set forth in Article 3.1.

(g) “CORRECTION PLAN” means a plan submitted by Contractor that details the means by which Contractor shall correct a failure to make adequate progress toward completion of any Work under this Agreement in accordance with Article 24.

(h) “CRITICAL DESIGN REVIEW” has the meaning set forth in Exhibit 1.

(i) “CFE” means Customer Furnished Equipment and is comprised of the items detailed in Section 10 of Exhibit 1.

(j) “CUSTOMER PERSONNEL” means Customer employees, consultants or representatives, or Customer’s consultants’ employees.

(k) “DATA AND DOCUMENTATION” means that data and documentation to be supplied by Contractor pursuant to the requirements of Exhibit 1.

(l) “DEFECT” means; i) with respect to Deliverable Items, any nonconformance in materials, workmanship, or a failure to perform in accordance with the specifications and the interface control documents (ICD’s) set forth in the Agreement or applicable exhibits. (ii) with respect to Deliverable Services, a failure to meet any material requirement set forth in this Agreement or to conform to a standard consistent with good industrial practice, or (iii) any material error, omission, or inconsistency in Data and Documentation, including engineering reports, test plans, test reports, specifications and drawings, set forth in or required by the Agreement.

(m) “DELIVERABLE ITEM(S)” means any and all of items listed in Section 3.1 of Exhibit 1.

(n) "DELIVERABLE SERVICE(S)" means the services set forth in Section 3.3 of Exhibit 1.

(o) "DELIVERY DATE(S)" means, with respect to any Deliverable Item, the delivery dates set forth in Exhibit 1.

(p) "DELIVERY SCHEDULE" means the schedule for Delivery of the Work as set forth in this Agreement and Exhibit 1.

(q) "DEMAND" means, in the context of Article 24, a demand made by Customer to Contractor for Contractor to provide a Correction Plan in the event Contractor is failing to make adequate progress in the performance of this Agreement.

(r) "EXCUSABLE DELAY" has the meaning set forth in Article 9.

(s) "EXHIBITS" means any and all exhibits, and any appendices thereto, to this Agreement, which are attached hereto and incorporated herein.

(t) "FINAL ACCEPTANCE" of a Contract Deliverable has the meaning set forth in Exhibit 1.

(u) "FIRST MILESTONE PAYMENT" means the first Milestone Payment identified in Exhibit 3.

(v) "INTELLECTUAL PROPERTY" means all algorithms, inventions, drawings technical data, works of authorship, mask works, technical information, computer software designs, methods, concepts, layouts, software, software codes, (in any form including source code and executable or object code), inventions (whether or not patented or patentable), network configurations and architectures, specifications, techniques, processes, data bases and data collections, protocols, technical data and documentation, and similar matter in which an Intellectual Property Right may subsist, which shall include, but not be limited to, technical analyses and reports, test plans, all interfaces between units, test reports, parts lists, anomaly reports and resolution, as built lists, and other program documentation, to review the design, satisfy requests from the U.S. Government for information, prepare operational documentation, to operate the Satellite following Launch, and to make repairs or modifications as necessary.

(w) "INTELLECTUAL PROPERTY RIGHTS" means all common law and statutory proprietary rights, including patent, patent application, patent registration, copyright, trademark, service mark, trade secret, mask work rights, moral rights, data rights and similar rights existing from time to time under the intellectual property Laws of the United States, any state or foreign jurisdiction or international treaty regime related to Intellectual Property.

(x) "LAUNCH" means, with respect to the Satellite, the intentional ignition of any of the motors on the launch vehicle.

(y) "LAUNCH READINESS REVIEW" shall have the meaning ascribed to it in Exhibit 1.

(z) "LAUNCH SERVICES" means the Launch and related services provided by a launch provider to be selected by Customer, including furnishing the launch vehicle, launch support, and equipment and facilities, for the purpose of launching the Satellite into orbit.

(aa) "LAUNCH SUPPORT SERVICES" has the meaning set forth in Exhibit 1.

(bb) "LAW" OR "LAWS" means any laws, including rules, regulations, codes, injunctions, judgments, orders, ordinances, decrees, rulings, and charges thereunder, of any federal, state, local or municipal government of any country (and all agencies thereof) having jurisdiction over any portion of the Work.

(cc) "LOSSES" means all losses, liabilities, damages, royalty payments and claims, and all related costs and expenses (including reasonable legal fees and disbursements and costs of investigation, expert fees, litigation, settlement, judgment, interest, and penalties).

(dd) "MATERIAL ADVERSE EFFECT" means any material adverse change in (i) the legality, validity, or enforceability of this Agreement or (ii) the ability of Customer or Contractor to perform this Agreement.

(ee) "MILESTONE" means a portion of the definitive, measurable Work upon completion of which a payment is to be made in accordance with Exhibit 3

(ff) "MILESTONE CERTIFICATE" has the meaning set forth in Article 4.

(gg) "MILESTONE PAYMENT" means any of those payments listed as specific Milestone Payments in Exhibit 3.

(hh) "PRELIMINARY DESIGN REVIEW" has the meaning assigned in Exhibit 1.

(ii) "PRE-SHIP REVIEW" shall have the meaning ascribed to it in Exhibit 1.

(jj) Reserved

(kk) "SATELLITE" means the satellite remote sensing system to be designed, developed and constructed by Contractor and delivered to Customer as specifically set forth in Exhibit 1.

(ll) "SATELLITE DELIVERY" means Initial Acceptance as defined in Exhibit 1.

(mm) "SATELLITE FLIGHT SOFTWARE" means the software to be delivered to, and installed by Contractor in the flight computer(s) on-board the Satellite to perform the spacecraft house-keeping functions, operate the instrument and communicate with the ground as more specifically set forth in Exhibit 1.

(nn) "SATELLITE PERFORMANCE SPECIFICATIONS" means the technical specifications set forth in Exhibit 2.

(oo) "SATELLITE SIMULATOR" has the meaning set forth in Exhibit 1.

(pp) "SOFTWARE LICENSE" means the software license as documented in Exhibit 4.

(qq) "TERMINATION LIABILITY AMOUNTS" means the amounts listed as Termination Liability Amounts in Exhibit 3.

(rr) Reserved

(ss) "WORK" means all design, development, construction, manufacturing, labor, services, and acts by Contractor and its subcontractors, including, tests to be performed, and any and all Contract Deliverables, including the Satellites, Satellite Flight Software, Data and Documentation, training, and equipment, materials, articles, matters, services, and things to be furnished and rights to be transferred under this Agreement, or any subcontract entered into by Contractor, all as further described in Exhibit 1.

(tt) "WV3 INSTRUMENT" has the meaning set forth in Exhibits 1 and 2.

1.2. OTHER TERMS.

Other terms in this Agreement are defined in the context in which they are used and shall have the meanings there indicated.

1.3. INTEGRATION AND CONSTRUCTION.

The documents listed below in this Article 1.3, including any Attachments, Schedules, and Annexes referenced therein constitute this Agreement and shall be deemed to constitute one fully integrated agreement between the Parties. In the event of any conflict or inconsistency among the provisions of the various documents of this Agreement, such conflict or inconsistency shall be resolved by giving a descending level of precedence to the documents in the order set forth below:

(a) Terms and Conditions of this Agreement

(b) Exhibit 1 — WorldView 3 Satellite Statement of Work

(c) Exhibit 2 — WorldView 3 Satellite Specification

(d) Exhibit 3 — WorldView 3 Milestone Payment and Termination Liability Schedule

(e) Exhibit 4 — WorldView 3 Software License Agreement

(f) Exhibit 5 — WorldView 3 Bi-lateral Non-Disclosure Agreement

1.4. HEADINGS.

The Article headings are for convenience of reference only and shall not be considered in interpreting the text of this Agreement.

2. SCOPE OF WORK

2.1. GENERAL.

(a) In accordance with the requirements of this Agreement, Contractor shall provide and Customer shall purchase the Work.

(b) Contractor shall furnish and perform the Work in accordance with the provisions of this Agreement and in the manner specified in the following documents:

(1) Exhibit 1 — WorldView 3 Satellite Statement of Work

(2) Exhibit 2- WorldView 3 Satellite Specification

(3) Exhibit 3 — WorldView 3 Milestone Payment and Termination Liability Schedule

(4) Exhibit 4 — WorldView 3 Software License Agreement

(5) Exhibit 5 — WorldView 3 Bi-lateral Non-Disclosure Agreement

(c) Contract Line Items. The contract line items under the contract shall be:

(1) CLIN 1: Satellite and related services and data.

2.2. CONTRACTOR WORK COMMITMENT.

Contractor shall commence the Work in compliance with the requirements of this Agreement and will use commercially reasonable efforts to perform sufficient Work to maintain the Delivery Dates for all deliverables per Exhibit 1.

3. CONTRACT PRICE

3.1. CONTRACT PRICE.

The total Contract Price for all Work required to be provided by Contractor under this Agreement is the Firm-Fixed-Price ("FFP") amount set forth in Exhibit 3.

3.2. CHANGES IN CONTRACT PRICE.

This is a FFP Agreement. Except as otherwise expressly provided in this Agreement, the Contract Price is not subject to any escalation or to any adjustment or revision.

3.3. TAXES AND DUTIES.

(a) Taxes: All taxes and similar assessments, levies, and government-imposed obligations arising with respect to any Contract Deliverables and/or support services (except for Contractor's income or franchise taxes) shall be the obligation of and be paid by Customer whether such taxes become due upon any payments under the Agreement or upon a future tax assessment as a result of an audit, or other event or notification by the relevant tax authority. For this purpose and unless otherwise indicated below, taxes shall mean and include any and all taxes imposed by the U.S. and its states and localities, sales and use, value added (including reverse charge value added tax), turnover, import duty, import VAT, property, excise, privilege or other fees, duties or taxes assessed by the sale, ownership, or use of the Contract Deliverable(s), support services, and any goods provided under this Agreement.

(b) Sales and Use Taxes: All applicable payments for sales and use taxes shall be collected from Customer by Contractor and remitted to the appropriate taxing authority in the legally defined time frame determined by said taxing authority. To the extent that Customer determines that it is exempt from any sales and use tax(es), Customer shall provide the Contractor with the applicable and executed exemption certificate.

(c) Non-Recurring Engineering Services: The Parties have initially determined that the non-recurring engineering services contemplated under this Agreement will be exempt from sales and use tax. Accordingly, Contractor will include these services as a separate line item(s) on its invoices. Billing will occur with the Milestone Payments up the value of the non-recurring engineering charges which will be exempt from sales and use tax, with subsequent Milestone Payments reflecting the final Contract Deliverable(s) which will be taxed unless a Resale Certificate is obtained.

(d) Sales Tax Exemption: Certain Contract Deliverables are tangible personal property and may be subject to Sales and Use Tax unless a properly completed Resale or Sales Tax Exemption Certificate is provided by Customer to Contractor. Customer agrees to reimburse Contractor for tax, interest, and any penalty assessed by any taxing authority where the claim for exemption is denied or where the non-recurring engineering services are taxable as sales.

(e) Licenses, Gross Receipts, Business and Occupation Taxes: Each Party will be responsible for its own licenses, gross receipts (with the exception of any sales taxes referred to as gross receipts), and business and occupation taxes.

(f) Property Taxes: Each Party will be responsible for property taxes due on property owned by the respective Party with the exception of any assessed property that constitutes a Contract Deliverable. Customer will be responsible for any property taxes on Contract Deliverables.

(g) Other Taxes: Each Party will be responsible for its own corporate income or franchise taxes based upon income and/or net worth.

4. PAYMENT

4.1. REQUESTS FOR PAYMENT AND INVOICES.

(a) Customer shall make Milestone Payments, and any other required payments under this Agreement to Contractor in accordance with this Article 4.1 and Exhibit 3 as applicable.

(b) The Parties have agreed upon a payment and termination liability schedule set forth in Exhibit 3. Customer shall pay Contractor upon successful completion of each Milestone and submission of a corresponding invoice as described herein. Contractor shall prepare and deliver to Customer with each invoice a Request For Payment, accompanied by a certificate in the form of Annex I to Exhibit 3 hereto (the "Milestone Certificate") and such supporting data as Customer reasonably deems necessary or appropriate. Subject to the foregoing, Customer shall sign each Milestone Certificate to signify Customer's agreement that the applicable Milestone has been completed. A Milestone shall not be regarded as completed, and no payment shall be made, until all the Work required under the particular Milestone has been completed and documented in accordance with applicable specifications and procedures and all the relevant documentation and training required under this Agreement for such Milestone has been provided to Customer's reasonable satisfaction. In the event that Customer does not agree that a Milestone has been completed, Customer shall notify Contractor in writing within ten (10) Business Days of receipt of the Milestone Certificate. If it is determined by Customer that Contractor has not completed the Milestone as specified in Exhibit 3, Customer may withhold the payment in full. Said withholding of payment, to the extent it is disputed by Contractor, shall be subject to the disputes process identified in Article 4.3 (Disputed Amounts).

(c) Contractor shall telefax, mail (overnight or return receipt requested) or hand-deliver signed copies of each Request For Payment, invoice and accompanying certificate and any supporting data to:

Fax:	**[**Redacted**]**
Address:	1601 Dry Creek Drive, Suite 260
	Longmont, CO 80503
Contact:	Finance Department

4.2. PAYMENT.

(a) Subject to the provisions of Article 4.1, Customer shall make in full each Milestone Payment within **[**Redacted**]** (unless otherwise specified in Exhibit 3) after receipt of invoice. Said Milestone Payment(s) shall be made via wire transfer or Electronic Funds Transfer to the following bank account as applicable:

[Redacted**]**

Regular Mail

[Redacted**]**

(b) In the event of anticipated early completion by Contractor of a Milestone in advance of such Milestone completion date as set forth in Exhibit 3, Contractor may invoice for Milestone(s) completed in advance of the Milestone completion date so long as it provides Customer with no less than thirty (30) days prior notice of the anticipated completion date to allow Customer time to arrange for payment of the applicable Milestone.

(c) Upon early completion of Satellite Delivery, Customer shall pay Contractor an early completion payment of **[**Redacted**]** per day up to an aggregate amount of **[**Redacted**]** (e.g. up to a total of **[**Redacted**]** prior to the date of the Delivery Date) upon receipt of invoice. Said payment is due and payable within **[**Redacted**]** of Customer's receipt of invoice.

4.3. DISPUTED AMOUNTS.

(a) If Customer does not agree that the Milestone associated with a Request For Payment has been satisfactorily completed, Customer shall give written notice to Contractor within ten (10) Business Days after receipt by Customer of a Request For Payment. Upon receipt of such notice, and to the extent that Contractor disputes said notice, the Parties' respective Program Managers shall meet and use good faith efforts to resolve such disagreement.

(b) If the Parties' Program Managers fail to resolve such disagreement within thirty (30) days after receipt by Customer of the Request For Payment, each Party will designate a member of their respective executive teams to meet to resolve the dispute within fifteen (15) days after the aforementioned thirty (30) days. In the event the designees cannot resolve such disagreement, the Chief Executive Officers of the Parties shall meet to resolve the dispute.

(c) In the event the Chief Executive Officers cannot resolve such dispute within fifteen (15) days of the aforementioned fifteen (15) days (within 60 days of receipt of the Milestone Certificate, then either Party may seek resolution of such dispute pursuant to Article 22.2. In any event, such unresolved dispute shall be referred to arbitration pursuant to Article 22.2.

4.4. SET OFF.

In the event one Party has not paid the second Party any amount that is due and payable to the second Party under this Agreement, such second Party shall have the right to set off such amount against payments due under this Agreement to the first Party.

4.5. LATE PAYMENT.

For any undisputed payment under this Agreement that is overdue, the Party entitled to such payment shall also be entitled to **[**Redacted**]**. This remedy **[**Redacted**]**. Late payment charges will be billed on a separate invoice.

5. ACCESS TO WORK

5.1. FACILITIES.

(a) Contractor shall provide Customer Personnel and/or duly authorized government representatives or consultants reasonable access to all Work (including work-in-progress, documentation, and testing) at the facilities of Contractor and, its Subcontractors (as set forth in paragraph 7.7.2 of Exhibit 1), during regular business hours, or such other times as Work is being performed under this Agreement. Said access shall be subject to the Contractor's or Subcontractor's procedures and requirements and shall not unreasonably interfere with such Work. Customer's access to Work shall be coordinated through the Contractor's program office.

(b) Any personnel visiting any facility of Contractor or a subcontractor (i) will abide by Contractor's security regulations and/or those of its subcontractors and any and all applicable Laws of the jurisdiction in which a Contractor or subcontractor facility is located; (ii) will abide by all applicable Laws and Articles under this Agreement regarding its use any information, including any confidential/proprietary information, received in connection with the access provided hereunder only in the performance of this Agreement; and (iii) will not remove any data, documents, materials, or other items from any facility of the Contractor or its subcontractors (other than Data and Documentation and other documents delivered to Customer Personnel for Customer's use and with no requirement to return to Contractor) without the express written consent of Contractor's Program Manager. The Customer and, if appropriate, authorized government representatives or consultants, shall execute any standard non-disclosure agreement that is necessary for access to a subcontractor's facility.

5.2. NO RELIEF

The inspection, examination, observation, agreement to or approval, waiver or deviation by either Party with respect to any design, drawing, specification, or other documentation produced under this Agreement shall not relieve the other Party from fulfilling its contractual obligations. Nor will the above actions result in any liability being imposed on the other Party, unless and to the extent such waiver, deviation, agreement, or approval specifically provides in writing for such relief to either Party or such imposition of liability on either Party.

5.3. WORKERS COMPENSATION AND EMPLOYER'S LIABILITY

Contractor and Customer shall maintain worker's compensation and employer's liability insurance covering all employees of Contractor and Customer engaged in the performance of this Agreement for claims arising under any applicable Worker's Compensation and Occupational Disease Acts. Contractor and Customer shall maintain certificates evidencing such insurance available for review upon request.

6. DELIVERY

Contract Deliverables listed in Exhibit 1 shall be delivered by Contractor to the destinations specified in Exhibit 1 on or before the dates ("Delivery Dates") specified in said Exhibit. Delivery Dates may be adjusted in accordance with this Agreement.

7. RESERVED

8. TITLE AND RISK OF LOSS

Transfer of title to and risk of loss for each of the Deliverable Items listed in Section 3.1 of Exhibit 1 (excluding the Satellite) shall pass to Customer at functional and performance signoff as indicated in Exhibit 1, Section 3.1. Transfer of title to and risk of loss for the Satellite shall pass to the Customer at the time of Launch. Contractor shall retain title to the WV3 Flight Software Test Bench ("FSTB") and Deliverable Data listed in Section 3 of Exhibit 1 both prior to and after delivery. Any title transferred under this Agreement shall be free and clear of all liens and encumbrances of any kind.

9. EXCUSABLE DELAY

9.1. EXCUSABLE DELAY DEFINED.

(a) With respect to Contractor's performance of its obligations under this Agreement, an "Excusable Delay" shall be any delay in the performance of the Work due to: war, outbreak of national hostilities, invasion or sabotage, Government sovereign acts; fire, earthquake, flood, epidemic, explosion, or quarantine restriction; strike or work slow down not reasonably within Contractor's control; freight embargoes; acts of God; any subcontractor delay due to any of the foregoing events; provided written notice is given to Customer, in writing, within ten (10) Business Days after Contractor shall have first learned of the occurrence of such an event. Notwithstanding the foregoing, failure by Contractor to provide such notice shall not prevent such an event from qualifying as an Excusable Delay provided Customer's Program Manager has actual notice of such event by means of publicly and commonly available sources (i.e. national or global coverage of major natural disaster) prior to Customer suffering any prejudice from Contractor's failure to provide such notice. Such notice to be provided by Contractor, as required by the preceding provisions, shall include a detailed description of the portion of the Work known to be affected by such delay. In all cases, Contractor shall use reasonable efforts to avoid or minimize and/or work around such delay through the implementation of any work-around plans, alternate sources, or other means Contractor may utilize or expect to utilize to minimize a delay in performance of the Work. Contractor shall also provide Customer prompt written notice when the event constituting an Excusable Delay appears to have ended. This Article 9, including reliance on Excusable Delay, is only applicable to Contractor. Delays applicable to Customer are set forth in Article 11.5.

(b) In the event Customer disputes the Excusable Delay, Customer shall inform Contractor in writing within ten (10) Business Days from the date of receipt of written notice of the event constituting an Excusable Delay and, if the Parties have not resolved the dispute within ten (10) Business Days of Contractor's receipt of written notice from Customer, the dispute shall be resolved pursuant to Article 21.

9.2. EQUITABLE ADJUSTMENTS.

(a) In the event of an Excusable Delay under Article 9.1, there shall be an equitable adjustment made to the Delivery Schedule and Delivery Dates as set forth in Exhibit 1, as well as any interim schedule events set forth in Exhibit 1; provided, however, Contractor acknowledges and agrees that the occurrence of an Excusable Delay shall not entitle Contractor to an increase in the Contract Price.

(b) In the event of an adjustment in the Delivery Date of the Satellite due to an Excusable Delay, there shall be an adjustment in the Delivery Date of the Satellite as well as interim schedule events only to the extent such Delivery Date or schedule is impacted by the Excusable Delay.

(c) Customer may terminate this Agreement pursuant to Article 25.3 when it becomes known that the aggregate of Contractor's Excusable Delays will exceed **[**Redacted**]**. Any dispute between the Parties as to the aggregate of Excusable Delay shall be subject to procedures set forth in Article 21.

9.3. MAXIMUM EXCUSABLE DELAY.

The maximum total amount of Excusable Delay shall be **[**Redacted**]**.

10. CORRECTIVE MEASURES IN SATELLITE AND OTHER CONTRACT DELIVERABLES

10.1. NOTICE OF DEFECTS.

(a) Customer shall notify Contractor within **[**Redacted**]** Business Days in writing when Customer becomes aware of a Defect existing in any Contract Deliverable or component part thereof. Said Defect shall be capable of being demonstrated to Contractor. In the event Contractor disagrees with Customer as to the existence or nature of a Defect, Contractor shall so advise Customer in writing. In such event, the Parties shall negotiate in good faith to determine what Defect, if any, exists and any action required to remedy such Defect. Except to the extent written waivers are made, Customer's failure to notify Contractor of any Defect shall not constitute a waiver of any rights of Customer or obligations of Contractor under this Agreement with respect to any such Defects.

(b) Contractor shall advise Customer as soon as practicable by telephone or e-mail and confirm in writing any event, circumstance, or development that materially threatens the quality of any Contract Deliverables or component parts thereof, including any Satellite, or threatens the Delivery Dates established therefore.

(c) Without limiting the generality of the foregoing, if the data available from the Satellite shows that the Satellite contains a Defect, Contractor shall promptly inform Customer of such Defect.

10.2. DUTY TO CORRECT.

(a) Without limiting the obligations of Contractor or the rights of Customer under this Agreement, prior to Launch of the Satellite, Contractor shall, at its expense, promptly correct any Defect related to any Contract Deliverable or component thereof that Contractor or Customer discovers during the course of the Work. The duty to correct is not waived regardless of prior payments, reviews, inspections, approvals, or acceptances (with the exception of waivers and deviations previously agreed-upon). This provision is subject to the right of Contractor to have any items containing a Defect returned at Contractor's expense to Contractor's facility for Contractor to verify and correct the Defect.

(b) Following Launch of the Satellite, the Contractor's duty to correct any Defect in the Contract Deliverables or components thereof **[**Redacted**]** in order to mitigate or eliminate the operational effects of the Defect. Contractor shall coordinate and consult with Customer concerning said resolution of Defects in the Satellite.

(c) Contractor shall fulfill the foregoing obligations at its own cost and expense, including all costs arising from charges for packaging, shipping, insurance, taxes, and other matters associated with the corrective measures, unless it is reasonably determined after investigation that Customer directly caused the Defect in question, in which case Customer shall pay all such costs.

(d) If Contractor fails to correct any material Defect with respect to any Contract Deliverable per Article 10.2(a) or 10.2(b), as applicable, within a reasonable time after notification from Customer and after the Parties have followed the provisions of Article 10.1 above, then, with the prior written consent of Contractor (said consent not to be unreasonably withheld), Customer may, by separate contract or otherwise, correct or replace such items or services and Contractor shall pay to Customer the reasonable cost of such correction or replacement., In the event of any dispute regarding the above, Article 21.2 shall apply. The amount payable by Contractor shall be verified at Contractor's request by an internationally recognized firm of accountants appointed by Contractor.

(e) Contractor may at its option, either correct the Defect or seek a waiver. In the event the Defect is waived, Contractor shall, at the Customer's request, promptly provide a written price reduction proposal for such change.

(f) Notwithstanding anything herein to the contrary, in the event there is a total loss of the Satellite prior to launch such that the Delivery of the Satellite would be delayed by more than **[**Redacted**]**, then the Customer shall have the option of either requiring that Contractor replace the Work up to the point of loss at Contractor's sole expense or return to Customer all payments made by Customer as of the date of the loss.

(g) This duty to correct does not apply to CFE.

11. CHANGES IN SCOPE OF WORK

11.1. CHANGES DIRECTED BY CUSTOMER.

(a) Subject to paragraphs (b), (c) and (d) below, Customer shall be entitled to direct changes to the Satellite during the performance of this Agreement when any such changes are necessary for the Satellite **[**Redacted**]**. Any **[**Redacted**]** requiring a change to the Satellite between or among these items must be demonstrated to be of such magnitude that a failure to proceed with the change could be reasonably expected have a material effect on the performance of the Satellite. The Parties will agree upon the scope, implementation and technical direction of any change prior to proceeding with said change.

(b) Any change directed by Customer as described in paragraph (a) above shall be submitted in writing to Contractor. Contractor shall respond to such directed change in writing to Customer within **[**Redacted**]** after such directed change and shall include in such response the details of the impact of such change on the Contract Price, Delivery Schedule, Satellite Performance Specifications, or other terms of this Agreement.

(c) Customer shall notify Contractor in writing, within **[**Redacted**]** after receipt of Contractor's response, whether or not Customer agrees with and accepts Contractor's response. If Customer agrees with and accepts Contractor's response, Contractor shall proceed with the performance of this Agreement as changed immediately upon the execution by both Parties of an Amendment reflecting such changes.

(d) If the Parties cannot agree on a reasonable price or revised Delivery Schedule, Satellite Performance Specifications, or other item, as occasioned by Customer's directed change, and Customer still desires the directed change, Customer shall direct Contractor to proceed with the change and Customer shall pay Contractor's proposed price and accept the revised Delivery Schedule or Satellite Performance Specifications or other item pending any decision to the contrary under Article 21. Contractor shall proceed with the Work as changed and Customer may dispute the reasonableness of the proposed price, revised Delivery Schedule, performance specification or under Article 21. In the event it is determined pursuant to such dispute resolution or by the Parties' mutual written agreement that Customer is entitled to a full or partial refund of amounts paid under this paragraph (d), Customer shall be entitled to interest on such refunded amounts, such interest running from the date of payment by Customer to the date of refund at the **[**Redacted**]**.

11.2. CHANGES REQUESTED BY CUSTOMER.

In the event Customer desires to change the scope of work, the Delivery Schedules, or any other term of this Agreement, Customer shall submit a detailed description of the requested change to Contractor. Contractor shall respond within **[**Redacted**]** Business Days, with its proposal for adjustments to the consideration, Delivery Schedule and any other term of this Agreement. Subject to mutual agreement, the consideration, Delivery Schedule and/or any other affected term of this Agreement shall be modified to incorporate the mutually agreed upon change. If the Parties establish and agree that an advance target price is sufficient to initiate Work in the Customer requested change, the Contractor shall proceed with the Work as modified. In such circumstances, the final determination of the price, schedule and any other affected term will be agreed upon on/before **[**Redacted**]** days after any decision to proceed. Contractor may implement any change requested by Customer prior to the completion of the change negotiation. This decision shall not constitute Contractor's acceptance of any change as requested nor shall it impair Contractor's rights to additional consideration, schedule adjustment or modification of any other Agreement term.

11.3. CHANGES REQUESTED BY CONTRACTOR.

(a) Subject to paragraphs (b) and (c) below, Contractor may request, during the performance of this Agreement, any change within the general scope of this Agreement, including any change that will add or delete Work, affect the design of the Satellites, change the method of shipping or packing, or the place or time of Delivery, or will affect any other requirement of this Agreement.

(b) Any changes as described in paragraph (a) above requested by Contractor shall be submitted in writing to Customer at **[**Redacted**]** prior to the proposed date of the change. If such Contractor requested change causes an increase or decrease or other impact in the Contract Price, Delivery Schedule, Satellite Performance Specifications, or other terms of this Agreement, Contractor shall submit, with such request, a written proposal identifying such change and the impact thereof on the Contract Price, Delivery Schedule, Satellite Performance Specifications, or other terms of this Agreement.

(c) Customer shall notify Contractor in writing, within **[**Redacted**]** after receipt of the requested change proposal, whether or not Customer agrees with and accepts such change and the price/schedule/performance or other impact thereof. If Customer agrees with and accepts Contractor's requested change and such impact thereof, Contractor shall proceed with the performance of this Agreement as changed.

11.4. PRICING OF CHANGES.

When calculating the change in the Contract Price caused by changes in the Work pursuant to this Article 11, such calculation shall be consistent with **[**Redacted**]**.

11.5. DELAYS CAUSED BY CUSTOMER

(a) In the event Customer creates a delay by failure to act in a timely manner, or by an action that in some way prevents or impedes Contractor from making progress, including, but not limited to Customer's failure to provide CFE and/or services in accordance with this Agreement's requirements, the Parties shall agree upon an equitable adjustment in the affected terms (including price) of this Agreement under this clause to the extent of the schedule delay that Customer is specifically responsible for causing.

(b) In the event Customer reasonably withholds acceptance and/or approvals, a delay shall not be deemed to have been caused by Customer. In the event such withholding of acceptance and/or approvals is unreasonable, a delay shall be deemed to have been caused by Customer to the extent, but only to such extent, that such an act has caused the delay to the project schedule, this Article 11.5 is the only remedy for of Contractor for Customer-caused delays.

12. PERMITS AND LICENSES; COMPLIANCE WITH LAWS

12.1. UNITED STATES PERMITS, LICENSES, AND LAWS.

(a) Contractor shall, at its own expense, obtain all United States Government approvals, permits, and licenses, including any required for export from or import into the United States, as may be required for its performance of the Work.

(b) Contractor shall, at its expense, perform the Work in accordance with all applicable Laws of the United States and the conditions of all applicable United States Government approvals, permits, or licenses.

12.2. REVIEW OF APPLICATIONS.

(a) Contractor shall review with Customer any application relating to import or export that Contractor makes to any government department, agency, or entity for any approval, permit, license, or agreement, as may be required for performance of the Work, prior to submission of such application. Contractor shall provide Customer a minimum of **[**Redacted**]** to review such application prior to submission to such governmental entity, and Contractor shall in good faith consider and accommodate any comments and proposed revisions made by Customer for incorporation into such application.

(b) Customer shall reasonably cooperate with Contractor in Contractor's efforts to procure all such approvals, permits, licenses, and agreements.

12.3. VIOLATIONS OF LAW.

Customer shall not be responsible in any way for the consequences, direct or indirect, of any violation by Contractor, its subcontractors, or their respective Affiliates or associates of any Law or of any country whatsoever. Contractor shall not be responsible in any way for the consequences, direct or indirect, of any violation by Customer, its subcontractors, or their respective Affiliates or associates of any Law or of any country whatsoever.

13. SUBCONTRACTS

13.1. SUBCONTRACTS.

To the extent permitted under the relevant subcontract and subject to the subcontractor's written approval and Customer's execution of any subcontractor-required non-disclosure agreement, Contractor will provide, upon Customer's reasonable request, copies of the technical content of the subcontract and/or a copy of the full text of any major subcontract (excluding price and payment schedule).

13.2. NO PRIVITY OF CONTRACT.

Nothing in this Agreement shall be construed as creating any contractual relationship between Customer and any of Contractor's subcontractors. Contractor is fully responsible to Customer for the acts or omissions of its subcontractors and all persons used by Contractor or any of its subcontractors in connection with performance of the Work. Except as provided for in Article 9, any failure by any of Contractor's subcontractors to meet their obligations to Contractor shall not constitute a basis for Excusable Delay and shall not relieve Contractor from meeting any of its obligations under this Agreement. Customer's acknowledgment of any vendor under subcontract or subcontractor shall not relieve Contractor from any obligations or responsibilities under this Agreement.

Nothing in this Agreement shall be construed as creating any contractual relationship between Contractor and any of Customer's subcontractors. Customer is fully responsible to Contractor for the acts or omissions of its subcontractors and all persons used by Customer or any of its subcontractors in connection with delivery of the WV3 Instrument. Contractor's acknowledgment of any vendor under subcontract or subcontractor shall not relieve Customer from any obligations or responsibilities under this Agreement.

13.3. ASSIGNMENT OF SUBCONTRACTS.

In accordance with Exhibit 1, Contractor shall make commercially reasonable efforts in negotiating its subcontracts to include an assignment clause that would enable the assignment of Contractor's subcontract(s) in the event of a properly executed termination under this Agreement. Upon said termination of this Agreement and to the extent that Contractor has the legal and contractual right under the subcontract to do so, upon Customer's written request, Contractor shall promptly assign said subcontract.

13.4. CONTRACTOR'S DUTIES WITH RESPECT TO SUBCONTRACTORS.

The Contractor's duties and obligations under this Agreement shall include the obligations of its subcontractors.

14. PERSONNEL AND KEY PERSONNEL

14.1. PERSONNEL QUALIFICATIONS.

Contractor shall assign properly qualified and experienced personnel to the program contemplated under this Agreement, and Contractor shall use reasonable efforts to retain such personnel on Customer's program for the duration of such program.

14.2. KEY PERSONNEL POSITIONS.

Contractor key personnel ("Key Personnel") shall be the personnel set forth in Exhibit 1.

14.3. ASSIGNMENT OF KEY PERSONNEL.

(a) Contractor will assign individuals from within Contractor's organization to the Key Personnel positions as defined in Exhibit 1.

(b) Key Personnel will be familiar with programs similar to Customer's program.

Before assigning an individual to any Key Personnel positions, whether as an initial assignment or a subsequent assignment, Contractor shall notify Customer of the proposed assignment, shall introduce the individual to appropriate Customer representatives and shall provide Customer with the individual's resume (only in the event any such individual is not known to the Customer). If Customer in good faith objects to the qualifications of the proposed individual after being notified thereof, then Contractor agrees to discuss such objections with Customer and resolve such concerns on a mutually agreeable basis, including selecting alternative personnel. Customer may object to any Key Personnel during the course of the program, or in the event any individual filling a Key Personnel position leave such position for whatever reason, Contractor shall follow the procedures set forth in this Article 14.3 to select replacement personnel.

15. CONTRACTOR'S REPRESENTATIONS, COVENANTS, AND WARRANTIES

15.1. ORGANIZATION; GOOD STANDING AND QUALIFICATION.

Contractor represents that:

(a) it is a corporation duly organized, validly existing and in good standing under the Laws of Delaware;

(b) it has all requisite power and authority to own and operate its material properties and assets and to carry on its respective business as now conducted in all material respects; and

(c) it is duly qualified to transact business and is in good standing in each jurisdiction in which the failure to so qualify would have a Material Adverse Effect.

15.2. AUTHORIZATION.

Contractor represents that:

(a) it has all requisite corporate power and authority to enter into this Agreement and to carry out the transactions contemplated by this Agreement;

(b) the execution, delivery, and performance of this Agreement and the consummation of the transactions contemplated by this Agreement have been duly authorized by the requisite corporate action of Contractor and do not conflict with any other agreement or obligation to which it is a party or which binds its assets; and

(c) this Agreement is a valid and binding obligation of Contractor, enforceable in accordance with its terms, except Contractor makes no representation or warranty as to the enforceability of remedies due to applicable bankruptcy, insolvency, moratorium, reorganization, or similar laws relating to or affecting the enforcement of creditor's rights or by reason of general principles of equity.

15.3. CONTRACTOR WARRANTIES FOR CONTRACT DELIVERABLES.

(a) Satellite (Pre-Launch): **[**Redacted**]**, Contractor warrants that the Satellite (excluding CFE) furnished under this Agreement shall comply with the requirements of Exhibit 1 and be free from Defects (other than Defects waived in writing by the Customer). If the Customer becomes aware of a Defect, Customer shall notify Contractor within **[**Redacted**]** Business Days after discovery by Customer of the Defect. Except for Contractor's obligations set forth in paragraph (b) immediately below, the warranty herein shall immediately expire upon Launch of the Satellite.

(b) Satellite (Post-Launch): Immediately upon Launch, Contractor's obligation to correct any Defect in the Satellite or components thereof (excluding CFE) is defined by paragraph 10.2 (b) of this Agreement for a period of **[**Redacted**]**.

(c) Other Contract Deliverables: With respect to all remaining Deliverable Items listed in Section 3.1 of Exhibit 1, excluding those items specified in Sections 3.1(f) and (g) of Exhibit 1, Contractor warrants that said Deliverable Items shall be free from Defects (other than those Defects waived by Customer) for a period of **[**Redacted**]** following delivery.

(d) Services: Contractor warrants that it will perform all services related to the Work in accordance with **[**Redacted**]** for work similar in type, scope and complexity of the Work.

(e) Data and Documentation: With respect to Data and Documentation, Contractor warrants that said Data and Documentation shall be free from material errors or omissions related to the operation of the Customer's satellite for a period of **[**Redacted**]** following Launch.

(f) Contractor's obligations under this warranty are, at the Contactor's sole discretion, limited to inspection of the Contract Deliverable and repair or replacement of the Contract Deliverable. It is understood that such a warranty repair does not renew the warranty term for the Contract Deliverable. Notwithstanding the foregoing: (a) the warranty term for the Contract Deliverable (or portion thereof) being repaired or replaced shall be tolled during the period of such repair; and (b) where a warranty repair involves a portion of the Contract Deliverable, and the remaining portion of the Contract Deliverable can not be effectively tested and or utilized during the period of repair, then the warranty term for the remaining portion of the Contract Deliverable shall be tolled during such period of repair. Contractor's obligations hereunder are expressly conditioned upon the following terms:

(1) In the event that the Contract Deliverable does not contain a Defect, Customer shall reimburse Contractor for all reasonable expenses incurred during the warranty determination.

(2) This warranty does not apply to any portion of CFE or to any Contract Deliverable or portion thereof that in any way has been repaired, altered, or otherwise affected in any manner by any act of Customer or its subcontractor(s) so as to affect the condition or performance of the Contract Deliverable or any Contract Deliverable or portion of the Contract Deliverable that shall have been subject to misuse, abuse, alteration, improper handling, improper testing or installation by Customer or its subcontractors, whether by accident or other cause.

(3) Before any Contract Deliverable is returned to the Contractor, Customer shall obtain written authorization from the Contractor. Customer assumes the responsibility for any/all unauthorized shipments. In the event that Contractor repairs or replaces any part under this warranty, the cost of shipping the part will be borne by the Customer.

(g) This warranty as set forth in this Article 15.3, does not extend to any customers or clients of Customer.

15.4. REMEDIES.

(a) Notwithstanding anything to the contrary herein, Customer shall have the right at any time during the period of the warranties set forth in this Article 15.4 to require that any Work not conforming in all material respects to this Agreement be promptly corrected or replaced at Contractor's expense with conforming Work.

(b) Contractor shall correct errors, including modifying code and making operational modifications, in accordance with Article 10.2. Either Party shall in a timely manner provide the other Party with access to engineering, software and operations support personnel, including and/or involving such other Party's subcontractors and vendors, where feasible, for the purpose of resolving errors, problems, or issues relating to any Contract Deliverable to be delivered pursuant to this Agreement. After lapse of the warranty period specified in Article 15.3 for the duration of the operational life of the Satellite, the parties agree to enter into a time and materials agreement for such services as the parties may agree upon after the date hereof.

(c) In the event Contractor, for whatever reason, fails to perform its obligations under paragraph (b) above, with respect to any flight or ground software to be delivered under this Agreement, Contractor agrees in accordance with the terms of the Software License to allow Customer to use the source code and related documentation for such software so as to enable Customer to perform tasks contemplated by paragraph (2) above. Contractor shall ensure that all of Contractor's source code for the flight firmware and software and ground software is appropriately maintained, stored, catalogued, and archived as necessary to maintain such source code to object code integrity.

(d) Under no circumstances, shall Contractor's total liability under this warranty exceed the price actually paid by Customer under this Agreement. CONTRACTOR'S WARRANTIES UNDER THIS AGREEMENT ARE SOLELY LIMITED TO WARRANTIES IDENTIFIED ABOVE. CONTRACTOR DISCLAIMS ALL OTHER WARRANTIES, EXPRESS AND IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER EXPRESS OR IMPLIED WARRANTIES.

16. CUSTOMER'S REPRESENTATIONS, WARRANTIES AND COVENANTS

16.1. ORGANIZATION; GOOD STANDING AND QUALIFICATION.

Customer represents that:

(a) it is duly organized, validly existing and in good standing under the Laws of the State of Delaware;

(b) it has all requisite power and authority to own and operate its material properties and assets and to carry on its respective business as now conducted in all material respects; and

(c) it is duly qualified to transact business and is in good standing in each jurisdiction in which the failure to so qualify would have a Material Adverse Effect.

16.2. AUTHORIZATION.

Customer represents that:

(a) it has all requisite corporate power and authority to enter into this Agreement and to carry out the transactions contemplated by this Agreement;

(b) the execution, delivery, and performance of this Agreement and the consummation of the transactions contemplated by this Agreement have been duly authorized by the requisite corporate action of Customer and do not conflict with any other agreement or obligation to which it is a party or which binds its assets; and

(c) this Agreement is a valid and binding obligation of Customer, enforceable in accordance with its terms, except Customer makes no representation or warranty as to the enforceability of remedies due to applicable bankruptcy, insolvency, moratorium, reorganization, or similar laws relating to or affecting the enforcement of creditor's rights or by reason of general principles of equity. Notwithstanding the foregoing, in the event of Customer's bankruptcy, insolvency, moratorium, reorganization, or equity proceeding, Customer shall use its best efforts to have this Agreement confirmed according to its terms.

16.3. THIRD PARTY INTELLECTUAL PROPERTY.

Customer represents and warrants that (i) it is either the owner of, or authorized to use and incorporate, any Intellectual Property provided by Customer (or others on behalf of Customer); (ii) Customer shall not require Contractor to pay any license fees or royalties for the use of any Intellectual Property of Customer for the purposes of fulfilling Contractors obligations under this Agreement; and (iii) Customer's Intellectual Property and/or any modifications of Contractor's Intellectual Property by Customer (or any other entity, other than Contractor or its subcontractors, acting on behalf of Customer) shall not infringe any Intellectual Property Right of any third party.

Customer is not aware of any claim to the contrary by any third party. This warranty shall begin on the **[**Redacted**]**. In the event of a claim under this clause, Customer shall use reasonable best efforts to secure an alternative source for the Intellectual Property or to obtain a license from the party claiming infringement.

17. INTELLECTUAL PROPERTY RIGHTS

17.1. CONTRACTOR FURNISHED/DEVELOPED TECHNOLOGY AND DATA.

(a) Intellectual Property developed and/or furnished by Contractor and provided to Customer pursuant to this Agreement shall be and remain the property of Contractor, or as applicable, its subcontractor. Contractor hereby grants to the extent legally permitted to do so, and as specified in the WV3 Software License Agreement attached as Exhibit 4, a **[**Redacted**]** license without the **[**Redacted**]** all of the Intellectual Property provided/developed by Contractor pursuant to this Agreement for the purpose of developing, integrating, testing, launching, operating, maintaining and repairing the Satellite and related ground command and control, and image ordering, processing, and dissemination functions, designing "work-arounds" for minor performance discrepancies, and designing, manufacturing, operating and maintaining ground stations, including any third party direct access facilities, that communicate with the Satellite related to the WV3 program operations.

(b) **[**Redacted**]**.

17.2. CUSTOMER DEVELOPED TECHNOLOGY AND DATA.

Technology and data developed by Customer and provided to Contractor pursuant to this Agreement shall be and remain the property of Customer. Contractor is granted **[**Redacted**]** license to **[**Redacted**]**, for the purposes for which **[**Redacted**]** under this Agreement. Such technology and data shall be marked with an appropriate legend which indicates that it is licensed to Contractor for Contractor's use so long as such use is associated with this Agreement. The integration, modification etc. of Customer Intellectual Property shall in no way diminish any of Customer's rights thereto. The Specifications (Exhibit 2) and the Statement of Work (Exhibit 1) shall be the Intellectual Property of Customer.

17.3. FUTURE LICENSES.

Should Contractor or Customer desire to use, for future applications outside the scope of this Agreement, the technology and data which have been licensed hereunder, the Parties shall endeavor to negotiate license agreements as appropriate for such future applications.

17.4. CONTRACTOR INTELLECTUAL PROPERTY INDEMNITY.

(a) Contractor will defend at its expense any legal proceedings brought against Customer and/or its officers, directors or employees, to the extent that it is based on a claim that the design or use of any Contract Deliverable is a direct infringement of a **[**Redacted**]** copyright, **[**Redacted**]** patent, or other Intellectual Property of a third party protected under **[**Redacted**]** law, and will pay all damages and costs awarded by a court of final appeal attributable to such a claim, provided that Customer (i) provides notice of a the claim promptly to Contractor, (ii) gives sole control of the defense and settlement of same; (iii) provides to Contractor all available information, assistance and authority to defend; (iv) has not settled such proceedings without Contractor's prior written consent. Should any Contract Deliverable or portion thereof become, or in Contractor's opinion be likely to become the subject of a claim of infringement, Contractor shall, at its own expense and as Customer's sole exclusive remedy, elect to (i) obtain for Customer the right to use the Contract Deliverable as contemplated herein, (ii) replace or modify the Contract Deliverable so that it becomes non-infringing and still satisfies all other requirements.

(b) Contractor shall have no liability for any infringement or claim which results from (i) use of the Contract Deliverables in combination with any non-Contractor-provided equipment, software or data, if such infringement would have been avoided by use of the Contract Deliverables without such equipment, software, of data; (ii) Contractor's compliance with designs or hardware provided solely by Customer that when implemented results in such infringement.

17.5. CUSTOMER INTELLECTUAL PROPERTY INDEMNITY.

(a) Customer will defend at its expense any legal proceedings brought against Contractor and/or its officers, directors or employees, to the extent that it is based on a claim that the design or use of any data, components, software and Intellectual Property furnished by Customer to Contractor hereunder is a direct infringement of a **[**Redacted**]** copyright, **[**Redacted**]** patent, or other Intellectual Property of a third party protected under **[**Redacted**]** law, and will pay all damages and costs awarded by a court of final appeal attributable to such a claim, provided that Contractor (i) provides notice of the claim promptly to Customer, (ii) gives sole control of the defense and settlement of same; (iii) provides to Customer all available information, assistance and authority to defend; (iv) has not settled such proceedings without Customer's prior written consent. Should any data, component, software or Intellectual Property furnished by Customer to Contractor hereunder, or any portion thereof, become, or in Customer's opinion be likely to become the subject of a claim of infringement, Customer shall, at its own expense and as Contractor's sole exclusive remedy, elect to (i) obtain for Contractor the right to use the data, components software or Intellectual Property furnished by Customer to Contractor hereunder as contemplated herein, (ii) replace or modify the data, components, software or Intellectual Property furnished by Customer to Contractor hereunder so that it becomes non-infringing and still satisfies all other requirements.

(b) Customer shall have no liability for any infringement or claim which results from (i) use of the CFE in combination with any non-Customer-provided equipment, software or data, if such infringement would have been avoided by use of the CFE without such equipment, software, of data; (ii) Customer's compliance with designs or hardware provided solely by Contractor that when implemented results in such infringement.

(c) THE ENTIRE LIABILITY OF EITHER PARTY WITH RESPECT TO INFRINGEMENT OF ANY INTELLECTUAL PROPERTY IS SET FORTH IN THE PRECEDING PROVISIONS OF THIS SECTION 18, AND NEITHER PARTY SHALL HAVE ANY ADDITIONAL LIABILITY WITH RESPECT TO ANY ALLEGED OR PROVEN INFRINGEMENT.

17.6. SOURCE CODE ESCROW.

(a) At the Customer's written request, Contractor agrees to place, or arrange to have placed in a escrow software account the source code identified in Section 5.3.16 of Exhibit 1. The software escrow account will be established with a mutually agreed upon institution naming Customer as beneficiary at Customer's expense and under terms that are mutually agreeable to both Parties. Access to this source code escrow account will be limited to Customer Personnel in the event of Contractor's or the owning party's cessation to do business for any reason or upon Contractor or the owning party's inability or refusal to provide, in a timely manner, support or enhancements for the Contract Deliverables delivered under this Agreement. Customer Personnel, and consultants and subcontractors who have executed an appropriate non-disclosure agreement, shall only use such source code in support of the Contract Deliverables under this Agreement and such use shall be strictly in accordance with the terms and conditions of the licenses granted in this Agreement. The source code shall be placed into the escrow account within twenty (20) Business Days after the shipment of a Contract Deliverable and will remain in the Escrow Account for the operational life of the Satellite.

17.7. RESERVED.

17.8. INTELLECTUAL PROPERTY REPRESENTATION.

(a) Contractor represents and warrants that (i) it is either the owner of, or authorized to use and incorporate, any Intellectual Property utilized or incorporated in any Contract Deliverable or the manufacture of any Contract Deliverable or otherwise utilized in the performance of the Work; (ii) Customer shall not be required to pay any license fees or royalties apart from those included in the Contract Price for use of any Intellectual Property utilized or incorporated in any Contract Deliverable or the manufacture of any Contract Deliverable or otherwise utilized in the performance of the Work; and (iii) neither the Work nor any Intellectual Property utilized or incorporated in any Contract Deliverable or the manufacture of any Contract Deliverable shall infringe any Intellectual Property Right of any third party.

(b) Customer represents and warrants that (i) it is either the owner of, or authorized to use and incorporate, any Intellectual Property to be furnished as CFE; (ii) Contractor shall not be required to pay any license fees or royalties for use of any Intellectual Property utilized or incorporated in any CFE; and (iii) no Intellectual Property utilized or incorporated in any CFE shall infringe any Intellectual Property Right of any third party.

18. INDEMNIFICATION

18.1. CONTRACTOR'S INDEMNIFICATION.

(a) Subject to the indemnification procedures set forth in Article 18.3, Contractor shall indemnify, defend, and hold harmless Customer and its Affiliates and their respective associates from any and all Losses arising from, in connection with, or based on any claims made by third parties (including Consultants and agents of Customer, Contractor, or any Subcontractor but not any employee, officer, or director of Customer) regarding any of the following:

(1) injury to persons (including sickness or death) or damage to real or tangible personal property, resulting from any act or omission, negligent or otherwise, of Contractor or its Subcontractors in the performance of the Work;

(2) any claims arising out of or related to occurrences Contractor is required to insure against pursuant to Article 20, to the extent of the amount of the insurance required under such Article; or

18.2. CUSTOMER'S INDEMNIFICATION.

(a) Subject to the indemnification procedures set forth in Article 18.3, Customer shall indemnify, defend, and hold harmless Contractor and its Affiliates and their respective associates from any and all Losses arising from, in connection with, or based on any allegations made by third parties (including Consultants and agents of Contractor, any Subcontractor, or Customer but not any employee, officer, or director of Contractor) regarding any of the following:

(1) injury to persons (including sickness or death) or damage to real or tangible personal property, resulting from any act or omission, negligent or otherwise, of Customer and its Consultants;

(2) any claims arising out of or related to occurrences Customer is required to insure against pursuant to Article 20, to the extent of the amount of the insurance required under such Article; or

(3) any claims arising from Customer's operation of the Satellites except where such Losses results from Contractor's (i) willful misconduct or gross negligence, or (ii) acts(s) or omissions(s) that are the basis of a denial or exclusion of coverage under the Customer's launch and in-orbit insurance policy.

18.3. INDEMNIFICATION PROCEDURES.

(a) Promptly after receipt by any entity entitled to indemnification under this Article 18 of notice of the commencement or threatened commencement of any civil, criminal, administrative, or investigative reaction or proceeding involving a claim in respect of which the indemnified Party will seek indemnification pursuant to this Article 18, the indemnified party shall notify the indemnifying Party of such claim in writing. Failure to so notify the indemnifying Party shall not relieve the indemnifying Party of its obligations under this Agreement except to the extent it can demonstrate that it was prejudiced by such failure. Within 15 days following receipt of written notice from the indemnified Party relating to any claim, but no later than 10 days before the date on which any response to a complaint or summons is due, the indemnifying Party shall notify the indemnified Party in writing if the indemnifying Party elects to assume control of the defense or settlement of that claim (a "Notice of Election").

(b) If the indemnifying Party delivers a Notice of Election relating to any claim within the required notice period, so long as it is actively defending such claim, the indemnifying Party shall be entitled to have sole control over the defense and settlement of such claim; provided that (i) the indemnified Party shall be entitled to participate in the defense of such claim and to employ counsel at its own expense to assist in the handling of such claim; (ii) where the indemnified Party is so represented, the indemnifying Party shall keep the indemnified Party ‘s counsel informed of each step in the handling of any such claim; (iii) the indemnified Party shall provide, at the indemnifying Party ‘s request and expense, such assistance and information as is available to the indemnified Party for the defense and settlement of such claim; and (iv) the indemnifying Party shall obtain the prior written approval of the indemnified Party before entering into any settlement of such claim or ceasing to defend against such claim. After the indemnifying Party has delivered a Notice of Election relating to any claim in accordance with the preceding paragraph, the indemnifying Party shall not be liable to the indemnified Party for any legal expenses incurred by the indemnified Party in connection with the defense of that claim. In addition, the indemnifying Party shall not be required to indemnify the indemnified Party for any amount paid or payable by the indemnified Party in the settlement of any claim for which the indemnifying Party has delivered a timely Notice of Election if such amount was agreed to without the prior written consent of the indemnifying Party.

(c) If the indemnifying Party does not deliver a Notice of Election relating to any claim within the required notice period or fails to actively defend such claim, the indemnified Party shall have the right to defend and/or settle the claim in such manner as it may deem appropriate, at the cost and expense of the indemnifying Party. Provided that the indemnified Party acts in good faith, it may settle such claim on any terms it considers appropriate under the circumstances without in any way affecting its right to be indemnified hereunder. The indemnifying Party shall promptly reimburse the indemnified Party for all such costs and expenses.

18.4. WAIVER OF SUBROGATION.

If a Party insures against any loss or damage it may suffer in respect of which it is required to indemnify the other Party, its Affiliates and their respective associates pursuant to this Article 18, it shall be a condition that the insuring Party arrange for the insurer to waive its right of subrogation against such other Party and such other Party’s Affiliates and their respective associates. Each Party shall be entitled to require proof from time to time that the other Party has complied with its obligations under this Article 18.4. In the event a Party does not comply with such obligations, the indemnities referred to in Articles 18.1, 18.2, and 18.3, as applicable, shall extend to any claim that may be made by an insurer pursuant to an alleged right of subrogation.

19. LIQUIDATED DAMAGES FOR LATE DELIVERY

(a) The Parties acknowledge and agree that failure to meet the Delivery Dates will cause substantial financial loss or damage to be sustained by the other Party. The Parties further acknowledge and agree that the following liquidated damages are believed to represent a genuine estimate of the loss that would be suffered by Customer by reason of any such delay (which losses would be difficult or impossible to calculate with certainty), and are neither intended as a penalty nor operate as a penalty.

(b) In the event Contractor fails to Deliver the Satellite within **[**Redacted**]** of the scheduled Delivery Date, or such other date as may be mutually agreed to in writing by Contractor and Customer, Contractor agrees to pay Customer as liquidated damages and not as a penalty, the sum of **[**Redacted**]** per **[**Redacted**]** for the period beginning on the **[**Redacted**]** of the delay or the first **[**Redacted**]** following any agreed to extension, if applicable. Damages shall be paid until the earlier of; completion of Satellite Delivery or for a maximum of **[**Redacted**]** (the “Liquidated Damages Period”). The total amount of Liquidated Damages under this Section (b) for failure to meet the Delivery Date for the Satellite shall not exceed **[**Redacted**]**.

(c) Notwithstanding anything else in this Agreement to the contrary, in the event and only to the extent that the failure to meet the Delivery Date is caused primarily (i) by Customer's failure to provide Launch Services as scheduled, (ii) by the failure of Customer to deliver the WV3 Instrument for integration with the bus, or (iii) the failure by Customer to deliver any other CFE as scheduled (the "Customer Delay") and the bus is ready for Instrument integration as defined by Exhibit 1, then Contractor will not be subject to Liquidated Damages for failure to meet the Delivery Date for such period of Customer Delay.

(d) In the event of a Customer Delay, or such other date as may be mutually agreed to in writing by Contractor and Customer, and the Work to be delivered by Contractor hereunder is **[**Redacted**]**, Customer agrees to pay Contractor as liquidated damages and not as a penalty, the sum of **[**Redacted**]** per **[**Redacted**]** for the period beginning on the **[**Redacted**]** of the delay or the first day following any agreed to extension, if applicable. Damages shall be paid until the earlier of completion of Satellite Delivery or a maximum of **[**Redacted**]**. The total amount of liquidated damages under this Section (d) for failure to meet the Delivery Date for the Satellite shall not exceed **[**Redacted**]**. Any Delivery Dates and affected interim Milestone schedules shall be adjusted to account for such Customer Delay. It being understood that any Customer Delay shall be cumulative and any individual Customer Delay shall count against the **[**Redacted**]**.

(e) In the event and only to the extent that each Party is delayed at the same time, neither Party shall be subject to Liquidated Damages for the period of the mutual delay.

20. INSURANCE

20.1. GENERAL OBLIGATIONS.

(a) Contractor represents that it has procured and will maintain insurance ("Ground Insurance") against all risks and loss or damage to the Satellite (except the WV3 Instrument), and to any and all components purchased for and intended to be integrated into the Satellite (except the WV3 Instrument), in an amount not less than the greater of; (i) the replacement value of, or (ii) the amounts paid by Customer with respect to, the Satellite and components. Contractor shall also maintain public liability insurance, insurance of employees, and comprehensive automobile insurance, all in amounts adequate for its potential liabilities under this Agreement. For the Satellite, such insurance shall cover the period beginning at the effective date of this Agreement up to the moment of Launch. In addition, Contractor shall require each of its subcontractors to provide and maintain insurance in amounts for their respective potential liabilities. In addition, Contractor represents that it has procured and will maintain at all times, from the effective date of this Agreement through Launch, Ground Insurance for all other Work.

(b) In the event of a loss under any of such policies, Customer shall be entitled to select (i) to instruct Contractor to replace the Satellite, or (ii) payment of the proceeds under such policies in an amount of the greater of (i) the replacement value of, or (ii) the amounts paid by Customer with respect to, the Satellite and components

(c) Contractor shall provide a certificate of insurance certified by Contractor's insurance broker, evidencing such insurance coverage to Customer at Customer's request.

(d) Contractor shall require its insurers to waive all rights of subrogation against Customer. Customer shall be named as an additional insured under Contractor's third-party liability coverage, and as a loss payee as Customer's interests may appear with respect to property insurance.

20.2. LAUNCH AND IN-ORBIT INSURANCE.

(a) Customer shall be responsible for procuring launch insurance for the Satellite. Customer shall require its Insurers to waive all rights of subrogation against Contractor. Contractor shall, at the written request of Customer, provide Customer with reasonable assistance (such as providing required technical information) in Customer's efforts to procure launch insurance, and support at Customer's meetings with insurers, if necessary.

21. DISPUTE RESOLUTION

Any dispute, claim, or controversy ("Dispute") between the Parties arising out of or relating to this Agreement, including but not limited to any Dispute with respect to the interpretation, performance, termination, or breach of this Agreement or any provision thereof shall be resolved as provided in this Article 21. However, disputes as to payments pursuant to Article 4.3 shall be resolved in accordance with Articles 4.3 and 4.4.

21.1. INFORMAL DISPUTE RESOLUTION.

Subject to the provisions of 21.2, prior to or concurrent with the initiation of formal dispute resolution procedures, the Parties shall first attempt to resolve their Dispute informally, in a timely and cost-effective manner, as follows:

(a) If, during the course of the Work, a Party believes it has a Dispute with the other Party, the disputing Party shall give written notice thereof, which notice will describe the Dispute and may recommend corrective action to be taken by the other Party. The Contractor Program Manager shall promptly consult with the Customer Program Manager in an effort to reach an agreement to resolve the Dispute.

(b) In the event agreement cannot be reached within 10 days of receipt of written notice, either Party may request the Dispute be escalated, and the respective positions of the Parties shall be forwarded to an executive level higher than that under paragraph (a) above for resolution of the Dispute.

(c) In the event agreement cannot be reached under paragraphs (a) or (b) above within a total of 20 days after receipt of the written notice described in paragraph (a) above, either Party may request the Dispute be escalated, and the respective positions of the Parties shall be forwarded to the Chief Executive Officer (CEO) of each Party, and such executives shall meet during such time to resolve the Dispute.

(d) In the event agreement cannot be reached under paragraphs (a), (b) or (c) above within a total of 30 days after receipt of the written notice described in paragraph (a) above, either Party may proceed with arbitration in accordance with 21.2.

21.2. ARBITRATION.

(a) Any dispute or disagreement arising between the Parties in connection with the interpretation of any Article or provision of this Agreement, or the compliance or non-compliance therewith, or the validity or enforceability thereof, or any other dispute related to this Agreement which is not settled to the mutual satisfaction of the Parties within thirty (30) days (or such longer period as may be mutually agreed upon) from the date that either Party informs the other, in writing, that such dispute or disagreement exists, shall be settled by arbitration in accordance with the Rules of the American Arbitration Association, in effect on the date that such notice is given. Arbitration shall be held in Denver, Colorado, U.S.A.

(b) The Party demanding arbitration of a controversy shall, in writing, specify the matter to be submitted to arbitration and, simultaneously, choose and nominate a competent individual to act as an arbitrator. Thereupon, within fifteen (15) days after receipt of such written notice, the other Party shall, in writing, choose and nominate a second competent arbitrator. The two arbitrators so chosen shall promptly select a third arbitrator, giving written notice to both Parties of their choice and fixing a time and place at which both Parties may appear and be heard with respect to the controversy at hand. In the event the two arbitrators fail to agree upon a third arbitrator within a period of seven (7) days, or if, for any other reason, there is a lapse in the naming of an arbitrator or arbitrators, or in the filling of a vacancy, or in the event of failure or refusal of any arbitrator(s) to attend to or fulfill his or their duties, then upon application by either Party to the controversy, an arbitrator or arbitrators shall be named by the American Arbitration Association. The arbitration award made shall be final and binding upon the Parties and judgment may be entered thereon, upon the application of either Party to any court having jurisdiction. In no event may the arbitrators award any special, incidental, indirect, consequential or punitive damages, including loss of profits or revenues, or prejudgment interest.

(c) Each Party shall bear the cost of preparing and presenting its case. The cost of arbitration, including the fees and expenses of the third arbitrator, will be shared equally by the Parties unless the award otherwise provides.

22. LAUNCH SUPPORT AND LAUNCH

Contractor shall provide the Launch Support Services set forth in Exhibit 1. Customer shall procure the Launch Services for the Launch.

23. CUSTOMER'S RESPONSIBILITIES

(a) In addition to Customer's responsibilities identified in this Agreement, Customer shall also discharge those responsibilities, at no cost to Contractor or to Subcontractors, as set forth in Exhibit 1 and below.

(b) Customer will provide access to Contractor and its Affiliates and subcontractors at Customer's Mission Control Center (MCC), on a timely basis, as necessary to permit Contractor to perform its obligations with respect to such MCC and related services.

(c) In addition to, and without limiting the generality of, the foregoing, Customer will be responsible for obtaining launch and in-orbit insurance prior to Launch. Customer shall provide Contractor a certificate of such insurance coverage at Contractor's request.

(d) Customer shall provide written notification to Contractor as early as practicable as to the identity and nationality of its employees and Consultant(s) for whom access to Contractor's and Subcontractors' facilities are required, and subsequent changes thereto, if any. It is recognized that certain United States Government approvals may be required before such employees and Consultant(s) have access to Work pursuant to the provisions of Article 5.

(e) Customer is responsible for obtaining the frequency spectrum allocations and other approvals and licenses to operate its WV3 Satellite program.

(f) Customer is responsible for Delivery of the WV3 Instrument as well as interface support with the Instrument supplier defined in Exhibit 1.

24. FAILURE TO MAKE ADEQUATE PROGRESS

If, at any time prior to Delivery of a Contract Deliverable (but not thereafter), Contractor has failed to make adequate progress toward the completion of such Contract Deliverable, including where such failure is due to the Contract Deliverable or any component thereof being damaged or destroyed where such damage or destruction does not constitute an Excusable Delay, such that Contractor, due to causes related to such Contract Deliverable, will not be able to Deliver the Contract Deliverable by the applicable Delivery Date (as such date may have been modified in accordance with this Agreement) for such Contract Deliverable, then Customer shall be entitled to deliver to Contractor a Demand for correction of the failure to make adequate progress. Such Demand shall state the details of the failure. Within **[**Redacted**]** after receipt of the Demand, or such longer time as the Parties may agree, Contractor shall submit to Customer a Correction Plan (in the level of detail feasible within that timeframe) for achieving Delivery not later than the **[**Redacted**]** following the originally scheduled Delivery Date. If such Correction Plan does not reasonably correct or offset the effect of the failure so as to demonstrate that Delivery of the Contract Deliverable affected thereby can be achieved within **[**Redacted**]** after the originally scheduled Delivery Date, Customer may reject the Correction Plan, and Contractor shall revise the Correction Plan so as to demonstrate that Delivery for the Contract Deliverable affected thereby can be achieved within **[**Redacted**]** after the originally scheduled Delivery Date.

25. TERMINATION

25.1. TERMINATION FOR CUSTOMER'S CONVENIENCE.

(a) Customer may, upon written notice to Contractor, terminate the Work in accordance with the terms set forth below, and Contractor shall immediately cease Work in the manner and to the extent specified below.

(b) In the event of termination under this Article 25.1 provided the termination is not due to Contractor's default under Article 25.2, Contractor shall be entitled to payment of an amount equal to the lesser of (i) **[**Redacted**]** of the total amount of such **[**Redacted**]**; and (ii) the Termination Liability Amount specified in Exhibit 3. In either case (i) or (ii) above, the Customer shall pay the above amount less the sum of all amounts previously received by Contractor in cash under this Agreement. In no event shall the amounts payable pursuant to this Article 25 exceed the Contract Price.

(c) In the event of termination under this Article, the Customer shall be entitled to take delivery of all **[**Redacted**]** per Exhibit 1, in their **[**Redacted**]**. Delivery of these items will be **[**Redacted**]** at the time of termination." Customer and Contractor agree to negotiate reasonable storage and delivery methods, costs, and terms.

(d) If in Contractor's judgment it is feasible for the Contractor to use any items of terminated Work, it shall submit to Customer an offer to acquire such items. If such offer is accepted, Contractor's termination invoice shall be credited with the agreed acquisition price.

25.2. TERMINATION FOR CONTRACTOR'S DEFAULT

(a) Customer may terminate this Agreement upon service of written notice of default to Contractor at any time after the occurrence of any of the following:

(1) Subject to any schedule adjustments pursuant to Article 9, Contractor fails to meet any of the program Milestone events set forth in Exhibit 3 causing a delay that could reasonably be expected to delay the Delivery Date of the Satellite taking into consideration the grace period set forth in clause (2) below.

(2) The Satellite has not been delivered within **[**Redacted**]** of the scheduled Delivery Date as set forth in Exhibit 1 and as may be extended in accordance with this Agreement. This **[**Redacted**]** period is comprised of the **[**Redacted**]** grace period, the **[**Redacted**]** liquidated damages period, and a second **[**Redacted**]** grace period.

(3) Contractor commences a voluntary proceeding concerning itself under any applicable bankruptcy, insolvency, reorganization, adjustment of debt, relief of debtors, or similar law ("Insolvency Law"); or any involuntary proceeding commences against Contractor under an Insolvency Law and the petition has not been dismissed within **[**Redacted**]** after commencement of the proceeding; or a receiver or custodian is appointed for or takes charge of all or a substantial portion of the property of Contractor and such custodian or receiver has not been dismissed or discharged within **[**Redacted**]**; or Contractor has taken action toward the winding-up, dissolution, or liquidation of Contractor or its business; or Contractor has been adjudicated insolvent or bankrupt or an order for relief or any other order approving a case or proceeding under any Insolvency Law has been entered; or Contractor has made a general assignment for the benefit of creditors or becomes unable to pay its debts generally as they become due. Should Contractor become a debtor in any bankruptcy proceeding, Contractor shall move to assume or reject this Agreement within **[**Redacted**]** after the entry of any order for relief; or

(4) Contractor has purported to assign or transfer this Agreement in violation of the provisions of Article 26.1 and Contractor fails to cure such unauthorized purported assignment or transfer within thirty (30) days after receiving written notice from Customer of the unauthorized purported assignment or transfer.

(b) In the event Customer terminates this Agreement pursuant to paragraph (a), Contractor shall be entitled to payment of an amount equal to the lesser of (i) the actual costs incurred (subject to audit by Customer) or (ii) the Termination Liability Amount specified in Exhibit 3 minus **[**Redacted**]**, less the sum of all amounts already received by Contractor in cash or cash equivalent under this Agreement.

(c) If, after termination of this Agreement under the provisions of paragraph (a), it is determined by arbitration, pursuant to Article 21, or admitted in writing by Customer, that Contractor was not in default under the provisions of paragraph (a), or that any delay giving rise to the default was excusable under the provisions of Article 9, such termination shall be considered a Termination for Convenience by Customer and the provisions of Article 25.1 shall apply.

25.3. TERMINATION FOR EXCUSABLE DELAY.

(a) Customer may, upon written notice to Contractor, immediately terminate this Agreement, if and when it becomes reasonably certain that the aggregate of Excusable Delays will **[**Redacted**]**.

(b) In the event of termination under this Article 25.3, Contractor shall be entitled to the lesser of (i) the actual costs incurred plus a profit equal **[**Redacted**]** or (ii) the Termination Liability Amount specified in Exhibit 3; in either case less the sum of all amounts received by Contractor in cash or cash equivalent under this Agreement.

(c) In the event of termination under this Article, the Customer shall be entitled to take delivery of all deliverable items per Exhibit 1, in their current condition of development /assembly. Delivery of these items will be subject to the payment of all amounts due and payable at the time of termination." Customer and Contractor agree to negotiate reasonable storage and delivery methods, costs, and terms.

(d) In the event it is determined by arbitration pursuant to Article 21 or by written agreement of the Parties that Customer wrongfully terminated this Agreement under this Article 25.3, such termination shall be considered a Termination for Convenience by Customer and the provisions of Article 25.1 shall apply.

25.4. TERMINATION RIGHT EXPIRATION.

Customer's right to terminate this Agreement pursuant to Articles 25.1 through 25.3 shall expire upon Launch.

25.5. TERMINATION FOR CUSTOMER'S DEFAULT.

(a) Contractor may stop Work or terminate this Agreement in whole or in part upon service of written notice of default to Customer at any time after the occurrence of any of the following:

(1) Customer fails to make any undisputed milestone or other payment when due (including any grace periods) and fails to cure such breach within **[**Redacted**]** following receipt of notice from Contractor, or

(2) Customer commences a voluntary proceeding concerning itself under any applicable bankruptcy, insolvency, reorganization, adjustment of debt, relief of debtors or similar law ("Insolvency Law"); or any involuntary proceeding commences against Customer under an Insolvency Law and the petition has not been dismissed within **[**Redacted**]** after commencement of the proceeding; or a receiver or custodian is appointed for or takes charge of all or a substantial portion of the property of Customer and such custodian or receiver has not been dismissed or discharged within **[**Redacted**]**; or Customer has taken action toward the winding-up, dissolution, or liquidation of Customer or its business; or Customer has been adjudicated insolvent or bankrupt or an order for relief or any other order approving a case or proceeding under any Insolvency Law has been entered; or Customer has made a general assignment for the benefit of creditors or becomes unable to pay its debts generally as they become due. Should Customer become a debtor in any bankruptcy proceeding, Customer shall move to assume or reject this Agreement within **[**Redacted**]** after the entry of any order for relief; or

(3) Customer has purported to assign or transfer this Agreement in violation of the provisions of Article 26.1 and Customer fails to cure such unauthorized assignment or transfer within **[**Redacted**]** after receiving written notice from Contractor of such unauthorized purported assignment or transfer by Customer.

(b) Except as specified in this Agreement, Contractor shall not have the right to terminate or suspend this Agreement.

25.6. CONSEQUENCE OF TERMINATION; INVOICE; AUDIT.

(a) Upon receipt of a notice of termination, as provided in this Article 25, Contractor shall take the following actions:

(1) stop Work under this Agreement on the date and to the extent specified in the notice of termination, except those services that are specifically intended to be provided in connection with a termination of this Agreement;

(2) withhold delivery of any of the items to be supplied hereunder until Contractor has received full payment under this Article 25;

(3) place no further orders or subcontracts for materials, services, or facilities to the extent they relate to the performance of the Work terminated;

(4) terminate orders and subcontracts to the extent they relate to the performance of the Work terminated;

(5) settle all outstanding liabilities and all claims arising out of such termination of orders and subcontracts for materials, services, or facilities; and

(6) take such action as may be reasonably necessary, or as Customer may direct, for the protection and preservation of the property related to this Agreement that is in the possession of Contractor or any subcontractor and in which Customer has or may acquire an interest.

(b) Upon termination of this Agreement in accordance with this Article 25, with regard to any amounts payable by Customer to Contractor hereunder, Contractor shall submit an invoice to Customer within **[**Redacted**]** after the termination date, and the invoice shall specify the amount due pursuant to this Article 25. By written notice no later than **[**Redacted**]** after receipt of Contractor's invoice pursuant to this Article 25, Customer may dispute the amount specified in said invoice. In the event Customer does not so notify Contractor that it disputes the amount in Contractor's invoice within **[**Redacted**]** after receipt thereof, Customer shall be deemed to have accepted such invoice.

(c) Contractor shall be entitled to payment by Customer of undisputed amounts in such invoice within **[**Redacted**]** after Customer's receipt of the invoice, and with respect to disputed interest amounts, **[**Redacted**]** after the resolution of such dispute. Payment of such amount by any Financing Entity on behalf of Customer shall relieve Customer from its obligation to make such payment. In the event Customer terminates this Agreement as provided in this Article 25, Contractor, if requested in writing by Customer, shall assign to Customer or its designee, such Subcontracts as requested by Customer, to the extent permitted by such Subcontracts.

(d) Upon completion of all payments in accordance with this Article 25, Customer may require Contractor to transfer to Customer in the manner and to the extent directed by Customer, title to and possession of any items (of which title would have passed) and assign licenses and subcontracts (to the extent they would have been assigned per the Agreement) comprising all or any part of the Work terminated (including all Work-in-progress, parts and materials, and all inventories and associated warranties), and Contractor shall, upon direction of Customer, protect and preserve property at Customer's expense in the possession of Contractor or its Subcontractors in which Customer has an interest and shall facilitate access to and possession by Customer of items comprising all or part of the Work terminated. Alternatively, Customer may request Contractor to make a reasonable, good faith effort to sell such items and to remit any sales proceeds to Customer less a deduction for costs of disposition reasonably incurred by Contractor for such efforts. To the extent Contractor's compliance with this paragraph (g) requires governmental approvals and Contractor cannot, with the exercise of commercially reasonable efforts, procure such approvals, Contractor shall be excused from performing its obligations under this paragraph (d).

(e) Payment of the amount payable by Customer to Contractor pursuant to paragraph (d) above shall constitute a total discharge of Customer's liabilities to Contractor for termination pursuant to this Article 25.1.

(f) The amounts payable by Contractor under paragraph (b) above shall be verified at Contractor's request and expense by an internationally recognized firm of accountants appointed by Contractor for that purpose subject to approval of Customer.

25.7. SECURITY INTERESTS.

In the event Contractor becomes insolvent or bankrupt and is unable to provide adequate assurance of performance acceptable to Customer, Customer shall have the right to take possession of the Deliverables and/or the components thereof, and shall have a perfected security interest to the extent of payments by Customer to Contractor. **[**Redacted**]**

26. GENERAL

26.1. ASSIGNMENT.

(a) This Agreement can be collaterally assigned, pledged or encumbered to any financial institution for making loans or otherwise extending credit to either Party. Neither Party may assign any rights or obligations hereunder without the prior express written consent of the other, except: (i) to a third party pursuant to a merger, sale of stock or all or substantially all assets, (ii) to a subsidiary, or other corporate reorganization in which all or substantially all of the assets associated with this Agreement is transferred, or (iii) the involuntary transfer as a result of this Agreement being taken by a financial institution following the default and declaration of default by the financial institution of material obligations under the financing or refinancing arrangement of the Party. Any purported assignment, transfer or subcontract shall be void and ineffective without such written consent; such permission will not be unreasonably withheld. Subject to the above restrictions on assignment, this Agreement shall inure to the benefit of and bind the successors and assigns of the Parties.

(b) Customer shall not, without the prior written approval of Contractor, assign, mortgage, charge, or encumber this Agreement or any part thereof, or merge with or into or sell all or substantially all its assets to any other entity (except to its parent company or a wholly-owned direct or indirect subsidiary company of Customer, or any person or entity acquiring all or substantially all the assets of Customer (through merger, stock or asset acquisition, recapitalization, or reorganization) where such merger, acquisition, recapitalization, or reorganization adversely affects Contractor's rights under this Agreement); provided, however, Contractor shall provide its approval, if in Contractor's reasonable judgment, Contractor's rights under this Agreement are not and would not be adversely affected thereby.

(c) The assigning Party shall reimburse the other Party for all reasonable expenses incurred by the other Party (and invoiced in reasonable detail) in obtaining advice from its external financial and legal advisors relating to the assigning Party's proposed assignment or transfer.

(d) This Agreement shall be binding on the Parties and their successors and permitted assigns. Assignment of this Agreement shall not relieve the assigning Party of any of its obligations nor confer upon the assigning Party any rights except as provided in this Agreement.

26.2. ENTIRE AGREEMENT.

This Agreement, including the Exhibits attached hereto, constitutes the entire understanding and agreement between the Parties regarding the Work and all obligations set forth herein and supersedes all prior and contemporaneous communications, negotiations, and other agreements either written or oral unless expressly incorporated by reference into this Agreement.

26.3. AMENDMENTS/MODIFICATIONS.

This Agreement, including any and all of its Schedules, Attachments, Annexes, Exhibits and Appendices thereto, may not be amended, modified, supplemented, or otherwise altered except by a written instrument of subsequent date signed by an officer of Contractor, or another person designated in writing by any such officer to sign such an instrument and a senior vice president of Customer, or another person designated in writing by any such Customer senior vice president to sign such an instrument.

26.4. SEVERABILITY.

In the event any one or more of the provisions of this Agreement shall for any reason be held to be invalid or unenforceable, the remaining provisions of this Agreement shall be unimpaired and the invalid or unenforceable provision shall be replaced by a mutually acceptable provision, which, being valid and enforceable, comes closest to the intention of the Parties with respect to the overall Agreement and the invalid or unenforceable provision.

26.5. APPLICABLE LAW.

Except as provided in Article 22, this Agreement and performance under it shall be governed by, construed, and enforced in accordance with the laws of the State of Colorado, without regard to conflict of laws or provisions thereof.

26.6. NOTICES.

(a) All notices, requests, demands, and determinations under this Agreement, including any required under Article 26.1 (Assignment), (other than routine operational communications), shall be in writing and shall be deemed duly given (i) when delivered by hand, (ii) two (2) Business Days after being given to an express courier with a reliable system for tracking delivery, or (iii) when sent by facsimile (confirmed by the specific individual to whom the facsimile is transmitted) with a copy sent by another means specified in this Article 26.6, and addressed as follows:

Customer: DigitalGlobe, Inc.
1601 Dry Creek Drive — Suite 260
Longmont, Colorado 80503
Tel: **[**Redacted**]**
Fax: **[**Redacted**]**
Attn.: **[**Redacted**]**

Contractor: Ball Aerospace & Technologies Corp.
1600 Commerce Street
Boulder, Colorado 80306
Tel: **[**Redacted**]**
Fax: **[**Redacted**]**
Attention: **[**Redacted**]**

(b) A Party may from time to time change its address or designee for notification purposes by giving the other Party prior written notice of the new address or designee and the date upon which it will be effective.

26.7. RELATIONSHIP OF THE PARTIES.

Both Parties are independent contractors under this Agreement. Nothing contained in this Agreement is intended nor is to be construed so as to constitute Contractor and Customer as partners, agents or joint ventures with respect to this Agreement. Neither Party shall have any express or implied right or authority to assume or create any obligations on behalf of or in the name of the other Party or to bind the other Party to any contract, agreement, or undertaking with any third party.

26.8. SURVIVAL.

The following Articles, and the provisions contained therein, shall be deemed to survive the termination (for any reason) or expiration of this Agreement, and, accordingly, such Articles shall remain applicable and enforceable in accordance with their terms:

(a) Article 1 (Definitions and Construction);

(b) Article 8 (Title and Risk of Loss);

(c) Article 9 (Excusable Delay);

(d) Article 16.3 (Contractor's Warranties for Contract Deliverables);

(e) Article 17 (Intellectual Property Rights);

(f) Article 18 (Indemnification);

(g) Article 19 (Liquidated Damages for Late Delivery);

(h) Article 21 (Dispute Resolution);

(i) Article 25 (Termination);

(j) Article 26.5 (Applicable Law);

(k) Article 26.13 (Limitation of Liability).

26.9. NO THIRD-PARTY BENEFICIARIES.

This Agreement is entered into solely between, and may be enforced only by, Customer and Contractor and their permitted assigns. This Agreement shall not create any rights in third parties, including suppliers and customers of either Party or create any obligations of a Party to any such third parties.

26.10. CONSENTS AND APPROVALS.

Except where expressly provided as being in the sole discretion of a Party, where agreement, approval, acceptance, consent, or similar action by either Party is required under this Agreement, such action shall not be unreasonably delayed or withheld. An approval or consent given by a Party under this Agreement shall not relieve the other Party from responsibility for complying with the requirements of this Agreement, nor shall it be construed as a waiver of any rights under this Agreement, except as and to the extent otherwise expressly provided in such approval or consent.

26.11. NO WAIVER; REMEDIES.

No failure or delay by any Party in exercising any right, power or privilege under this Agreement will operate as a waiver of such right, power or privilege. A single or partial exercise of any right, power or privilege will not preclude the exercise of any other or further right, power or privilege. The rights and remedies in the Agreement are cumulative and not exclusive of any rights and remedies provided by law.

26.12. COVENANT OF GOOD FAITH.

Each Party agrees that, in respective dealings with the other Party under or in connection with this Agreement, it shall act in good faith.

26.13. LIMITATION OF LIABILITY.

NOTWITHSTANDING ANY OTHER PROVISION IN THIS AGREEMENT TO THE CONTRARY: (1), IN NO EVENT SHALL EITHER PARTY BE LIABLE TO THE OTHER PARTY OR ANY OTHER PERSON OR ENTITY FOR ANY SPECIAL, EXEMPLARY, INDIRECT, INCIDENTAL, CONSEQENTIAL, OR PUNITIVE DAMAGES OF ANY KIND OR NATURE WHATSOEVER (INCLUDING WITHOUT LIMITATION, LOST REVENUES, PROFITS, SAVINGS, BUSINESS) OR LOSS OF RECORDS OR DATA, EVEN IF SUCH PARTY HAS BEEN INFORMED IN ADVANCE OF THE POSSIBILITY OF SUCH DAMAGES; [Redacted**] ARISING OUT OF, OR RESULTING FROM THIS AGREEMENT'S PERFORMANCE OR NON-PERFORMANCE OR BREACH THEREOF; AND (3) AT THE TIME LIABILITY ATTACHES TO CONTRACTOR, IN NO EVENT SHALL [**Redacted**] BY THE CONTRACTOR.**

26.14. PUBLIC ANNOUNCEMENTS.

Neither Party, nor any of their officers, directors, employees, agents or representatives shall make any disclosure except as may be required by law or purposes of financing, or public announcement with respect to the transaction contemplated by this Agreement without prior written approval of the other Party,.

26.15. NONDISCLOSURE AGREEMENT.

That certain Non-Disclosure Agreement dated xxxxx, attached hereto as Exhibit 5 shall govern the use, protection, and disclosure of confidential and proprietary information.

IN WITNESS WHEREOF, this Agreement has been executed on behalf of Customer and Contractor by persons authorized to act on their behalf.

DIGITALGLOBE, INC.	BALL AEROSPACE & TECHNOLOGIES CORP.
BY: /s/ Yancey Spruill	**[**Redacted**]**
TITLE: Executive Vice President & Chief Financial Officer	**[**Redacted**]**
[Redacted**]**	**[**Redacted**]**

DIGITALGLOBE®

FOIA CONFIDENTIAL TREATMENT REQUESTED

PORTIONS OF THIS EXHIBIT MARKED BY [**Redacted**] HAVE BEEN OMITTED PURSUANT TO A REQUEST FOR CONFIDENTIAL TREATMENT FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION

Exhibit 1 to Agreement 60150
Statement of Work
for the WorldView 3
Satellite

Document Number	10329656
Release Date:	Aug 23, 2010
Issue/Revision:	Initial Release
Prepared by:	Steve Linn
Approved by	Neal Anderson

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Change Record

Issue	Date	Section(s)	Description of Change
Initial	20 Aug 2010		Initial Release

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Issue	Date	Section(s)	Description of Change

1.0 INTRODUCTION

This Statement of Work defines those tasks to be performed by BATC, the Space Segment Integrator, in defining; designing, producing, testing, verifying, and preparing for launch; the DigitalGlobe WorldView 3 Satellite. BATC has the overall responsibility for Satellite performance, as defined in the WV3 Satellite Specification, provided the DG-furnished Instrument meets its interfaces and specifications as defined in Paragraph 2.2. Within this role, BATC has the responsibility to work with DigitalGlobe to define requirements, allocate budgets, analyze performance, execute trade studies, interact with other vendors, define configurations(s), conform to existing Instrument interfaces, assess and mitigate risks, prepare various programmatic documentation, and interact with all participating organizations via meetings, teleconferences, and reviews as defined herein.

BATC shall provide integrating services as defined herein and the hardware and software, exclusive of Customer Furnished Equipment, that comprise the WV3 Satellite.

This document also defines the scope of work required from DigitalGlobe and associated subcontractors in order for BATC to execute this contract successfully.

Associate contractors under contract to DigitalGlobe shall provide the Instrument and Launch services. However, BATC shall fully support defining, documenting, and verifying Satellite(s) to LV and MGB interfaces and integration procedures. BATC shall insure that the Satellite will withstand all launch environments.

1.1 Definitions

Agreement: Satellite Purchase Agreement #60150 by and between DigitalGlobe, Inc. and Ball Aerospace and Technologies Corp., dated DDMMYYYY, as amended.

Authorization to Proceed (ATP): Effective date of work commencement per the Agreement.

Satellite: The complete space-borne infrastructure required to perform the mission of providing radiometrically and geometrically correct imagery of the Earth. The Satellite consists of the Instrument and the Spacecraft Bus.

Instrument: The Instrument is that part of the Satellite that collects light photons using appropriate mirrors and structure**[**Redacted**]**. It also may be designated the Electro-Optical Assembly (EOA). The instrument includes it's own thermal control system. However, the instrument focus mechanism depends upon drive electronics to be provided by BATC per this Statement of Work. Also, the instrument stimulation lamp depends upon drive electronics to be provided by BATC per this Statement of Work.

Telescope: That part of the Instrument that collects and focuses light onto a focal plane. **[**Redacted**]** It also may be designated the Optical Telescope Unit (OTU).

Sensor Subsystem (SSS): That part of the Instrument that converts photons to analog voltage signals, **[**Redacted**]**, and digitizes **[**Redacted**]** those signals.

Solid State Recorder: The subsystem that accepts digital data from the SSS and Ancillary Data from the spacecraft bus, provides storage, **[**Redacted**]** and outputs that data to the wideband transmitter(s).

Spacecraft Bus: The Bus is that part of the Satellite that provides the support infrastructure so the Instrument can function. .

[Redacted**]**

MGB: "MGB" is a meaningless three letter designation for an additional subsystem being installed on the WV3 satellite. The MGB subsystem consists of three components. The first is a Sensor Unit (SU) which will attach to the aperture end of the OBA. The second is the Interface Adaptor Unit (IAU) which will mount to the spacecraft bus. The third is an inter-connect cable which connects the first two units.

Initial Acceptance: Occurs upon successful completion of the Satellite Pre-Ship Review as defined in paragraph 4.5.3.2.e

Final Acceptance: Occurs following satellite fueling operations and completion of the Satellite Launch Readiness Review as defined in paragraph 4.5.3.2.f

Transfer of Title: Occurs as defined in the Satellite Purchase Agreement paragraph 8.

1.2 Program Overview

Under this Scope of Work, DigitalGlobe will procure one satellite to support the EnhancedView program and future commercial operations. DigitalGlobe shall provide the Instrument as Customer Furnished Equipment via a procurement contract with ITT. DigitalGlobe shall provide the "MGB" subsystem. As on the WV2 program, BATC shall deliver a WorldView 2 like stimulation lamp that will be incorporated into the ITT provided instrument. BATC shall also incorporate into the Bus, an instrument focus mechanism electronics capability.

DigitalGlobe shall provide the Launch Services via a procurement contract with Boeing Launch Services (TBD). It is assumed that Boeing Launch Services will in-turn subcontract with United Launch Alliance to provide the Delta 2 launch vehicle and associated launch services. BATC can assume a Delta 2 launch vehicle and a launch from Vandenberg Air Force Base. BATC shall assume satellite processing at Vandenberg AFB will occur in either the Astrotech Payload Processing facility or the Spaceport Systems International (BATC) Processing Facility.

2.0 DOCUMENTS

2.1 Applicable Documents

This Statement-of-Work identifies applicable documents. These documents provide detailed requirements regarding Satellite performance, interfaces, and/or standardized design, fabrication, and testing processes/procedures. BATC and DigitalGlobe will perform the defined work according to these standardized processes/procedures such that the delivered products meet the performance and ICD requirements.

In the event of any conflict between these documents, the following order of precedence shall prevail: a) Agreement Terms & Conditions; b) Statement of Work; c) Satellite Specification; d) Other Applicable documents.

DigitalGlobe Produced or Provided Documents	
WV3 Satellite Specification	**[**Redacted**]**
WV3 Spacecraft Simulator Specification	**[**Redacted**]**
WV3 Command & Telemetry Handbook Specification	**[**Redacted**]**
WV3 Maneuver Planner Specification	**[**Redacted**]**
MGB Data Protection Plan for BATC	**[**Redacted**]**
Stim Lamp and Stim Lamp Electronics Specification	**[**Redacted**]**
[Redacted**]** Focus Mechanism Electronics Specification	**[**Redacted**]**
Star Tracker Simulation Specification	**[**Redacted**]**
IRU Simulator Specification	**[**Redacted**]**
SSR to DPU Cable Design and Build Documentation	**[**Redacted**]**
BATC Produced Documents	
BATC Product Assurance Plan	**[**Redacted**]**
BATC Supplier Product Assurance Plan	**[**Redacted**]**
BATC Document Control Procedure	**[**Redacted**]**
BATC Configuration and Data Management Plan	**[**Redacted**]**
Associated Contractor Produced Documents	
Astrotech Vandenberg Facility Accommodations Manual	**[**Redacted**]**
Spaceport Systems International, Vandenberg Facility Accommodation Manual	**[**Redacted**]**

2.2 Reference Documents

The following documents provide the baseline instrument definition. DigitalGlobe shall provide an instrument that is compliant with these documents.

DigitalGlobe Produced or Provided Documents	
Instrument Specification	**[**Redacted**]**
Instrument Finite Element Model	**[**Redacted**]**

3.0 CONTRACT DELIVERABLES

3.1 Deliverable Items

a. WV3 Satellite: Initial Acceptance: **[**Redacted**]**. Final Acceptance: **[**Redacted**]** Delivery shall be adjusted for Excusable Delay or failure of customer to meet CFE delivery dates to the extent that these delays affect the Delivery Date.

b. WV3 Satellite Simulator

Interim releases: **[**Redacted**]**.

Feature complete: **[**Redacted**]**

Functional and performance signoff: **[**Redacted**]**

On orbit performance/tuning update: **[**Redacted**]**

c. [Redacted**]**

d. [Redacted**]**

e. [Redacted**]**

f. **[**Redacted**]**

g. **[**Redacted**]**

h. **[**Redacted**]**

i. **[**Redacted**]**

j. **[**Redacted**]**

k. **[**Redacted**]**

l. **[**Redacted**]**

m. **[**Redacted**]**

n. **[**Redacted**]**

3.2 Deliverable Data

Reference Attachment 1: Contractor Data Items List (CDIL)

3.3 Deliverable Services

a. Storage and Delivery (Section 11.0)

b. Launch Support (Section 12.0)

c. Mission, Commissioning, & Readiness Support (Section 13.0)

4.0 PROGRAM MANAGEMENT

4.1 Program Philosophy

Emphasis throughout all phases and functions of the project shall be to produce a reliable Satellite that meets the performance requirements on the contracted schedule. **[**Redacted**]**

4.2 BATC Organization (CDIL PM-1)

A dedicated Program Manager shall be appointed by BATC prior to the start of the contract. The Program Manager shall lead all of the Contractor's activities under the contract.

A diagram illustrating the Program Management Structure shall be provided to DigitalGlobe. (CDIL PM-1) This diagram(s) shall indicate job titles and names of the program management team.

The Program Manager shall coordinate changes to contract conditions, price, timescale, deliverables, services or performance levels, unless a specific alternate has been appointed to deal with any of these matters. All changes to the contract documents shall require the written agreement of BATC contracts representative.

BATC shall also appoint a different and dedicated individual to be a single point of contact for each of the following:

a. Program technical management (Satellite System Engineer)

b. Instrument System Engineer

c. Project Engineer Quality Assurance (PEQA)

d. Program Integration and Test management

BATC shall appoint a different individual to be a single point of contact for each of the following:

e. Various Bus Subsystem Lead Engineers

f. Launch Vehicle Integration Engineer

g. Program Contract Management

These individuals are key personnel and, if performing well, should remain unchanged for the duration of the program.

BATC shall appoint a Satellite Simulator Project Lead. This individual will be the technical lead for the Satellite Simulator development effort and will be responsible for meeting its technical and schedule guidelines established herein.

4.3 DigitalGlobe Management

DigitalGlobe will appoint a Program Manager who as an individual shall act as DigitalGlobe's primary point of contact on all program management matters. As required, according to the activity and phase of the contract, the Program Manager will nominate specific individuals to interface directly with BATC.

The DigitalGlobe Program Manager shall coordinate changes to contract conditions, price, timescale, deliverables, services or performance levels, unless a specific alternate has been appointed to deal with any of these matters. All changes to the contract documents shall require the written agreement of the DigitalGlobe contracts representative.

DigitalGlobe will also appoint a responsible individual(s) to be a single point of contact for each of the following.

[Redacted**]**

BATC shall permit direct engineering interactions between these DG individuals and their BATC counterparts.

4.4 Space Segment Master Program Schedule (MPS) (CDIL PM-2)

BATC shall develop maintain, and provide a Master Program Schedule (MPS) for the entire program including hardware, software, analyses, data item deliverables, and subcontractor activities for all phases of the program including design, integration, test, and shipment through final acceptance.

4.4.1 General

The MPS shall consist of a computer supported dependency network, each element of which shall represent a single program event. Each event shall be attributed a start and finish date. The network must clearly show the interdependency in terms of both time and function amongst the events.

The MPS shall be the major management tool for planning, monitoring and controlling the program, in terms of:

a. Planning the program, monitoring progress, documenting actual activity accomplishment and actual durations.

b. Predicting future progress.

c. Identification of significant milestones e.g. review meeting.

d. Identification of the time critical path.

e. Reflecting actual progress and changes relative to baseline plan.

4.4.2 Required Software

The Contractor shall create and maintain the network using Microsoft Project (Version 2003). Schedules of a detailed nature shall be provided electronically on a monthly basis. A hardcopy shall also be provided on request.

4.4.3 MPS Construction

4.4.3.1 Content

The network shall be constructed against the following major classifications:

a. Deliverable hardware down to component level

b. Software development activities

c. Facilities required to support the production of any of the deliverables

d. Other events/items required to support the production of the deliverables or services. e.g. test aids, test software prototypes, etc.

e. Customer Furnished Equipment required from DigitalGlobe

Individual items in each class shall be considered to consist of a number of generic events. These events shall typically consist of such activities as:

a. Plan

b. Design & develop

c. Manufacture

d. Assemble

e. Integrate

f. Test

g. Deliver

h. Reviews

However steps may be omitted or added given unit specific circumstances.

4.4.3.2 Unique Identifiers

The MPS shall include a unique identifying number for each task. This will more easily allow DigitalGlobe to combine certain tasks into a DigitalGlobe Master Schedule. Unique identifiers will not be deleted, reused, or re-assigned to other tasks.

4.4.4 Reports

The MPS shall be capable of generating a number of different types of reports upon demand. All events and milestones shall be coded to permit a variety of sort options to be exercised without program modification. Both GANTT and network form shall be supported.

4.5 Meetings & Reviews

BATC shall support the meetings and reviews listed in the following paragraphs.

4.5.1 Weekly Status Meeting

BATC Program Manager shall support a weekly meeting/telecon with the DigitalGlobe Program Manager to review program status including schedule, technical, risk register, action item list, and subcontracts.

4.5.2 Monthly Program Status Review

BATC Program Manager shall support a monthly Program Status Review with DigitalGlobe.

4.5.3 Program Reviews

4.5.3.1 List of Formal Reviews

BATC will host and conduct formal reviews at the following program milestones. BATC shall prepare charts, viewgraphs, analysis results, trade study results, etc. in the quantity and quality typical of aerospace industries reviews.

a. Satellite Requirements Review (SRR) (CDIL D-34)) Only changes between WV2 and WV3 must be reviewed.

b. Delta — Preliminary Design Review (PDR) (CDIL D-30) Only changes between WV2 and WV3 must be reviewed.

c. Delta-Critical Design Review (CDR) (CDIL D-31) Only changes between WV2 and WV3 must be reviewed.

d. Spacecraft Bus Complete/Instrument Integration Readiness Review (IRR) (CDIL — PT-8)

e. Satellite Environmental Testing Readiness Review (CDIL — PT-9)

f. Satellite Pre-Ship Review (CDIL PT-10)

g. Launch Readiness Review (CDIL LM-14)

4.5.3.2 Content of Reviews

A. PDR and CDR: BATC shall conduct “delta” reviews. These reviews will document the design changes between WV2 and WV3. These design reviews (PDR and CDR) shall include information and documentation typical of aerospace industry reviews, such as:

1. Satellite mechanical configuration including stowed and deployed views
2. Satellite mechanical configuration including **[**Redacted**]**
3. Satellite electrical/electronic design, including system block diagram and redundancy scheme
4. Satellite software design
5. Satellite Operating Modes
6. Satellite Fault Detection and Safing
7. Satellite Budgets and Margins
    A. Performance relative to specifications
    B. Mass
    C. Power
    D. Thermal
    E. Consumables
    F. Attitude control: stability, pointing and knowledge
    G. RF links
    H. Satellite resources: relays, telemetry stream, CPU throughput, processor memory
    I. MTF

J. Reliability: Ps, critical items list, cycle-limited items, FMECA

B. Spacecraft Bus Complete/Instrument Integration Readiness Review: BATC shall host this review. The purpose is to ensure the readiness to begin Instrument integration. This review will cover information including:

1. Instrument Integration procedure and hardware status

2. Status of all Certification Logs for all Ball built hardware that will be integrated to the Bus. Ball shall provide rationale and recovery plan for all certification logs that are open, even though the hardware is complete and ready for integration.

3. TAR and HAR status from the Bus Integration and Test phase

4. Test Team Personnel status, certifications, and time-sharing with other programs

5. Facility status

6. Satellite configuration review

7. Other issues that may impact the timely and successful completion of Instrument integration.

8. The Spacecraft Bus shall be deemed complete and ready for Instrument integration when: **[**Redacted**]**

C. Satellite Environmental Testing Readiness Review: BATC shall host this review. The purpose is to ensure the readiness to begin satellite level environmental testing which includes but is not limited to: TVAC, EMI/EMC, Vibration, Shock, and Acoustic. This review will cover information including:

[Redacted**]**

D. Satellite Pre-Ship Review: BATC shall host this review. The purpose is to ensure the readiness to ship the satellite to the launch site. This review shall be held after completion of all significant testing and all post-test reviews. The purpose shall be to review the results of the entire Integration & Test program, and demonstrate compliance to the satellite specification., and provide for satellite preliminary acceptance.

The Pre-ship Review shall be deemed satisfactory and the satellite preliminary acceptance by DigitalGlobe complete when the:

[Redacted**]**

F. Satellite Launch Readiness Review: BATC shall conduct a Satellite Launch Readiness Review (SLRR) on or about **[**Redacted**]**. (Note, the Launch Services Provider, Boeing/ULA also has a review called the Launch Readiness Review. However, that review encompasses the satellite, launch vehicle, weather, and range support.) This SOW paragraph is only concerned with the readiness to launch the satellite. BATC shall review the results of the launch site Integration & Test activities, review any updates to the Verification Matrix, and provide for satellite final acceptance.

The SLRR shall be deemed satisfactory and the satellite final acceptance by DigitalGlobe complete when the:

[Redacted**]**

4.5.4 Component/Subsystem Design Review Listing (CDIL PM-3)

BATC shall prepare a summary listing of all planned component (box level) and subsystem design reviews. This listing shall include BATC and vendor provided hardware, and BATC provided software including the satellite simulator and maneuver planner software. This listing shall define the meeting format and required attendance. BATC shall provide a minimum of 10 days advance notice to DigitalGlobe for the following major reviews:

a. System/Subsystem & Component PDRs

b. System/Subsystem & Component CDRs

DigitalGlobe attendance and participation, including support consultants, shall be allowed, but not required at all reviews. The review activity will not be repeated if DigitalGlobe fails to attend.

4.5.5 Component/Subsystem Test Readiness / Data Review Listing (CDIL PM-4)

BATC shall prepare a summary listing of all planned component (box level) and subsystem qualification and acceptance test reviews. This listing shall include BATC provided and vendor provided hardware, and BATC provided software. This listing shall define the meeting format and required attendance. BATC shall inform DigitalGlobe of upcoming reviews in a timely manner.

DigitalGlobe attendance and participation shall be allowed, but not required at all reviews. The review activity will not be repeated if DigitalGlobe fails to attend.

4.5.6 DigitalGlobe Meetings

DigitalGlobe will arrange separate contracts for the:

a. Launch Vehicle Segment (LV)

b. Instrument

c. Launch and Mission insurance

A series of technical interchange and review meetings will be held with these contractors jointly and separately, as required. BATC shall provide representation at these meetings as needed to resolve interface issues.

In the case of the insurance (c), BATC will provide inputs to formal presentations and support meetings to be held at the DigitalGlobe facility.. DigitalGlobe will be responsible for responses to action items using information made available or provided by BATC during the course of the program.

4.6 Documentation Management

4.6.1 Access to Program Technical Data

DigitalGlobe will have access rights to all program technical data that BATC generates and Subcontractor data to which BATC has legal and contractual rights. Program technical data may include Engineering Reports, drawings, software source code, and other tools used in the development of the spacecraft and analysis of requirements.

4.6.2 Objective

BATC shall establish a control and monitoring process relating to all deliverable documentation and other technical and test data for the complete program. The program shall account for the following:

a. Preparation, review, and formal release as required

b. Changes

c. Storage, backup, and retrieval

d. Distribution

Note: BATC shall include the DigitalGlobe Satellite Integration and Test Point-of-Contact on the distribution list of all relevant WV3 Engineering Reports. ("Relevant" in this clause refers to all ERs containing design information, analyses, test data, etc that affect the performance and/or operations of the satellite. It does not include ERs that contain BATC proprietary cost data.)

e. DigitalGlobe access to all BATC documentation prepared on the project

f. Long term storage for the purpose of through-life product support

As a primary supporting management tool, BATC shall use a secure project server. All data items except memory intensive drawings, test data, production logs, and QA data shall be maintained electronically on the project server. The project shall use the Microsoft Office software suite for word processing, spreadsheets, presentations, and documentation databases.

4.6.3 Documentation Listing (CDIL PM-5)

BATC shall develop and maintain a Documentation Listing that identifies all deliverable reports, analyses, drawings, software items, etc., that are developed on the project. The Documentation Listing shall include a naming convention that uniquely identifies the documents for electronic access where applicable. The List shall also indicate spacecraft name, a short title/description of the document, subsystem affected, the latest revision number and date, planned completion date, and status information. The List shall indicate those WV1 and WV2 documents that are also applicable to WV3. Document updates are required to reflect content changes. Document updates are not required if the sole purpose is to reflect applicability to WV3.

4.6.4 Documentation Delivery

The Contractor shall deliver document in native formats, e.g. Microsoft Word, Excel, etc., as opposed to PDF except as noted below. DigitalGlobe will identify the delivery location, such as a Microsoft Office Sharepoint Server (MOSS) internet site, and provide Contractor with username and password-controlled access. Documents shall be submitted or made available to DigitalGlobe according to the dates indicated in the list provided in Attachment 1.

In the case of deliverables generated in Microsoft Office, such as Word, Excel, PowerPoint, etc; BATC shall populate the document property fields with the following minimum information: Title, Subject, Author, and key words.

In the case of deliverables that are not generated in MicroSoft Office, such as BATC drawings, .pdf is acceptable and BATC shall populate the property fields of drawings after they are converted to .pdf format.

4.7 Action Item Tracking (CDIL PM-6)

BATC shall maintain an Action Item List indicating all significant action items, including those of BATC as well as those of other organizations that relate to interactions with BATC. The Action Item List will be developed and maintained in a format that allows sorting by subsystem, originating party, receiving party, originating date, and closing date. BATC shall be responsible for ensuring closure of those items relating to BATC interactions and interfaces.

4.8 Financial Management

BATC shall define a standard set of formats for reporting program financial payment and billing status and shall submit them on a monthly basis. This shall consist of the following:

4.8.1 Historical Record of Payments (CDIL PM-7)

This shall consist of a record of the individual payments made, updated on a monthly basis. This record shall be cross-referenced to the payment schedule incorporated in the contract. Payments made in support of contract amendments shall be separately reported and cross-referenced to the payment schedule incorporated in the amendment.

4.8.2 Payments Forecast (CDIL PM-7)

This shall consist of a forecast of the future invoices and shall be cross-referenced to the payment schedule incorporated in the contract. Payment milestone forecasts shall be consistent with program progress reported on the Master Program Schedule. NOTE: Record of Payments and Payment Forecast are delivered as a single CDIL item.

4.9 Contract Change Control

These are considered to be of three types only:

a. Contract Amendments

b. Waivers: A written authorization granted after contract award to accept an item, that during production, or after having been submitted for inspection or acceptance, is found to depart from contract or specified configuration requirements. Waivers are intended only as one-time departures from an established configuration for specified items or lots and are not intended to be repeatedly used in place of formal engineering changes.

c. Deviations: A written authorization, granted after contract award and prior to the manufacture of the item, to depart from a particular performance or design requirement of a contract, specification, or referenced document, for a specific number of units or a specified period of time. Deviations are intended only as one-time departures from an established configuration for specified items or lots and are not intended to be repeatedly used in place of formal engineering changes.

BATC shall devise a system to control, monitor, and notify DigitalGlobe of these changes. The control system shall include provision for:

a. A unique numbering scheme to track the changes through to completion.

b. Impact upon contract obligation: — price, performance and delivery schedule, with specific identification of the item(s) of hardware, software or documentation affected.

c. Notification of timescale for acceptance or rejection for each change, typically 10 business days.

5.0 DESIGN

5.1 General

BATC shall perform the necessary trade studies, preliminary design, and detailed design of the Satellite, exclusive of the Customer Furnished Equipment as defined in Section 10, in accordance with the applicable documents. BATC shall design and procure the Ground Support Equipment necessary to support Satellite Integration and Test activities, except for items defined in Section 10.0. Design activities shall be featured in the program master schedule.

5.2 Working Groups and Trade Studies

5.2.1 Working Groups

[Redacted**]**

5.2.2 Trade Studies

Reserved.

5.3 Satellite Design Data

The satellite shall be designed such that the environmental design criteria of the Instrument as defined in the documents of paragraph 2.2 are not exceeded, and the structural, electrical, and thermal characteristics, as defined in the documents of paragraph 2.2, of the Instrument are accommodated.

DigitalGlobe shall provide information required to update the budgets for the Customer Furnished Equipment, consistent with paragraph 2.2.

5.3.1 Satellite to Instrument Interface Control Document(s) (CDIL D-1)

BATC shall produce and maintain the Satellite to Instrument ICD(s). The ICD(s) will address all interface issues including but not limited to: power, commanding, telemetry, mass and mass properties, mechanical envelope and mounting, thermal, fields-of-view, vibration and jitter isolation/management, and accommodation of bus components on the Instrument.

5.3.2 Satellite to Ground Terminal Narrowband Link ICD (CDIL D-2)

BATC shall produce and maintain the Satellite to Ground Station Narrowband Link ICD. This link will address both the command uplink and telemetry downlink.

5.3.3 Satellite to Ground Terminal Wideband Link ICD (CDIL D-3)

BATC shall produce and maintain the Satellite to Ground Terminal Wideband Link ICD.

5.3.4 Satellite Environmental Design and Test Specification (EDTS) (CDIL D-4)

BATC shall prepare and maintain the EDTS, or equivalent document defining the component environmental design and test requirements. Electromagnetic Interference Design and Testing shall be in accordance with the standards specified in Satellite Specification.

5.3.5 Contamination Control Plan(s) (CDIL D-5)

[Redacted**]**

5.3.6 Satellite Level Requirements Verification/Compliance Matrix (CDIL D-6)

BATC shall produce a satellite level RVCM. The RVCM will include requirements from the Satellite Specification and the Instrument Specification if applicable. BATC shall update/maintain the Satellite RVCM to reflect changes to these parent specifications. DigitalGlobe shall have review and approval authority over changes to the RVCM. BATC shall include the following information in the RVCM

a. Source of requirement (Parent specification document and paragraph number, i.e. satellite spec, instrument spec, etc)

b. Specification paragraph

c. Paragraph title

d. Summary description of requirement

e. Column indicating status of compliance

f. Summary description of performance

g. Responsible organization

h. Verification Point **[**Redacted**]**

i. Verification Method **[**Redacted**]**

j. Verification Source Document indicating applicable paragraph, test sheet, etc.

k. Comments, if required.

l. Other information at BATC's option

5.3.7 Box Level Requirements Verification/Compliance Matrix (CDIL D-7)

BATC shall flow down requirements from the Satellite Specification to box level requirements. BATC shall develop performance requirements for each box level component on the Satellite excluding CFE. For this paragraph, "box level component" also includes all components that are not really "box" like. These include but may not be limited to:

[Redacted**]**

BATC shall use the Box Level RVCM as an input into the box level performance test procedures. BATC shall demonstrate compliance to the box level RVCM.

5.3.8 Drawings (CDIL D-8)

A complete file of BATC drawings prepared for the WV3 program, will be maintained on file in electronic and hardcopy form, where appropriate. Electronic transfer to DigitalGlobe will constitute delivery.

5.3.9 Performance Compliance and Risk Management

5.3.9.1 Performance Compliance (CDIL D-9)

The contractor shall supply at PDR a Performance Compliance Matrix identifying the performance estimate, allocated uncertainty (and/or contingency as appropriate) and resulting Total Performance (where Total Performance = performance estimate + uncertainty) for the following list. The Performance Compliance Matrix shall be updated and provided with each Quarterly Review following the PDR.

[Redacted**]**

DigitalGlobe shall provide performance information required to update the budgets for any of the Customer Furnished Equipment, in accordance with the documents in Paragraph 2.2.

5.3.9.2 Risk Management Report (CDIL D-10)

BATC and DigitalGlobe shall jointly develop and maintain a Risk Status Report. This report highlights known program risks, assigns risk levels, and documents mitigation strategies and status. BATC shall supply at PDR an initial Risk Status Report covering the system elements to be provided by this SOW. BATC shall updated the Risk Status Report monthly following the PDR.

5.3.10 Subsystem Description Documents (CDIL D-11)

BATC shall prepare Subsystem Description Documents for each satellite subsystem.

The Subsystem Description Documents will include as a minimum, unless provided in other deliverable documents, and referenced in the SDD:

a. Subsystem Overview including a detailed block diagram

b. Functionality and major performance characteristics of each Subsystem Component

c. Redundancy

[Redacted**]**

d. **[**Redacted**]**

e. **[**Redacted**]**

f. **[**Redacted**]**

g. Subsystem schematic including power, power returns, commands, and telemetry. This schematic shall be updated to reflect Engineering Change Orders.

h. Expected nominal operating methods and telemetry limits

[Redacted**]**

i. Operational constraints

[Redacted**]**

j. Fault Protection

[Redacted**]**

List the information available to the operator to reconstruct or identify the fault.

k. Interfaces between subsystem components

l. Major interfaces with other subsystems

The Subsystem Description Documents shall be delivered at CDR + 4 months. If changes require an update to the document, those updates shall be provided at approximately Launch — 4 months and again at Launch + 4 months. The subsystem schematic (item e.) shall be updated as required throughout the program to reflect Engineering Change Orders.

5.3.11 Analysis and reports

BATC shall perform the following analyses. Updates shall be provided when changes significantly invalidate previous results.

a. (1) Integrated Spacecraft Bus/Instrument thermal analyses, including summary of temperature predictions for unit level components under various operational modes. and (2) unit-level thermal analysis **[**Redacted**]**. **(CDIL D-12)**

b. Integrated Spacecraft Bus/Instrument structural analysis including **[**Redacted**]**. **(CDIL D-13)**

c. Control system analysis including **[**Redacted**]**. **(CDIL D-14)**

d. System Level Failure Modes and Effects and Criticality Analysis (FMECA). **[**Redacted**] (CDIL D-15)**

e. Satellite Reliability Analysis BATC shall calculate satellite reliability using it's standard process. **[**Redacted**] (CDIL D-16)**

f. Satellite Life Prediction Data . DigitalGlobe needs to continually assess expected satellite life based upon actual on-orbit operational parameters. BATC shall provide all backup data used by BATC for sizing and life predictions. BATC does not need to produce a life expectancy analysis. DigitalGlobe will use the provided data and make our own Life Prediction. BATC can provide the life prediction data in one summary package, or in other CDILs.

g. Flight Battery Life Prediction Analysis. BATC shall produce a life expectancy analysis for the satellite battery. The battery life prediction shall account for ground handling and will include a family of curves based upon pertinent on-orbit variables including but not necessarily limited to temperature and depth-of-discharge. (CDIL D-35)

h. Satellite Imaging Performance **(CDIL D-17)**

BATC shall perform a comprehensive analysis regarding imaging performance. This is a comprehensive look at the numerous subsystem and trans-subsystem performance measures that affect imaging. The list includes but is not limited to:

[Redacted**]**

5.3.12 Other Interface Control Documents

BATC shall provide inputs, review, and verify BATC side of the following ICDs.

a. Satellite to Launch Vehicle ICD

In the event that the ICDs require revision, the changes will be discussed between the affected parties to determine the most cost and schedule efficient manner to implement the change. If applicable, any impact will be covered under changes provision of the Contract.

5.3.13 Critical Items list (CDIL D-18)

BATC shall maintain a Critical Items List summarizing all known single point failures on the Satellite and any special efforts required to mitigate risk associated with them. It shall also contain any items requiring special handling due to a high potential of damage, mission criticality, or safety concerns.

5.3.14 Component Heritage Summary (CDIL D-19)

The Component Heritage Summary will consist of a listing of all Satellite units by subsystem summarizing:

a. Unit name

b. Development / qualification history (e.g. engineering model, qual, protoflight)

c. Previous flight heritage

d. Modifications to previous uses

e. Any significant known anomalies on flight units

5.3.15 Engineering Reports (CDIL D-20)

A complete file of all relevant Engineering Reports prepared on the WV3 program funding shall be maintained on file in electronic and hardcopy form where appropriate. Electronic transfer to DigitalGlobe will constitute delivery and shall occur within 5 business days of the ER release date. ERs delivered as a separate CDIL do not need to be delivered twice — once per this paragraph and again per the relevant CDIL paragraph. Those ERs need only be delivered once per the relevant CDIL paragraph.

("Relevant" in this clause refers to all ERs containing design information, analyses, test data, etc that affect the performance and/or operations of the satellite. It does not include ERs that contain BATC proprietary cost data.)

5.3.16 Flight Software Source Code (CDIL D-21)

Per the terms of the software license agreement set forth in the Agreement, BATC shall grant to DigitalGlobe a limited license to use the flight software code. A copy of the flight software code, as identified below, shall be provided to DigitalGlobe on suitable media. Other elements of the software, as identified below, shall be placed in escrow per the Agreement.

[Redacted**]**

For units that are subcontracted by BATC, software and firmware shall be delivered if delivered to BATC and BATC has the right to deliver it to DigitalGlobe.

5.3.17 Composite Grounding Design (CDIL D-22)

[Redacted**]**

5.3.18 Structural, Power, Thermal, and Reliability Analytical Models (CDIL D-23)

BATC shall provide the analytical models used to predict the integrated spacecraft and instrument Structural **[**Redacted**]**, Power, and Thermal performance.

Satellite thermal performance modeling shall use the instrument thermal model provided by ITT. BATC shall use the integrated Satellite model to:

a. Verify thermal interface requirements documented in the Spacecraft Bus to Instrument ICD are being met. Although BATC shall not be held contractually responsible for non-compliances on the ITT side of the interfaces, any such non-compliances revealed by Satellite thermal modeling shall be reported to DigitalGlobe.

b. Verify the Bus meets all of its requirements when modeled as a complete Satellite, for example unit temperatures and line of sight stability. BATC shall deliver line of sight motion vs. time profiles to DigitalGlobe (for incorporation into system geolocation budgets).

c. Develop predicted temperature vs. time profiles of key instrument nodes as coordinated with ITT through the established ICD process. BATC shall deliver these temperature profiles to DigitalGlobe and forward a copy to ITT (so that ITT can verify the instrument meets its requirements).

BATC shall also provide the spacecraft bus reliability model down to the component and/or card level. Electronic transfer to DigitalGlobe will constitute delivery.

5.3.19 Coordinate Transformation Document (CDIL D-24)

BATC shall provide the documentation of all coordinate reference frames used in the satellite system including their reference points within the spacecraft. Nominal values for all transformations shall be provided. Reference frames requiring on-orbit calibration shall be noted. The document shall be updated with best-estimates from pre-launch calibrations and measurements.

5.3.20 Flight Software Users Manual (CDIL D-25)

BATC shall provide documentation of the flight software to include flowchart of routines/modules, structure and calling sequences, commands, telemetry, database constants and uploadable parameters, address tables, and log file definitions and locations.

5.3.21 Component Acceptance Data Package (CDIL D-26)

BATC shall provide or make available data acceptance packages for all major components.

5.3.22 [Redacted**]**

[Redacted**]**

5.3.23 Instrument/Sensor Boresight Stability Data (CDIL D-28)

[Redacted**]**

5.3.24 Position and Attitude Accuracy (CDIL D-29)

BATC shall provide detailed analysis and test data showing compliance with position and attitude accuracy requirements.

5.3.25 Satellite to MGB Interface Control Document(s) (CDIL D-32)

BATC shall produce and maintain the Satellite to MGB ICD(s). The ICD will address all interface issues including but not limited to: power, commanding, telemetry, mass and mass properties, mechanical envelope and mounting, thermal, fields-of-view, vibration and jitter isolation/management.

5.3.26 DigitalGlobe to BATC Electrical GSE Interface Control Document (CDIL D-33)

BATC shall produce and maintain an ICD for the STOC-to-NarrowBand Rack interface. This includes but is not limited to: grounding, commanding, telemetry, data formats, etc.

6.0 PRODUCT ASSURANCE

6.1 Product Assurance Plan

The Contractor and its subcontractors shall have an established quality control system that meets the requirements of BATC's Product Assurance Plan and BATC's Supplier Product Assurance Plan

6.2 BATC Parts Control Board (PCB)

The Parts Control Board (PCB) shall be constructed as follows: A PCB will be established. The responsibility of this PCB is to ensure each EEE part was evaluated for performance relative to the requirements. With the exception of System Safety, the PCB will also be used as the forum to discuss other Systems Assurance/Product Assurance issues i.e., Materials and Processes, Reliability, etc. The PCB is responsible for the review and disposition of any noncompliance with BATC's Product Assurance Plan.

The PCB consists of:

a. BATC Product Assurance Manager (Chairman)

b. BATC WV3 Product Assurance Specialist or designated alternate

c. Designated technical specialist from the hardware/software product team as needed

d. Other necessary disciplines as needed

e. DigitalGlobe Designated Representative(s). (The DigitalGlobe member is a non-voting adjunct member).

6.2.1 Subcontractor Parts Control Board (PCB)

Subcontractor PCBs shall be established as necessary to implement BATC's supplied Product Assurance Plan. It is BATC's responsibility to verify compliance.

6.2.2 PCB Meetings

PCB meeting shall be convened as needed. BATC shall notify DigitalGlobe of upcoming meetings at least 2 working days in advance. DigitalGlobe attendance is optional BATC shall maintain meeting minutes to document all decisions and will provide a copy of the minutes to DigitalGlobe within 5 working days.

The minutes may be informal and in most cases shall be delivered to DigitalGlobe electronically via e-mail.

Minimal PCB approval/disposition signatures include BATC PAM and BATC WorldView Product Assurance Specialist or his designated alternate. Once the PCB approves a part, the Parts Engineer will indicate approval on the Advanced or Program Parts List (A/PPL).

6.3 Parts and Materials

6.3.1 Electrical, Electronic, and Electro-mechanical Parts (EEE)Parts Listing (CDIL QA-1)

BATC shall prepare, maintain, and deliver a EEE Parts Listing for all satellite hardware except for Customer Furnished Equipment. This listing shall identify all EEE parts intended to be used by BATC and it's vendors. For each part, the following minimum information shall be identified: manufacturer, description, lot date code. Parts shall be qualified as compared to BATC product assurance criteria and the Satellite Specification and the Satellite Specification Addendum. BATC's internal process and format for EEE Parts Listing may be utilized.

The Parts List shall be maintained and reviewed by BATC as necessary, but minimally it shall be updated and provided to DigitalGlobe at the following:

a. Prior to manufacturing for each box/component At this phase, it is acknowledged by DigitalGlobe and BATC that the list may be incomplete due to part shortages.

b. Prior to box/component level Test Readiness Review

c. Prior to the integration of any box/component onto the Bus.

6.3.2 Material and Processes Reports (CDIL QA-2)

BATC shall prepare and deliver reports documenting their approval of all materials and processes planned for use on the Bus.

6.4 As-Built Configuration and Conformance

6.4.1 As-Built Configured Article List (CDIL QA-3)

The as-built configured article status shall be maintained throughout the production program in the certification logs and production orders. At the conclusion of integration, the information shall be used to generate the preliminary As-built Configured Article List. After test and modification (if any) the List shall be finalized and presented.

6.4.2 Certificate of Conformance (CDIL QA-4)

A Certificate of Conformance shall be generated and signed off by Product Assurance and Program Management. It details the conformance (and exceptions) to the SOWs, specifications and other contractual documents for the delivered article. This Certificate of Conformance shall be delivered to DigitalGlobe at the Launch Readiness Review.

6.5 Product Assurance Reviews (CDIL QA-5)

The plan shall include a program for the periodic audit of portions of the Contractor's Product Assurance System in each of the below activity areas to confirm conformance to the requirements. These audits will be conducted by the Program Product Assurance engineer. BATC shall inform DigitalGlobe of the audit results.

a. Reliability

b. Parts Procurement

c. Materials and Processes

d. Non-Conforming Material Control

e. Configuration Management

f. Safety

6.6 Documentation

Documents shall be submitted or made available to DigitalGlobe as indicated in the list provided in Attachment 1.

6.7 Known Non-Compliant Hardware

[Redacted**]**

6.8 Military Standard 461

[Redacted**]**

7.0 PROCUREMENT

7.1 General

BATC shall be responsible for the work associated with the procurement of all material and subcontracts required to provide the deliverable items, except for the CFE items identified in Section 10.0. BATC shall procure according to the CSO Supplier Product Assurance Plan. Procurement activities shall be featured in the program master schedule.

7.2 Make/Buy Plans (CDIL PT-1)

BATC shall identify Make/Buy plans for all Satellite components.

7.3 Encryption/Decryption Devices

[Redacted**]**

7.4 Reviews

A series of reviews shall be established with each subcontractor. A schedule of these reviews shall be included in the Review Listings required by paragraph 4.5.3. The reviews will generally be held at the vendor and DigitalGlobe personnel may attend, at their option.

7.5 Program Subcontract Status Report (PSSR) (CDIL PT-2)

BATC shall prepare a Program Subcontract Status Report (PSSR) for the program. The PSSR will contain critical status information on each major subcontract (larger than $1M) relative to:

- Design & development
- Procurement and Production
- Assembly
- Integration
- Test, including any anomalies
- Delivery schedule
- Reviews

7.6 Documentation

Documents shall be submitted or made available to DigitalGlobe as indicated in the list provided in Attachment 1.

7.7 Subcontract Flow-downs

7.7.1 Assignment Clause

[Redacted**]**

7.7.2 Access

[Redacted**]**

8.0 PRODUCTION ACTIVITIES

8.1 General

BATC shall appoint a Production engineer responsible for ensuring that BATC's production capabilities match the requirements of the program. With the support of the Program QA engineer, he shall ensure that the production facilities comply with the Product Assurance requirements.

BATC shall be responsible for the work associated with the production of the deliverable items, except for the CFE items identified in Section 10.0. BATC shall be responsible for the production activities associated with integrating the CFE items as defined in Section 10.

Production activities shall be featured in the program master schedule.

8.2 Production Process

BATC shall produce the deliverable hardware according to applicable BATC standardized procedures. As a minimum, standardized BATC procedures shall be followed for the following topics:

[Redacted**]**

8.3 Access

The production manager shall arrange access for the DigitalGlobe staff to BATC manufacturing areas where manufacturing activities associated with the program are taking place.

8.4 Production Documentation

Production orders and Certification Logs shall document the as-built configuration. These logs shall be available on-site for DigitalGlobe review.

9.0 INTEGRATION AND TEST ACTIVITIES

9.1 General

For the WV program the Integration and Test activities fall into four logical categories.

a. Box level / Subsystem level testing

b. Bus level integration and testing including integration of the instrument

c. Satellite level testing

d. Mission and Launch Rehearsals

The Integration and Test Manager shall be responsible to ensure that BATC's integration and test capabilities match the requirements of the program

BATC shall accomplish the work associated with a-d above for all BATC supplied hardware/software. BATC shall accomplish the work associated with b-d above for all CFE.

9.2 Box/Subsystem Level Testing

9.2.1 General

BATC shall perform all box level testing per environmental design and test specification and the box level Requirements Verification and Compliance Matrix.

9.2.2 [**Redacted**]

[Redacted**]**

9.3 WV Bus and Satellite Integration and Test Plans (CDIL PT-3)

BATC shall develop a WV Bus and Satellite Integration and Test Plan (Satellite I&T Plan) for the WV3 satellite. The test plans will include all I&T activities starting from the installation of the first component on to the bus structure through launch.

The WV I&T Plan(s) shall:

[Redacted 4 Pages **]**

9.4 Post-Shipment Instrument Testing

ITT will perform post-shipment functional testing to verify the Instrument survived shipment without damage. ITT will provide the necessary test equipment for the Instrument.

BATC shall provide:

[Redacted**]**

For schedule purposes the Instrument is not considered delivered to BATC upon arrival at BATC facility. Rather the instrument is considered delivered on the date that the Instrument has completed all necessary post-shipment testing and is ready and available for BATC to integrate to the telescope/bus.

9.5 Supporting Documents

BATC shall provide as a minimum the following support documents:

a. All necessary box level test procedures, integration procedures, and system level test procedures. Each procedure shall include a detailed test description explaining the "what, how, and why" of each test.

b. A System Level Test Matrix. The test matrix will identify which System Level Test procedures or portions of those procedures will be accomplished at each test phase. The System Level Test phases include, but are not limited to:

[Redacted**]**

9.6 System Test Reports (CDIL PT-5)

[Redacted**]**

9.6.1 Content

The report shall include a summary of satellite configuration, test objectives, test results, significant hardware/software anomalies if any, resolution of significant anomalies, and a copy of all telemetry plots or other post-test data. The cognizant test engineer and the appropriate subsystem engineer(s) shall sign the report.

9.6.2 Timeliness

BATC shall publish the test reports No Later Than 15 working days after test completion.

9.7 Uninterruptible Power Supply (UPS)

[Redacted**]**

9.8 DigitalGlobe Integration and Test Engineering Access

9.8.1 On-Site and Visiting Engineers

BATC shall provide dedicated cubicle space, furniture, high-speed internet access, and phone lines for three resident DigitalGlobe I&T engineers. These DG on-site engineers will serve as the I&T focal point between DG and BATC. It is anticipated these engineers will be on-site at BATC on a full-time basis. BATC shall provide dedicated cubicle space, furniture, high-speed internet access, and phone lines for one visiting DigitalGlobe engineer.

9.8.2 Access to Live Satellite Telemetry

Once power-on bus integration begins, BATC shall provide DG with access to the live satellite telemetry from the cleanroom. DG will provide the necessary hardware to connect the Mission Control Center (MCC) to BATC GSE. DG will man and operate the DG hardware as necessary to flow the telemetry to the MCC. DigitalGlobe access to telemetry will occur on a non-interference basis to BATC test team.

9.8.3 Test Observation By Other DG Engineers

BATC shall allow other DG satellite and ground system engineers access to the cleanroom to witness satellite testing. BATC is not obligated to coordinate, inform, or schedule testing according to DG engineer availability.

9.8.4 Access to Command and Telemetry Log Files (CDIL PT-6)

BATC shall deliver an archive of all command and telemetry files from satellite integration and test in an electronic format. BATC shall deliver an update weekly. Electronic transfer to the DG server shall constitute delivery. BATC shall maintain information about which command and telemetry database was used in delivered files as well as which test procedures were run in each file.

9.9 Test Reviews

The status of the Satellite shall be reviewed during the test phases of the program. See paragraph 4.5.3.2 for the list of reviews and required content.

9.10 Optional Testing

The following is a list of optional tests to be performed or supported by BATC. These are tests DigitalGlobe may choose to have BATC perform if the schedule permits. BATC should not show these tests in the baseline schedule. In each case after a test option is exercised by DigitalGlobe, BATC has 30 calendar days to prepare for the test. BATC shall provide a separate option price prior to the start of I&T for each of these tests.

[Redacted**]**

10.0 CUSTOMER FURNISHED EQUIPMENT AND SERVICES

10.1 General

DigitalGlobe has contracts with vendors other than BATC who are responsible for providing portions of the overall system. DigitalGlobe has the responsibility for monitoring, administering, and verifying performance of those subcontracts. This section defines the items and support requirements that DigitalGlobe is responsible for securing and providing to BATC via these other subcontractors. This section also defines the equipment that DigitalGlobe is responsible for providing directly.

The delivery of all items shall be per Attachment 2: Customer Furnished Equipment list. DigitalGlobe will also arrange for the return of loaned equipment, if required, at no cost to BATC. CFE items shall be featured in the program master schedule. Unless otherwise explicitly provided to the contrary in Attachment 2, title to all equipment identified in this Section 10.0 shall remain in DigitalGlobe.

10.2 Flight Equipment

[Redacted**]**

10.2.1 [Redacted**]**

[Redacted**]**

10.2.2 [Redacted**]**

[Redacted**]**

10.2.3 [Redacted**]**

[Redacted**]**

10.2.4 [Redacted**]**

[Redacted**]**

10.2.5 [Redacted**]**

[Redacted**]**

10.2.6 [Redacted**]**

[Redacted**]**

10.3 Simulators (CSIM-1)

[Redacted**]**

10.4 Launch Vehicle Interfaces

10.4.1 Launch Vehicle Interface

DigitalGlobe shall provide a launch vehicle interface adapter to BATC (CLSE-1). BATC shall use this for a fit check and for a separation test as described in paragraph 9.3.e. DigitalGlobe shall provide a match drill template to BATC (CLSE-2).

10.4.2 Launch Vehicle Separation Connectors (CLSE-3)

DigitalGlobe shall provide the flight satellite/launch vehicle separation connectors.

10.5 Ground Support Equipment

10.5.1 Wideband Link RGT Equipment

DigitalGlobe will provide a set of RGT ground equipment for capturing Instrument data in the cleanroom. Nominally, this will include the following equipment and documentation:

[Redacted**]**

10.5.2 Narrowband Link RGT Equipment (CGSE-5)

DigitalGlobe will provide a set of RGT ground equipment for processing the S-band uplink and X-band narrowband downlink in the cleanroom. The capability to bypass the RF sections and operate at a baseband Satellite interface shall be provided by BATC . This may include elements of the Mission Control Center **[**Redacted**]** as dictated by the architecture of the ground system. DigitalGlobe shall deliver to BATC operating documentation and interface details one month prior to delivery.

This equipment shall include: **[**Redacted**]**

10.5.3 Special Test Equipment

DigitalGlobe shall provide special WB Link / WB receiver test equipment for WB link development and testing. This will include:

[Redacted**]**

10.5.4 Mission Control Center (CGSE-11)

DigitalGlobe will provide portions of the Mission Control Center (MCC) and software as required to support the Satellite Integration and Test Plan, via data links between the MCC in Longmont, CO and BATC. BATC shall be responsible for work on the Satellite required to resolve problems associated with the Satellite performance and function. All work associated with resolution of DigitalGlobe provided ground equipment and interfaces shall be at DigitalGlobe expense.

10.5.5 [Redacted**]**

[Redacted**]**

10.5.6 [Redacted**]**

[Redacted**]**

10.5.7 [Redacted**]**

[Redacted**]**

10.5.8 MGB Test Equipment (CGSE-15)

DigitalGlobe shall provide a signal generator, up-converter, feedhorn, and control computer.

10.6 Launch Vehicle Data (0 and 0)

DigitalGlobe shall provide a preliminary and final Coupled Loads Analysis (CLA) to BATC from the Launch Services contractor.

10.7 Instrument Data

DigitalGlobe shall provide the WV3 instrument data and models, as specified in Paragraph 2.2, to support satellite level analysis and modeling for the areas listed below. BATC shall be responsible for additional data to support the provisions of this document and the spacecraft specification.

10.7.1 Instrument Structural Analysis Data (CID-1)

DigitalGlobe shall provide the WV3 instrument structural data and model.

10.7.2 Instrument Thermal Analysis Data (CID-2)

DigitalGlobe shall provide WV3 instrument thermal data and model.

11.0 STORAGE AND DELIVERY

11.1 General

BATC shall be responsible for storage, if required, and delivery of the WV3 Satellite in accordance with the following paragraphs.

11.2 Satellite Pre-Shipment Storage

In the event that the Satellite is completed prior to the contractually scheduled delivery date, BATC shall provide, at their cost, suitable environmentally controlled storage including temperature and humidity monitoring and recording.

If shipment is delayed due to BATC beyond the contractually scheduled delivery date and the Satellite is complete, and such delay by BATC has caused a loss of available launch opportunity, the Satellite shall be placed in storage at BATC's expense.

If shipment is delayed due to DigitalGlobe beyond the contractually scheduled delivery date and the Satellite is complete, the Satellite shall be placed in storage at DigitalGlobe's expense.

11.3 Pre-Shipment Re-Test

Subject to the length of the storage period, appropriate maintenance and power up of those units sensitive to inactivity shall be undertaken. Any items exhibiting signs of deterioration shall be subject to appropriate follow up action according to the circumstances. All instances shall be reported to DigitalGlobe.

A thorough re-test is required should the storage exceed **[**Redacted**]**. Details shall be provided in the test requirements document. Appropriate follow up action shall be taken, according to the circumstances, should any problems be detected.

The re-test costs shall be at BATC expense if delay and retest were caused by BATC. The re-test costs shall be at DigitalGlobe's expense if delay and retest were caused by DigitalGlobe.

11.4 Satellite Shipping and Delivery

[Redacted**]**

BATC shall provide shipping from BATC plant to the launch site. BATC shall pack the Satellite and ground support equipment in suitable containers for shipment to the launch site. BATC shall unpack the Satellite and ground support equipment at the payload processing facility at the launch site.

BATC shall provide insurance and security for the satellite and ground support equipment during shipment to the launch site.

BATC shall pack the ground support equipment for return to BATC plant and provide shipping.

BATC shall provide insurance for the ground support equipment during shipment back to BATC plant.

The transportation environment shall be enveloped by the requirements in the Launch Vehicle and Instrument ICD and performance specification. BATC shall be responsible for ensuring the Satellite compatibility with the requirements. BATC shall be responsible for verifying all environmental requirements are met including temperature, humidity, and shock monitoring.

11.5 Satellite Launch Site Storage

BATC shall provide volumetric storage and access requirements to DigitalGlobe for shipping containers required at the launch site. The baseline program assumes no Satellite storage requirements at the launch site. However, if the launch should be delayed once the Satellite has been shipped, BATC shall provide, at DigitalGlobe expense, the support necessary to maintain, store, and retest the Satellite.

12.0 LAUNCH SUPPORT SERVICES

BATC shall provide launch support services as defined in the following paragraphs.

12.1 General

[Redacted**]** DigitalGlobe will be responsible for overall coordination of launch activities. BATC shall support this activity as defined in this section of the SOW.

The Satellite shall be compatible with U.S. launch safety requirements. BATC shall generate a WV3 Missile System Pre-launch Safety Package (MSPSP) **(CDIL LM-1)** to document hazardous items or operations and planned safety procedures for the Satellite.

BATC shall support the safety review processes of the Launch Services Contractor and the Launch site.

12.2 Requirement Definition

BATC shall support the generation and maintenance of the Launch Vehicle ICD as defined in paragraph 5.3.12. BATC shall supply the following information and any other information normally required by the Delta II Payload Planners Guide to DigitalGlobe and the Launch Services contractor:

a. Launch vehicle interface details and requirements.

b. Requirements for launch site support and services including space, power, environment, contamination control, lifting/moving, telecommunications, etc.

c. Statement of compliance with launch site safety requirements.

d. Environmental requirements pre and post installation on launch vehicle.

e. Verification of applicable portions of the Satellite to Launch Vehicle ICD.

f. Launch Site Procedures.

BATC shall, by means of drawings, analysis, or test, be responsible for specifically confirming Satellite compatibility with the launch vehicle requirements defined in the ICD. BATC shall prepare a RVCM, as defined in paragraph 5.3.6, for those portions of the ICD for which it has responsibility.

12.3 Technical Interchange Meetings

BATC shall support up to eight Technical Interchange Meetings (TIM) with the launch organization. **[**Redacted**]** In addition, BATC will support informal meetings and teleconferences at DigitalGlobe's Colorado facilities and BATC facility as required to resolve interface and infrastructure issues.

12.4 FEM and CLA-to-Design Load Comparisons (CDIL LM-2)

BATC shall provide preliminary Finite Element Models (FEM) and final FEMs for the WV3 Satellite for the purposes of performing coupled loads analyses. DigitalGlobe is responsible for obtaining valid CLA results from the launch service contractor and delivering those to BATC. BATC shall then compare the results of the coupled loads analyses to the design loads used in spacecraft bus and Instrument structural analysis to confirm that the resulting loads are within the design requirements as specified in the respective ICDs. The deliverables are as follows:

[Redacted**]**

12.5 Export Regulations

All contractors on this program are anticipated to be U.S. companies including the launch service contractor. Therefore we anticipate no exports of hardware, software, or technology to foreign companies. However, if that situation changes, DigitalGlobe shall be the single point of contact for all export issues. Therefore:

BATC shall provide information directly to DigitalGlobe and DigitalGlobe will be responsible for obtaining and documenting all export approvals for all documentation transmitted to the launch vehicle agencies.

DigitalGlobe will be responsible for all work associated with compliance to export regulations including licensing, security, customs, document approval, transportation, etc. for documents/data channeled through DigitalGlobe.

It is understood that the Department of State International Traffic in Arms regulations (CFR 22 Part 120 through 130) strictly apply to any data or hardware covered under this SOW.

12.6 Adapter Fit-Check

BATC shall perform a launch vehicle interface check on the satellite as defined in the Test Plan. DigitalGlobe will arrange for the launch services contractor to provide the adapter, interface portions of the separation system, and GSE. If required, DigitalGlobe will also arrange for support from the launch services contractor at no cost to BATC.

12.7 Launch Site Infrastructure

DigitalGlobe shall arrange for and provide all launch site infrastructure necessary for satellite testing and pre-launch processing. This includes lease of a satellite processing facility.

12.8 Launch Site Operations

BATC shall support the launch operations campaign including provision of the test equipment and labor required to perform the launch site unpacking, Satellite checkout as defined by the WV I&T Plan, fueling, final mating to launch vehicle, launch, and repacking for return to BATC plant. Delays associated with BATC performance shall be at BATC expense. Any other delays shall be at DigitalGlobe expense. BATC will be responsible to support meetings for the purpose of coordinating launch site operations including joint operations with the launch services contractor. All efforts associated with reprocessing due to a cancelled or aborted launch shall be at DigitalGlobe expense.

12.9 Fueling

BATC shall prepare a fueling plan and the procedures required for fueling the Satellite using an appropriate fueling cart. BATC shall prepare the fueling equipment for hydrazine loading operations and package for shipment to the launch site. BATC shall be responsible for a single fuel loading operation unless multiple fuelings are required due to reasons under BATC's control.

BATC shall provide all required consumables, propellant, safety training, and safety equipment including SCAPE gear required to effectively and safely perform satellite fueling operations. DigitalGlobe shall arrange for disposal of all hazardous wastes and any excess materials through its Launch Services provider.

BATC shall provide support to the launch vehicle/range contractor as required to respond to range specific requirements as they pertain to the handling of the hydrazine operations.

13.0 MISSION PREPARATION AND ON-ORBIT COMMISSIONING

BATC shall assist with Mission preparation and On-orbit Commissioning by performing the following tasks and engineering services.

13.1 Training (CDIL LM-3)

13.1.1 Training Materials

BATC shall develop a training package for each satellite subsystem including the operation of the Instrument to address specifically the changes between WV-2 and WV3. The training package will be based on the Subsystem Description Documents (Paragraph 5.3.10) and include the same minimum information.

The training packages will be delivered on both paper and electronic media.

13.1.2 Training Sessions

For each subsystem, a cognizant BATC subsystem engineer shall present the training materials from paragraph 13.1.1. DigitalGlobe will provide the conference room and necessary projectors to support the presentation. DigitalGlobe reserves the right to videotape the training sessions for the purpose of training future DigitalGlobe personnel.

13.2 Command and Telemetry Handbook (CDIL LM-4)

BATC shall prepare a command and telemetry handbook. This document shall provide a definitive listing of all satellite telemetry and commands with a full description for each. The handbook shall meet the requirements identified in WV159.

13.3 Bus Subsystem Calibration Tools (CDIL LM-5)

BATC shall provide the subsystem calibration tools necessary for on-orbit calibration activities. Depending upon the final satellite design, these tools include but may not be limited to:

[Redacted**]**

13.4 DigitalGlobe Procedure Development Support

DigitalGlobe will generate the on-orbit procedures for the WV3 satellite(s). BATC shall understand the DigitalGlobe Concept-of-Operations and assist the procedure development. BATC shall review DigitalGlobe developed procedures for technical, operational, and safety concerns. **[**Redacted**]**

13.5 Commissioning Plan (CDIL LM-6)

DigitalGlobe shall generate the Commissioning Plan for the WV3 satellite. BATC shall assist the commissioning plan development. This includes assisting with the definition of the nominal sequence of events, required prerequisites, allowed out-of-sequence events, and required technical support for each event. DigitalGlobe will provide information about ground contacts, mission control center operations, and other necessary ground information used to create the commissioning plan(s).

The Commissioning Plan shall include subsystem initialization, calibration, and demonstration of performance requirements including, but not limited to, the following:

[Redacted**]**

13.6 Anomaly Preparations

DigitalGlobe will generate anomaly resolution flow-charts. BATC shall assist with the anomaly flow-chart development including defining the probable anomalies and proper recovery actions/sequences. BATC shall review DigitalGlobe anomaly resolution flow-charts for technical, operational, and safety concerns.

13.7 Satellite Commissioning

13.7.1 Launch and Early Operations (LEOP) Phase

DigitalGlobe shall direct Satellite Launch and Early Operations. BATC shall provide a dedicated engineer for all satellite subsystems except for the Instrument subsystem. This support will run 24 hours per day for up to 7 days at the DigitalGlobe Mission Control Center in Longmont, CO.

13.7.2 Verification and Calibration (V&C) Phase

DigitalGlobe shall conduct the Verification and Calibration activities necessary to achieve Full Operational Capability (FOC). This includes but is not limited to satellite calibration activities such as star tracker and gyroscope calibrations.

Barring anomalies, V&C activities will nominally occur between 0600 and 1800 hours seven days per week. V&C activities will nominally require 30 days. BATC shall provide a dedicated engineer for all satellite subsystems except for the Instrument subsystem.

BATC shall also provide off-hour, on-call engineering support during V&C. A 30 minute or less call-back response is required.

13.7.2.1 Commissioning Reports (CDIL LM-7)

BATC shall produce a Commissioning Report. The report will document spacecraft bus Beginning-of-Life (BOL) performance and will update End-of-Life (EOL) performance predictions for all subsystems for which it has responsibility. At a minimum the report shall include:

a. An explanation of significant deviations from performance metrics as identified in the satellite specification. The explanation shall include the reasons for the performance delta and the anticipated effects, if any, on the subsystem or satellite.

b. An explanation of any known component or sub-component failures encountered during the LEOP or V&C Phases. The explanation shall include the possible causes of the failure, workarounds, updated reliability analysis for the component, subsystem, and satellite, and any impacts to DigitalGlobe's concept of operation.

13.8 Satellite Simulator

BATC shall provide a high fidelity dynamic satellite simulator. The simulator shall simulate satellite responses to stimuli. BATC shall provide sufficient documentation to accurately capture the design, functionality, capabilities, limitations, maintenance, extension, and operation of the simulator.

13.8.1 Satellite Simulator (CDIL LM-8)

BATC shall deliver a high fidelity satellite simulator per the requirements document WV901. Unless otherwise specifically stated in WV901, the depth of functionality of the WV3 simulators shall be the same as provided in the WV2 simulator.

BATC and DigitalGlobe shall mutually agree upon a computer hardware and operating system, called the computing platform, for use in simulator functional and performance acceptance testing. BATC shall execute spacecraft simulator acceptance testing on the identified platform. DigitalGlobe shall execute the simulator testing on the same platform.

The satellite simulator does not need to include the MGB subsystem.

13.8.2 Documentation (CDIL LM-9)

BATC shall provide a Users manual with sufficient detail to:

- Develop simulation scenarios including all configuration files, scripts, procedures, ephemeris, initial conditions, etc
- Start-up, shut-down, and operate the simulation console and all simulator components
- Control the simulation in real-time by setting/adjusting variables
- Inspect low level model telemetry through the simulation console and simulator components directly
- Save, modify, and load simulator state files used to start, pause, resume, and diagnose simulation scenarios
- Understand all log files and log entries
- Understand and recover from all error conditions
- Extend, modify, maintain, build and release the simulator.
- Incorporate a new flight software release into the simulator

In this context, “maintain” refers to the functions required to upgrade to new versions of commercial products such as MatLab or Simulink, alter configuration files, or otherwise customize the implementation.

13.8.3 Source Code (CDIL LM-10)

Per the terms of the software license agreement set forth in the Agreement, BATC shall provide all BATC developed bus simulator software components in source format (non binary). Source code shall be delivered in originating and native format. BATC does not need to provide development tools or COTS software, but BATC shall provide COTS software tool configuration including supplier, part number, and revision levels of tools used (e.g. compilers, linkers, and other development tools) and all reasonable data/information necessary for DigitalGlobe to enhance, modify, compile, and deploy the simulator.

13.8.4 Delivery Schedule

BATC shall provide the simulator, manuals, and source code per Attachment 1. BATC shall deliver an updated simulator based upon LEOP/commissioning on-orbit performance. At a minimum, the following subsystem models will be updated: thermal, power, and ADCS models.

13.8.5 Technical Interchange Meetings and Design Reviews

BATC shall include DigitalGlobe in technical interchange meetings and design reviews such that DigitalGlobe can explain the intent behind various simulator requirements. BATC and DigitalGlobe shall refine high level requirements to detailed requirements during technical interchange meetings. BATC shall hold preliminary and critical design reviews for the Satellite Simulator. BATC shall hold intermediate Technical Interchange Meetings for the following modules at a minimum: the console, sensor and actuator models, redundancy modeling, fault modeling, thermal modeling, and power modeling.

13.9 Maneuver Planners

[Redacted**]**

13.9.1 [Redacted**]**

[Redacted**]**

13.9.2 [Redacted**]**

[Redacted**]**

13.9.3 [Redacted**]**

[Redacted**]**

13.10 Software Test Bench

BATC shall maintain a test bench suitable for the development and troubleshooting of the satellite computer Flight Software. The bench will include at a minimum:

[Redacted**]**

13.11 Ground Stations

DigitalGlobe is responsible for all Ground Station equipment. DigitalGlobe operators will be the lead operators of the Ground Segment.1

13.12 Telemetry Packet Creation and Mapping Tools (CDIL LM-15)

BATC shall provide the documentation, software, and training necessary for making changes to the telemetry received from the satellite. This includes changes to both telemetry packets and the mapping of those packets into various telemetry streams under CCSDS Grade C protocol.

Initial delivery shall coincide with initial delivery of the Command & Telemetry Handbook (C&TH). BATC shall update if necessary at a. launch minus 6 months, b. final pre-launch C&TH delivery, and c. launch plus 6 months. Training shall occur coincident with Training Sessions specified in section 13.1 with delta training, if needed, at the final pre-launch C&TH delivery.

13.13 Telemetry Monitor and Response (CDIL LM-16)

BATC shall provide the documentation, software, and training necessary for making changes to flight software telemetry monitors and response actions on the satellite. This includes creation of new telemetry monitors and response actions, and changes to existing monitors and response actions.

Initial delivery shall coincide with initial delivery of the Command & Telemetry Handbook (C&TH). BATC shall update if necessary at a. launch minus 6 months, b. final pre-launch C&TH delivery, and c. launch plus 6 months. Training shall occur coincident with Training Sessions specified in section 13.1 with delta training, if needed, at the final pre-launch C&TH delivery.

14.0 COMMUNICATIONS FLEXIBILITY AND TT&C DEFINITION

BATC shall work with DigitalGlobe to set/finalize satellite ID’s by CDR.

15.0 FACILITIES

BATC shall provide all facilities necessary to perform the scope of this SOW.

ATTACHMENT 1 CONTRACT DATA ITEMS LIST

Data Item	Title	SOW Ref	Initial Submittal	Updates	Comments
PROGRAM MANAGEMENT					
PM-1	Program Management Structure	4.2	**[**Redacted**]**	As req'd	
PM-2	Master Program Schedule	4.4	**[**Redacted**]**	monthly	
PM-3	Component/Subsystem Design Review Listing	4.5.4	**[**Redacted**]**	As req'd	
PM-4	Component/Subsystem Test Readiness / Data Review Listing	4.5.5	**[**Redacted**]**	As req'd	
PM-5	Documentation Listing	4.6.3	**[**Redacted**]**	No later than Bi-monthly	
PM-6	Action Item List	4.7	**[**Redacted**]**	As req'd	
PM-7	Historical Record of Payments & Payments Forecast	4.8.1 & 4.8.2	**[**Redacted**]**	monthly	
DESIGN					
D-1	Satellite to Instrument ICD	5.3.1	**[**Redacted**]**	As req'd	
D-2	Satellite to Ground Station Narrowband ICD	5.3.2	**[**Redacted**]**	As req'd	
D-3	Satellite to Ground Station Wideband Link ICD	5.3.3	**[**Redacted**]**	As req'd	
D-4	Satellite Environmental Design and Test Specification	5.3.4	**[**Redacted**]**	As req'd	
D-5	Contamination Control Plan	5.3.5	**[**Redacted**]**	As req'd	
D-6	Satellite Level Requirements Verification/Compliance Matrix	5.3.6	**[**Redacted**]**	As req'd	
D-7	Box Level Requirements Verification/Compliance Matrix	5.3.7	**[**Redacted**]**	As req'd	
D-8	Drawings	5.3.8	**[**Redacted**]**	with EOs	
D-9	Performance Compliance Matrix	5.3.9.1	**[**Redacted**]**	Quarterly	
D-10	Risk Management Report	5.3.9.2	**[**Redacted**]**	Monthly	
D-11	Subsystem Description Docs	5.3.10	**[**Redacted**]**	Launch — 4 m; Launch + 4 m	Updates only as required

Data Item	Title	SOW Ref	Initial Submittal	Updates	Comments
D-12	Thermal Analysis and Reports	5.3.11.a	**[**Redacted**]**	As req'd	
D-13	Structural Analysis	5.3.11.b	**[**Redacted**]**	As req'd	
D-14	Control System Analysis	5.3.11.c	**[**Redacted**]**	As req'd	
D-15	Failure Modes and Effects and Criticality Analysis (FMECA)	5.3.11.d	**[**Redacted**]**	As req'd	
D-16	Satellite Reliability Analysis	5.3.11.e	**[**Redacted**]**	As req'd	
D-17	Satellite Imaging Performance	5.3.11.h	**[**Redacted**]**	As req'd	
D-18	Critical Items List	5.3.13	**[**Redacted**]**	As req'd	
D-19	Component Heritage Summary	5.3.14	**[**Redacted**]**	As req'd	
D-20	System Engineering Reports	5.3.16	**[**Redacted**]**		
D-21	Flight Software Code	5.3.16	**[**Redacted**]**	As req'd Final @ PSR	
D-22	Composite Grounding Design	5.3.17	**[**Redacted**]**	As req'd	
D-23	Structural, Power, Thermal, and Reliability Analytical Models	5.3.18	**[**Redacted**]**	L+3 m	
D-24	Coordinate Transformation Document	5.3.19	**[**Redacted**]**	L — 4m	
D-25	Flight Software Users Manual	5.3.20	**[**Redacted**]**	As req'd	
D-26	Component Acceptance Data Package	5.3.21	**[**Redacted**]**	As req'd	
D-27	Jitter Analysis and Test Data	5.3.22	**[**Redacted**]**	As req'd	
D-28	Telescope Boresight Stability Data	5.3.23	**[**Redacted**]**	As req'd	
D-29	Position and Attitude Accuracy	5.3.24	**[**Redacted**]**	As req'd	
D-30	PDR Data Package	4.5.3	**[**Redacted**]**	As req'd	
D-31	CDR Data Package	4.5.3	**[**Redacted**]**	As req'd	
D-32	Satellite to MGB ICD	5.3.25	**[**Redacted**]**	As req'd	
D-33	Electrical GSE ICD	5.3.26	**[**Redacted**]**	As req'd	
D-34	Satellite Requirements Review	4.5.3.1	**[**Redacted**]**		
D-35	Battery Life Prediction	5.3.11.g	**[**Redacted**]**	L+ 1m	

Data Item	Title	SOW Ref	Initial Submittal	Updates	Comments
PRODUCT ASSURANCE					
QA-1	EEE Parts List	6.2.1	**[**Redacted**]**		
QA-2	Material Identification and Use Listing	6.2.2	**[**Redacted**]**	See para 6.3.2	
QA-3	As built configured article list	6.3.1	**[**Redacted**]**	At Launch Readiness Review	
QA-4	Certification of Conformance	6.3.2	**[**Redacted**]**		
QA-5	Product Assurance Reviews	6.4	**[**Redacted**]**		
PROCUREMENT, PRODUCTION & TEST					
PT-1	Make / Buy Plans	7.2	**[**Redacted**]**	As req'd	
PT-2	Program Subcontract Status Report	7.5	**[**Redacted**]**	monthly	
PT-3	WV I&T Plan	9.3	**[**Redacted**]**	As req'd	
PT-4	Battery Maintenance Plan	9.3.d	**[**Redacted**]**	As req'd	
PT-5	System Test Reports	9.6	**[**Redacted**]**		
PT-6	I&T Command and Telemetry Log Files	9.8.4	**[**Redacted**]**	weekly	
PT-7	Reserved	na	**[**Redacted**]**		
PT-8	Instrument Integration Readiness Review Data Package	4.5.3	**[**Redacted**]**		
PT-9	Satellite Environmental Testing Readiness Review Data Package	4.5.3	**[**Redacted**]**		
PT-10	Pre-Ship Review Data Package	4.5.3	**[**Redacted**]**		

Data Item	Title	SOW Ref	Initial Submittal	Updates	Comments
LAUNCH AND MISSION					
LM-1	Missile Systems Pre-Launch Safety Package (MSPSP)	12.1	**[**Redacted**]**	L-52 wks TBD L-26 wks TBD	
LM-2	Preliminary WV3 FEM Preliminary CLA-to-WV3 Design Loads Comparison Final WV3 FEM Final CLA-to-WV3 Design Loads Comparison	12.4.a 12.4.b 12.4.c 12.4.d	**[**Redacted**]** **[**Redacted**]** **[**Redacted**]** **[**Redacted**]**		
LM-3	Training Materials and sessions	13.1.1	**[**Redacted**]**	As revised	
LM-4	Command &Telemetry Handbook	13.2	**[**Redacted**]**	As revised	
LM-5	Calibration Tools	13.3	**[**Redacted**]**	As revised & L+3 m	
LM-6	Commissioning Plan	13.5	**[**Redacted**]**	As revised	
LM-7	Commissioning Report	13.7.2.1	**[**Redacted**]**		
LM-8	Satellite Simulator	13.8.1	**[**Redacted**]**		
LM-9	Satellite Simulator Documentation	13.8.2	**[**Redacted**]**	Final L — 3 m	
LM-10	Satellite Simulator Source Code	13.8.3	**[**Redacted**]**	As req'd	
LM-11	High Fidelity Maneuver Planner	13.9.1	**[**Redacted**]**		
LM-12	Peak Estimator Algorithm	13.9.2	**[**Redacted**]**		
LM-13	Integrative Maneuver Model	13.9.3	**[**Redacted**]**		
LM-14	Satellite Launch Readiness Review Data Package	4.5.3	**[**Redacted**]**		
LM-15	Telemetry Packet Creation and Mapping Tools	13.12	**[**Redacted**]**	See 13.12	
LM-16	Telemetry Monitor and Response	13.13	**[**Redacted**]**	See 13.13	

All items are provided for DigitalGlobe information only. Approvals are not required except for ICDs, changes to ICDs, and as otherwise noted.

ATP +1m is 1 month after Authorization to Proceed.

ATTACHMENT 2 CUSTOMER FURNISHED EQUIPMENT LIST

Item	Title	SOW Ref	Date	Comment
FLIGHT HARDWARE				
CFHW-1	**[**Redacted**]**	10.2.1	**[**Redacted**]**	
CFHW-2	**[**Redacted**]**	10.2.2	**[**Redacted**]**	Flight and corresponding ground keys.
CFHW-3	**[**Redacted**]**	10.2.3	**[**Redacted**]**	
CFHW-4	**[**Redacted**]**	10.2.4	**[**Redacted**]**	
CFHW-5	**[**Redacted**]**	10.2.5	**[**Redacted**]**	
CFHW-6	**[**Redacted**]**	10.2.6	**[**Redacted**]**	
[Redacted**]**				
CSIM-1	**[**Redcated**]**	10.3	**[**Redacted**]**	Remains the property of DG
[Redacted**]**				
CLSE-1	**[**Redacted**]**	10.4.1	**[**Redacted**]**	
CLSE-2	**[**Redacted**]**	10.4.1	**[**Redacted**]**	
CLSE-3	**[**Redacted**]**	10.4.2	**[**Redacted**]**	
[Redacted**]**				
CGSE-1	**[**Redacted**]**	10.5.1.a	**[**Redacted**]**	Remains the property of DG
CGSE-2	**[**Redacted**]**	10.5.1.b	**[**Redacted**]**	Remains the property of DG
CGSE-3	**[**Redacted**]**	10.5.1.c	**[**Redacted**]**	Remains the property of DG
CGSE-4	**[**Redacted**]**	10.5.1.d	**[**Redacted**]**	Remains the property of DG
CGSE-5	**[**Redacted**]**	10.5.2.a	**[**Redacted**]**	Remains the property of DG
CGSE-6	**[**Redacted**]**	10.5.2.b	**[**Redacted**]**	Remains the property of DG
CGSE-7	**[**Redacted**]**	10.5.2.d	**[**Redacted**]**	Remains the property of DG
CGSE-8	**[**Redacted**]**	10.5.3.a	**[**Redacted**]**	Remains the property of DG
CGSE-9	**[**Redacted**]**	10.5.3.b	**[**Redacted**]**	Remains the property of DG
CGSE-10	**[**Redacted**]**	10.5.3.c	**[**Redacted**]**	Remains the property of DG
CGSE-11	**[**Redacted**]**	10.5.4	**[**Redacted**]**	Remains the property of DG

Item	Title	SOW Ref	Date	Comment
CGSE-12	**[**Redacted**]**	10.5.5	**[**Redacted**]**	Remains the property of DG
CGSE-13	**[**Redacted**]**	10.5.6	**[**Redacted**]**	Remains the property of DG
CGSE-14	**[**Redacted**]**	10.5.7	**[**Redacted**]**	Remains the property of DG
CGSE-15	**[**Redacted**]**	10.5.8	**[**Redacted**]**	Remains the property of DG
LAUNCH VEHICLE DATA ITEM				
CLD-1	**WV3 Preliminary CLA**	10.6	**[**Redacted**]**	
CLD-2	**WV3 Final CLA**	10.6	**[**Redacted**]**	
INSTRUMENT DATA ITEM				
CID-1	**WV3 Instrument Structural Data**	10.7.1	**[**Redacted**]**	
CID-2	**WV3 Instrument Thermal Data**	10.7.2	**[**Redacted**]**	

DigitalGlobe will provide this equipment in accordance with the requirements of the Agreement.

FOIA CONFIDENTIAL TREATMENT REQUESTED

PORTIONS OF THIS EXHIBIT MARKED BY [**Redacted**] HAVE BEEN OMITTED PURSUANT TO A REQUEST FOR CONFIDENTIAL TREATMENT FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION

Exhibit 2 to Contract 60150

WorldView-3 Satellite

Specification

Document #	10329655
Revision #	1.0
Release Date	20 August 2010
Prepared by	George Hunyadi
Approved by	Keith Constantinides

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Change Record

Revision	Date	Sections	Description of Change
1.0	20 Aug 2010	All	Initial Release

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1. SCOPE

1.1 Purpose

This document describes the requirements for design and implementation of the DigitalGlobe WorldView-3 Satellite, being constructed to support DigitalGlobe commercial imaging operations.

1.2 System Overview

Ball Aerospace & Technology Corporation (BATC) is providing the integrated WorldView-3 imaging satellite to DigitalGlobe, Inc. As the Space Segment Integrator (SSI), BATC is manufacturing a Spacecraft Bus that can accommodate the panchromatic + multi-spectral WorldView-3 Instrument. This will be the same Bus design as used for predecessor WorldView Satellites. The Instrument is being supplied by ITT Industries Space Systems Division (ITT) to DigitalGlobe, with miscellaneous support units / functions provided by BATC. All ITT equipment will be provided as Customer Furnished Equipment (CFE) to BATC for Satellite integration. As the SSI, BATC will then perform Satellite level testing, prepare the Satellite for launch, and support on-orbit checkout of the Satellite.

The Satellite will be in a sun-synchronous orbit at an altitude between 450 and 830 km with a descending equator crossing time between 10:00 AM and 2:00 PM. **[**Redacted**]** Image data is recorded by the Spacecraft Bus and is normally downlinked to DigitalGlobe ground stations. However, direct downlink to user sites may also be performed in certain circumstances. Direct downlink is via the normal wideband downlink.

A key feature of the WordView-3 Satellite is Direct Tasking, where imaging and downlink parameters are directly uplinked from a customer's ground station to the satellite, and image data is directly downlinked to a customer's ground station, on the same and/or successive passes. Direct Tasking supports an expanded customer base and fulfills these customers' desires to compress the overall planning-tasking-collection-downlink timeline and to not expose their task list to outside parties (including DigitalGlobe) prior to image collection. Full command authority is maintained by DigitalGlobe, with key commands needed to initiate the image and downlink operations uploaded from DigitalGlobe ground stations.

1.3 Document Overview

This document specifies functional, performance and interface requirements for the integrated Satellite and the Spacecraft Bus, including external Satellite interfaces, Instrument-Bus interfaces and Instrument integration, Bus and Satellite test, launch, and operational requirements. Separate Interface Control Documents (ICDs) detail the specifics of the Instrument-Bus interfaces and Integration and Test processes. Satisfaction of the Satellite-level requirements contained in this specification assume the Instrument provided as CFE meets its requirements, which are documented separately. As the SSI, BATC will refer to the separate Instrument Specifications as necessary to maintain the Spacecraft Bus to Instrument ICDs and develop an integration and test plan sufficient to ensure the integrated Satellite meets its system-level functional and performance requirements.

This specification may contain requirements that have not been fully defined. These open requirements are indicated by a TBR, and/or TBD:

TBR — To Be Resolved: Indicates parameters that exist, but may change after discussions with Contractor and others (e.g.: DigitalGlobe).

TBD — To Be Determined: Indicates parameters that have not yet been determined.

2. APPLICABLE DOCUMENTS

This document is the Satellite Specification. This specification defines the technical requirements called out in the Contract and a Statement of Work (SOW). The Contract and SOW define schedule requirements, deliverable items and programmatics. However, in the event of a conflict between a specific requirement herein and documents, then the Contract, the Statement of Work, this document, and Applicable documents shall govern in this order. If the revision is not specifically noted, the latest revision of each document applies.

At contract signing, the Environmental Design and Test Specification and Interface Control Documents from predecessor DigitalGlobe WorldView satellite programs listed below shall be considered the baseline release for WV-3. It is anticipated that the WV-3 versions of these documents will require few modifications from the predecessor baselines, with changes focused in a few key areas as driven by WV-3 unique requirements (for example enhanced Instrument thermal control and updated power values). The first release of the WV-3 version of each document shall supersede the predecessor version, which shall no longer be considered an Applicable Document.

Although the Satellite Integrating Contractor physically maintains many of these ICDs, their development is inherently a cooperative process. Accordingly, the latest released ICD revision shall always apply, where release is predicated on mutual agreement between all involved parties; for example the Instrument to Spacecraft ICD requires consensus between the Satellite Integrating Contractor, the Instrument Contractor, and DigitalGlobe.

2.1 Government Documents

2.1.1 [Redacted**]**

2.1.2 [Redacted**]**

2.2 Non-Government Documents

2.2.1 [Redacted**]**

2.2.2 [Redacted**]**

2.2.3 [Redacted**]**

2.3 Reference Documents

[Redacted**]**

3. REQUIREMENTS

Remarks contained as *Rationale/Info* shall NOT be considered a formal part of this specification and are provided for reference only.

[Redacted**]**

3.1 Satellite Definition

This Section defines fundamental terminology and identifies the basic Satellite functions along with the provider of each function. It also provides external interface requirements and internal interface requirements for the equipment to be provided **[**Redacted**]** to the SSI.

3.1.1 Satellite Diagrams

3.1.1.1 Component Tree

[Redacted**]** defines the major elements, subsystems, assemblies and units/functions of the Satellite and shows how they are allocated between DigitalGlobe's contractors. The figure also indicates items that are delivered to the SSI **[**Redacted 1 Page**]**.

3.1.1.2 Coordinate System

The base coordinate system used for all major Satellite element and segment mechanical interfaces shall be as shown in

for example, Instrument to Spacecraft Bus and Satellite to Launch Vehicle.

Other coordinate systems may be used as appropriate within elements and/or subsystems; **[**Redacted**]**. The relationships between the base coordinate system and other coordinate systems shall be explicitly shown in the appropriate documents (drawings, interface control documents, etc.).

[Redacted**]**

3.1.2 Satellite Interfaces

3.1.2.1 Non-interference with Outside Systems

3.1.2.1.1 [Redacted**]**

The Satellite shall not interfere with **[**Redacted**]**.

3.1.2.1.2 [Redacted**]**

During normal operations, RF emissions from the Satellite shall not exceed the limits specified in the **[**Redacted**]**.

3.1.2.1.3 [Redacted**]**

All RF emissions shall use the frequency allocation of **[**Redacted**]**, with out-of-band emissions compliant with **[**Redacted**]**.

3.1.2.2 Satellite-Global Positioning System Interfaces

3.1.2.2.1 Compatibility

The Spacecraft Bus shall be compatible with standard GPS interfaces as defined in **[**Redacted**]**.

3.1.2.3 Satellite-Ground Interfaces

The following paragraphs define high-level requirements for Satellite-Ground compatibility; detailed interface requirements shall be defined in the Narrowband and Wideband Satellite-Ground ICD.

[Redacted**]**

3.1.2.3.1 Compatibility

The Satellite Narrowband and Wideband Communications Subsystems shall be compatible with **[**Redacted**]**.

3.1.2.3.2 Remote Ground Terminal Locations

Remote Ground Terminals (RGTs) will be located as follows:

[Redacted**]**

3.1.2.3.3 Command Uplink

3.1.2.3.3.1 Effective Isotropic Radiated Power

The minimum Effective Isotropic Radiated Power (EIRP) of the command uplink antenna will be **[**Redacted**]**.

3.1.2.3.3.2 Axial Ratio

The command uplink antenna will transmit using **[**Redacted**]**.

3.1.2.3.4 Narrowband Telemetry Downlink

3.1.2.3.4.1 Figure of Merit (G/T)

The minimum G/T of the Narrowband receive antenna will be as follows across the frequency range of **[**Redacted**]** under all conditions, for the RGT locations defined in Section 3.1.2.3.2 Remote Ground Terminal Locations. These values include the effects of antenna pointing error and atmospheric conditions.

[Redacted**]**

3.1.2.3.4.2 Axial Ratio

The Narrowband receive antenna will receive using **[**Redacted**]**.

3.1.2.3.4.3 Implementation Loss

The demodulator implementation loss for the Narrowband telemetry receiver will be **[**Redacted**]**.

3.1.2.3.5 Wideband Data Downlink

3.1.2.3.5.1 Figure of Merit (G/T)

The minimum G/T of the Wideband receive antenna will be as follows across the frequency range of **[**Redacted**]** under all conditions, for the RGT locations defined in Section 3.1.2.3.2

Remote Ground Terminal Locations. These values include the effects of antenna pointing error and atmospheric conditions.

[Redacted**]**

3.1.2.3.5.2 Axial Ratio

The Wideband receive antenna will receive using **[**Redacted**]**.

3.1.2.3.5.3 Implementation Loss

The demodulator implementation loss for the wideband telemetry receiver will be **[**Redacted**]**.

3.1.2.4 Satellite-Launch Vehicle Interfaces

The following paragraphs define high-level requirements for Satellite — Launch Vehicle compatibility; detailed interface requirements shall be defined in the Mission Specification.

3.1.2.4.1 Compatibility

The Satellite design shall be compatible with the **[**Redacted**]**

3.1.2.4.2 [Redacted**]**

The Satellite shall accommodate **[**Redacted**]**.

3.1.2.4.3 Umbilical

The Satellite shall accommodate an umbilical to support all required functions for launch mode, including at a minimum the following critical electrical functions:

[Redacted**]**

3.1.3 Customer Furnished Equipment

3.1.3.1 Instrument

The Instrument will be provided to the SSI **[**Redacted**]**. The SSI shall provide interfaces as specified herein, with detailed interface requirements provided in accordance with the **[**Redacted**]**.

3.1.3.1.1 Physical, Structural and Mechanical Requirements

3.1.3.1.1.1 Configuration

The Spacecraft Bus shall accommodate the following major Instrument assemblies and/or units:

[Redacted**]**

3.1.3.1.1.2 Size

The Spacecraft Bus shall be capable of supporting the Instrument assemblies/units as specified in the Spacecraft Bus to Instrument ICDs.

3.1.3.1.1.3 Mass Properties

[Redacted**]**

3.1.3.1.1.4 EOA-Mounted Spacecraft Bus Equipment

The SSI shall provide the following equipment to be mounted on the EOA:

[Redacted**]**

3.1.3.1.1.5 EOA Fields of View

The Spacecraft Bus shall provide the Instrument with **[**Redacted**]**.

3.1.3.1.1.6 EOA Purge Fitting

The Satellite shall be configured to provide a purge fitting **[**Redacted**]**.

3.1.3.1.1.7 Assembly, Integration and Test

a) To the maximum extent possible, the Satellite configuration shall permit independent integration of all Instrument assemblies/units and access to internal Instrument test ports and harness connections.

b) The Satellite configuration shall allow clear access to Instrument equipment essential to integration and test activities, for example: test ports, purge lines, aperture cover, interface connectors, etc.

3.1.3.1.1.8 EOA Vibration Environment (**TBR**)

The SI shall ensure that the **[**Redacted 2 Pages**]**

3.1.3.1.1.9 [Redacted**]**

The Spacecraft Bus shall provide radiation shielding for the **[**Redacted**]**.

3.1.3.1.2 Thermal Interfaces

The Spacecraft Bus shall perform the following thermal functions, with interfaces to the Instrument as specified in the Spacecraft Bus to Instrument ICDs:

[Redacted**]**

3.1.3.1.3 Power Interfaces

The Spacecraft Bus shall provide electrical power to the Instrument as specified below, with the breakdown of individual unit powers and other characteristics as specified in the Spacecraft Bus to Instrument ICDs.

3.1.3.1.3.1 Instrument Power Feeds

The Spacecraft Bus shall provide power to all Instrument units as follows:

[Redacted**]**

3.1.3.1.3.2 Voltage

The Spacecraft Bus shall present power at the Instrument interfaces as follows:

[Redacted**]**

3.1.3.1.3.3 [Redacted**]**

[Redacted**]**

3.1.3.1.3.4 Average Operating Power

During normal operations, the Spacecraft Bus shall be able to perform the **[**Redacted**]**

3.1.3.1.3.5 Survival Power

When in Emergency Mode, the Spacecraft Bus shall provide power as specified in **[**Redacted**]** via the Essential Bus, as specified in Section 3.1.3.1.3.1 Instrument Power Feeds.

3.1.3.1.3.6 Maximum Power

a) The Spacecraft Bus shall be capable of supporting the sustained maximum Instrument power specified in **[**Redacted**].**

b) The Spacecraft Bus shall ensure **[**Redacted**]**

3.1.3.1.4 Command and Telemetry Interfaces

The Spacecraft Bus shall provide the following command and telemetry interfaces to the Instrument, all of which shall be cross-strapped between the primary and redundant Spacecraft Bus electronics and primary and redundant Instrument electronics:

[Redacted**]**

3.1.3.1.4.1 Instrument Commanding

Using the specified data interfaces, the Spacecraft Bus shall forward commands to the Instrument, **[**Redacted**]** as documented in the Spacecraft Bus to Instrument ICDs.

3.1.3.1.4.2 Image Start and Stop Commands

The commands for image **[**Redacted**]** shall be issued from the Spacecraft Bus **[**Redacted**]**

3.1.3.1.4.3 Image Duration

a) The minimum Image duration possible shall be no more than **[**Redacted**]**.

b) There shall be **[**Redacted**]**.

c) Image durations shall be commandable in **[**Redacted**]**.

[Redacted**]**

3.1.3.1.4.4 Instrument Telemetry

Using the specified data interfaces, the Spacecraft Bus shall receive telemetry from the Instrument as documented in the Spacecraft Bus to Instrument ICDs. The following rules shall be applied to Instrument telemetry:

[Redacted**]**

3.1.3.1.4.5 [Redacted**]**

The Spacecraft Bus shall provide a **[**Redacted**]** as follows:

[Redacted**]**

3.1.3.1.5 Image Data Interfaces

The Spacecraft Bus shall provide image data interfaces **[**Redacted**]**

3.1.3.1.5.1 General Interface Definition

The Spacecraft Bus to Instrument data interface shall be as follows:

[Redacted**]**

3.1.3.1.5.2 Maximizing Storage and Downlink Efficiency

The Spacecraft Bus to Instrument data interface shall be capable of supporting the following Instrument configurations and shall ensure

[Redacted**]**

3.1.3.1.6 EOA Thermal Control Interfaces

[Redacted**]**

3.1.3.1.6.1 [Redacted**]**

[Redacted**]**

3.1.3.1.6.2 [Redacted**]**

[Redacted**]**

3.1.3.1.6.3[Redacted**]**

[Redacted**]**

3.1.3.2 MGB

The MGB will be provided to the SSI **[**Redacted**]**. The SSI shall meet the MGB requirements specified in the MGB Requirements Documents and Interface Control Documents.

3.2 Satellite Characteristics

This Section defines the characteristics of the Satellite required to support the mission with respect to performance, physical characteristics, reliability, availability, and environmental conditions. The SSI shall derive and otherwise define lower level requirements necessary to implement the requirements of this specification, including those that are passed to the Instrument Contractor via the Spacecraft Bus to Instrument ICD, the Environmental Design and Test Specification, and other relevant documents.

3.2.1 Performance

3.2.1.1 General Mission Requirements

3.2.1.1.1 Mission Life

The Satellite shall meet all on-orbit performance requirements for a Mission Life of **[**Redacted**]**. The end of this period is defined as End of Life (EOL).

[Redacted**]**

3.2.1.1.2 Orbits

3.2.1.1.2.1 General Orbit Compatibility

The Satellite shall be capable of operating at any equatorial altitude between **[**Redacted**]**

3.2.1.1.2.2 Reserved

3.2.1.1.2.3 Mission Orbit

The Mission Orbit shall be defined as:

[Redacted**]**

3.2.1.1.2.4 Reserved

3.2.1.1.2.5 Insertion Orbit and Dispersions

The Satellite shall be compatible with being inserted directly into any of the orbits defined under General Orbit Compatibility,

[Redacted**]**

3.2.1.2 Satellite Operating Modes

3.2.1.2.1 Normal Operating Modes

The Satellite shall, at a minimum, provide the operating modes defined in Table 3-1 Normal Operating Modes, with the following additional requirements:

[Redacted**]**

Table 3-1 Normal Operating Modes

Mode	Basic Satellite State	Satellite Pointing
Cruise Mode	**[**Redacted**]**	Satellite oriented as required to ensure: **[**Redacted**]**
[Redacted**]**		**[**Redacted**]**
[Redacted**]**	**[**Redacted**]**	**[**Redacted**]**
[Redacted**]**		**[**Redacted**]**

3.2.1.2.2 Special / Contingency Modes

The Satellite shall, at a minimum, provide the modes defined in **[**Redacted**]**, with the following additional requirements:

[Redacted**]**

Table 3-2 Special / Contingency Modes

Mode	Basic Satellite State	Satellite Pointing
[Redacted**]**	**[**Redacted**]**	**[**Redacted**]**
[Redacted**]**	**[**Redacted**]**	**[**Redacted**]**
[Redacted**]**	**[**Redacted**]**	

Table 3-3 Simultaneous Operations

Simultaneous Operations	Normal Operating Modes					Special / Contingency Modes		
	[**Redacted**]	[**Redacted**]	[**Redacted**]	[**Redacted**]	[**Redacted**]	[**Redacted**]	[**Redacted**]	[**Redacted**]
Recording Image Data			[**Redacted**]	[**Redacted**]				
Recording Ancillary Data	[**Redacted**]	[**Redacted**]	[**Redacted**]	[**Redacted**]	[**Redacted**]			
Transmitting recorded Image and Ancillary Data	[**Redacted**]		[**Redacted**]	[**Redacted**]	[**Redacted**]			
Recording Satellite state of health data	[**Redacted**]	[**Redacted**]	[**Redacted**]	[**Redacted**]	[**Redacted**]		[**Redacted**]	
Transmitting stored state-of-health data	[**Redacted**]	[**Redacted**]	[**Redacted**]	[**Redacted**]	[**Redacted**]		[**Redacted**]	
Transmitting real-time state-of-health data	[**Redacted**]	[**Redacted**]	[**Redacted**]	[**Redacted**]	[**Redacted**]	[**Redacted**]	[**Redacted**]	
Preserving stored Image and Ancillary Data	[**Redacted**]	[**Redacted**]	[**Redacted**]	[**Redacted**]	[**Redacted**]		[**Redacted**]	
Preserving stored state-of-health data	[**Redacted**]	[**Redacted**]	[**Redacted**]	[**Redacted**]	[**Redacted**]		[**Redacted**]	[**Redacted**]
Receiving and executing real-time commands	[**Redacted**]	[**Redacted**]	[**Redacted**]	[**Redacted**]	[**Redacted**]	[**Redacted**]	[**Redacted**]	[**Redacted**]
Receiving and storing stored commands	[**Redacted**]	[**Redacted**]	[**Redacted**]	[**Redacted**]	[**Redacted**]		[**Redacted**]	
Executing stored commands	[**Redacted**]	[**Redacted**]	[**Redacted**]	[**Redacted**]	[**Redacted**]	[**Redacted**]	[**Redacted**]	

[Redacted**]**

3.2.1.2.3 Intermediate and Transitional Modes

Additional intermediate and transitional modes may be defined for the Satellite and Spacecraft Bus. **[**Redacted**]**

3.2.1.3 Pre-Launch Operations

3.2.1.3.1 Ground Storage

The Satellite shall be capable of being stored under proper conditions for up to **[**Redacted**]** without the need for refurbishment.

3.2.1.3.2 Launch Delay

a) The Satellite shall be capable of remaining loaded with propellant for a minimum of **[**Redacted**]** prior to launch, while maintaining safety and status monitoring.

b) The Satellite shall be capable of launch for up to **[**Redacted**]** following the integration of the Satellite to the Launch Vehicle without the need for demate, while maintaining safety and status monitoring.

c) The Satellite shall be designed to permit **[**Redacted**]**.

3.2.1.4 Early Orbit Operations

3.2.1.4.1 Autonomous Operations After Separation

Following the separation event, the Satellite shall autonomously:

[Redacted**]**

3.2.1.4.2 First [Redacted**]**

Following the Autonomous Operations after Separation, the Satellite shall pose no constraints on operation such that:

[Redacted**]**

3.2.1.4.3 Commissioning

The Satellite shall pose no constraints on operation such that total Satellite on-orbit performance can be fully verified as specified in the Statement of Work.

3.2.1.5 Mission Operations

3.2.1.5.1 Viewing Angles

Viewing angles referred to in the **[**Redacted**]** and elsewhere in this specification shall be as defined below.

[Redacted**]**

3.2.1.5.1.1 Nominal Field of Regard

The Nominal Field of Regard shall be defined as a **[**Redacted**]**

3.2.1.5.1.2 Maximum Field of Regard

The Maximum Field of Regard shall be defined as a **[**Redacted**]**

3.2.1.5.1.3 [Redacted**]**

[Redacted**]**

3.2.1.5.1.4 [Redacted**]**

[Redacted**]**

3.2.1.5.1.5 Instrument Operating Modes

The Satellite shall allow operation of the Instrument in the modes specified in **[**Redacted**].**

3.2.1.5.2 Imaging and Downlink Operations

The Satellite shall be capable of performing the imaging and downlink operations specified below assuming **[**Redacted**]**

3.2.1.5.2.1 [Redacted**]**

[Redacted 1 Page**]**

3.2.1.5.2.2 Wideband and Narrowband Downlinks

It shall be possible to perform both Wideband and Narrowband downlinks as follows:

[Redacted**]**

3.2.1.5.2.3 Instrument Mass Properties for **[**Redacted**]**

For purposes of verifying the Satellite's ability to perform the DIS, **[**Redacted**]**

3.2.1.5.2.4 [Redacted**]**

[Redacted**]**

3.2.1.5.3 Stereo Imaging

a) The Satellite shall be capable of collecting the stereo imagery **[**Redacted**]**

b) The Satellite shall be capable of collecting stereo imagery **[**Redacted**]**

3.2.1.5.4 Off-Nadir Imaging

The Satellite shall be capable of supporting off-nadir image collections as follows:

[Redacted**]**

3.2.1.5.5 [Redacted**]**

3.2.1.5.5.1 [Redacted**]**

[Redacted**]**

3.2.1.5.5.2 [Redacted**]**

[Redacted**]**

3.2.1.5.6 [Redacted**]**

[Redacted**]**

3.2.1.6 Instrument Requirements

3.2.1.6.1 Integrated Bus/Instrument Performance Effects

The SSI shall perform appropriate integrated Satellite-level analyses and design work in order to ensure the Satellite meets the following performance requirements. LOS motion shall be calculated using an Instrument Finite Element Model (FEM) provided by the Instrument Contractor as defined under Applicable Documents, which shall be assumed to meet the following requirements:

[Redacted**]**

3.2.1.6.1.1 [Redacted**]**

[Redacted**]**

3.2.1.6.1.2 [Redacted**]**

[Redacted**]**

3.2.1.6.2 [Redacted**]**

[Redacted**]**

3.2.1.6.2.1 [Redacted**]**

[Redacted**]**

3.2.1.6.2.2 [Redacted**]**

[Redacted**]**

3.2.1.6.3 [Redacted**]**

[Redacted**]**

3.2.1.6.3.1 [Redacted**]**

[Redacted**]**

3.2.1.6.3.2 [Redacted**]**

[Redacted**]**

3.2.1.6.3.3 [Redacted**]**

[Redacted**]**

3.2.1.6.3.4 [Redacted**]**

[Redacted**]**

3.2.1.6.3.4.1 [Redacted**]**

[Redacted**]**

3.2.1.6.3.4.2 [Redacted**]**

[Redacted**]**

3.2.1.6.3.4.3 [Redacted**]**

[Redacted**]**

3.2.1.6.3.5 [Redacted**]**

[Redacted**]**

3.2.1.6.3.5.1 [Redacted**]**

[Redacted**]**

3.2.1.6.3.5.2 [Redacted**]**

[Redacted**]**

3.2.1.6.3.6 [Redacted**]**

[Redacted**]**

3.2.1.6.4 Instrument Cleanliness

[Redacted**]**

3.2.1.6.4.1 [Redacted**]**

[Redacted**]**

3.2.1.6.4.2 [Redacted**]**

[Redacted**]**

3.2.1.7 Bus Subsystem Requirements

In addition to supporting all subsystem-level requirements derived from the Satellite-level requirements specified in the above sections, Spacecraft Bus subsystems shall meet the specific requirements contained within this section.

3.2.1.7.1 [Redacted**]**

3.2.1.7.1.1 [Redacted**]**

[Redacted**]**

3.2.1.7.1.2 [Redacted**]**

[Redacted**]**

3.2.1.7.1.3 [Redacted**]**

[Redacted**]**

3.2.1.7.1.3.1 [Redacted**]**

[Redacted**]**

3.2.1.7.1.3.2 [Redacted**]**

[Redacted**]**

3.2.1.7.1.3.3 [Redacted**]**

[Redacted**]**

3.2.1.7.1.3.4 [Redacted**]**

[Redacted**]**

3.2.1.7.1.3.5 [Redacted**]**

[Redacted**]**

3.2.1.7.1.3.6 [Redacted**]**

[Redacted**]**

3.2.1.7.1.3.7 **[**Redacted**]**

[Redacted**]**

3.2.1.7.1.3.8 [Redacted**]**

[Redacted**]**

3.2.1.7.1.4 [Redacted**]**

3.2.1.7.1.4.1 [Redacted**]**

[Redacted**]**

3.2.1.7.1.4.2 [Redacted**]**

[Redacted**]**

3.2.1.7.1.4.3 [Redacted**]**

[Redacted**]**

3.2.1.7.1.4.4 [Redacted**]**

[Redacted**]**

3.2.1.7.2 ADCS

3.2.1.7.2.1 [Redacted**]**

[Redacted**]**

3.2.1.7.2.2 [Redacted**]**

3.2.1.7.2.2.1 [Redacted**]**

[Redacted**]**

3.2.1.7.2.2.2 [Redacted**]**

[Redacted**]**

3.2.1.7.2.2.3 [Redacted**]**

[Redacted**]**

3.2.1.7.2.2.4 [Redacted**]**

[Redacted**]**

3.2.1.7.2.2.5 [Redacted**]**

[Redacted**]**

3.2.1.7.2.3 [Redacted**]**

[Redacted**]**

3.2.1.7.2.4 [Redacted**]**

3.2.1.7.2.4.1 [Redacted**]**

[Redacted**]**

3.2.1.7.2.4.2 [Redacted**]**

[Redacted**]**

3.2.1.7.2.5 [Redacted**]**

3.2.1.7.2.6 [Redacted**]**

[Redacted**]**

3.2.1.7.2.7 [Redacted**]**

[Redacted**]**

3.2.1.7.2.8 [Redacted**]**

[Redacted**]**

3.2.1.7.2.9 [Redacted**]**

[Redacted**]**

3.2.1.7.2.9.1 [Redacted**]**

[Redacted**]**

3.2.1.7.2.9.2 [Redacted**]**

[Redacted**]**

3.2.1.7.2.9.3 [Redacted**]**

[Redacted**]**

3.2.1.7.2.9.4 [Redacted**]**

[Redacted**]**

3.2.1.7.2.9.5 [Redacted**]**

[Redacted**]**

3.2.1.7.2.10 [Redacted**]**

[Redacted**]**

3.2.1.7.2.11 Solar Arrays

In all modes of operation except Launch Mode, the ADCS shall be capable of pointing the Solar Array as follows:

[Redacted**]**

3.2.1.7.2.12 Wideband Antenna

While in Cruise Mode, Earth or Fixed Frame Imaging Mode, or maneuvering to/from Images, the ADCS shall be capable of pointing the Wideband Antenna as follows:

[Redacted**]**

3.2.1.7.3 Propulsion

3.2.1.7.3.1 Minimum Delta-V Capability

The Propulsion subsystem shall provide at least **[**Redacted**]**

3.2.1.7.3.2 Propellant Budget

The SSI shall develop and maintain a **[**Redacted**]**

3.2.1.7.3.3 Inefficiencies of Operation

The propellant budget shall, at a minimum, account for the following inefficiencies of operation:

[Redacted**]**

3.2.1.7.3.4 Thruster Orientation

[Redacted**]**

3.2.1.7.3.5 [Redacted**]**

[Redacted**]**

3.2.1.7.4 Flight Software

3.2.1.7.4.1 [Redacted**]**

The Flight Software shall provide the capability to **[**Redacted**]**

3.2.1.7.4.2 Modularity

The design of the Satellite flight software shall be **[**Redacted**]**.

3.2.1.7.4.2.1 Module Size

The patching or replacing of any single Satellite flight software module shall not require more than **[**Redacted**]** or the **[**Redacted**]** shall be uploadable in no more than **[**Redacted**]** split across multiple contacts.

[Redacted**]**

3.2.1.7.4.3 Parameterization

The design of the Satellite flight software shall incorporate parameterization to support operational flexibility and command versatility.

[Redacted**]**

3.2.1.7.4.3.1 Parameter Range and Resolution

Parameters shall have enough range and resolution to permit operation of the Satellite to the requirements of this specification without having to patch the Satellite Flight software.

3.2.1.7.4.3.2 [Redacted**]**

[Redacted**]**

3.2.1.7.4.4 [Redacted**]**

[Redacted**]**

3.2.1.7.4.4.1 [Redacted**]**

[Redacted**]**

3.2.1.7.4.4.2 [Redacted**]**

[Redacted**]**

3.2.1.7.4.5 [Redacted**]**

[Redacted**]**

3.2.1.7.4.6 [Redacted**]**

[Redacted**]**

3.2.1.7.4.7 [Redacted**]**

[Redacted**]**

3.2.1.7.4.7.1 [Redacted**]**

[Redacted**]**

3.2.1.7.4.8 [Redacted**]**

[Redacted**]**

3.2.1.7.4.9 [Redacted**]**

[Redacted**]**

3.2.1.7.4.10 [Redacted**]**

[Redacted**]**

3.2.1.7.4.11 [Redacted**]**

[Redacted**]**

3.2.1.7.5 C&DH

3.2.1.7.5.1 Commands

3.2.1.7.5.1.1 Command Formats

Commands shall be formatted as specified in the **[**Redacted**]**.

3.2.1.7.5.1.2 Command Length

Commands shall be **[**Redacted**]** to assure compatibility with **[**Redacted**]**, with **[**Redacted**]** and **[**Redacted**]**.

3.2.1.7.5.1.3 [Redacted**]**

[Redacted**]**

3.2.1.7.5.1.4 [Redacted**]**

[Redacted**]**

3.2.1.7.5.1.5 [Redacted**]**

[Redacted**]**

3.2.1.7.5.1.6 [Redacted**]**

[Redacted**]**

3.2.1.7.5.1.7 [Redacted**]**

[Redacted**]**

3.2.1.7.5.1.8 [Redacted**]**

[Redacted**]**

3.2.1.7.5.1.9 [Redacted**]**

[Redacted**]**

3.2.1.7.5.1.10 Unique Satellite Identification

The Satellite identification used for command verification and acceptance shall be unique for each redundancy string and shall be different than IDs used on previous DigitalGlobe satellites.

[Redacted**]**

3.2.1.7.5.2 State-of-Health Telemetry

3.2.1.7.5.2.1 Telemetry Content

The C&DH subsystem shall collect and format housekeeping telemetry for the Spacecraft Bus and Instrument sufficient to provide the following capabilities on the ground:

[Redacted**]**

3.2.1.7.5.2.2 Telemetry Format

The C&DH subsystem shall format and transmit the **[**Redacted**]** as follows:

[Redacted**]**

3.2.1.7.5.2.3 [Redacted**]**

[Redacted**]**

3.2.1.7.5.2.4 [Redacted**]**

[Redacted**]**

3.2.1.7.5.2.5 [Redacted**]**

[Redacted**]**

3.2.1.7.5.2.6 Unique Satellite Identification

All telemetry data shall periodically include a Satellite identification that is unique to each redundancy string and different than IDs used on previous DigitalGlobe satellites.

[Redacted**]**

3.2.1.7.5.2.7 Storage Capacity

The C&DH subsystem shall be capable of storing at least 36 hours of telemetry at an average rate of **[**Redacted**]**.

[Redacted**]**

3.2.1.7.5.2.8 [Redacted**]**

[Redacted**]**

3.2.1.7.5.2.9 [Redacted**]**

[Redacted**]**

3.2.1.7.5.3 [Redacted**]**

[Redacted**]**

3.2.1.7.5.4 Ancillary Data

During normal operations, the C&DH subsystem shall collect Ancillary Data from Bus and Instrument equipment and forward it **[**Redacted**]**.

3.2.1.7.5.4.1 Standard Content

The standard content of the two Ancillary Data streams shall be as defined in **[**Recated**]**.

[Redacted**]**

***Table 3-4 Standard Ancillary Data Content**

Data Type	Description	Frequency	Minimum Rate
	Continuous Ancillary Data Stream		
[Redacted**]**	**[**Redacted**]**	**[**Redacted**]**	**[**Redacted**]**
[Redacted**]**			
	Image Ancillary Data Stream		
[Redacted**]**	**[**Redacted**]**	**[**Redacted**]**	**[**Redacted**]**
[Redacted**]**	**[**Redacted**]**	**[**Redacted**]**	
[Redacted**]**	**[**Redacted**]**	**[**Redacted**]**	
[Redacted**]**	**[**Redacted**]**	**[**Redacted**]**	
[Redacted**]**	**[**Redacted**]**	**[**Redacted**]**	
[Redacted**]**	**[**Redacted**]**	**[**Redacted**]**	
[Redacted**]**	**[**Redacted**]**	**[**Redacted**]**	
[Redacted**]**			

3.2.1.7.5.4.2 Format

The C&DH subsystem shall format the **[**Redacted**]**

3.2.1.7.5.4.3 Redefinable Content

It shall be possible to independently re-define the content of **[**Redacted**]**, subject to data bandwidth constraints.

[Redacted**]**

3.2.1.7.5.4.4 [Redacted**]**

[Redacted**]**

3.2.1.7.5.4.5 Data Transfer

The C&DH subsystem shall transfer the Ancillary Data to the MDR as follows:

[Redacted**]**

3.2.1.7.5.4.6 [Redacted**]**

[Redacted**]**

3.2.1.7.5.4.7 [Redacted**]**

[Redacted**]**

3.2.1.7.5.5 Command & Telemetry Protocol

The satellite shall meet the requirements for the satellite command and telemetry protocol as specified in the **[**Redacted**]**

exv10w2

3.2.1.7.6 Narrowband Communications

3.2.1.7.6.1 Command Uplink

3.2.1.7.6.1.1 Uplink Bit Rate

The Command Uplink shall operate at one of two selectable rates, including all headers and other formatting, as follows:

[Redacted**]**

3.2.1.7.6.1.2 Bit Error Rate

The Command Uplink shall provide a bit error rate not to exceed **[**Redacted**]**.

3.2.1.7.6.1.3 Availability

The Command Uplink shall provide an availability of at least **[**Redacted**]**.

3.2.1.7.6.1.4 Elevation Angle

The Command Uplink shall operate at elevation angles of **[**Redacted**]**.

3.2.1.7.6.1.5 Link Margin

The Command Uplink shall meet all performance and functional requirements specified herein at EOL with a link margin of at least **[**Redacted**]**.

3.2.1.7.6.1.6 [Redacted**]**

[Redacted**]**

3.2.1.7.6.1.7 Modulation

The Command Uplink shall be modulated using **[**Redacted**]**.

3.2.1.7.6.1.8 Radio Frequency

The nominal Command Uplink carrier frequency shall be **[**Redacted**]**.

3.2.1.7.6.1.9 Antenna Coverage

Command Uplink antenna coverage shall be provided as follows:

[Redacted**]**

3.2.1.7.6.1.10 Antenna Polarization

The Command Uplink antenna shall use **[**Redacted**]**

3.2.1.7.6.1.11 Idle Patterns

[Redacted**]**

3.2.1.7.6.2 Telemetry Downlink

3.2.1.7.6.2.1 **[**Redacted**]** *Telemetry Bit Rate*

The Telemetry Downlink shall be at the following selectable rates, including all header and other formatting required to structure the

commands:

[Redacted**]**

3.2.1.7.6.2.2 **[**Redacted**]** *Telemetry Bit Rate*

The Telemetry Downlink shall be at a rate of **[**Redacted**]**

3.2.1.7.6.2.3 Bit Error Rate

The Telemetry Downlink shall provide a bit error rate not to exceed **[**Redacted**]**.

3.2.1.7.6.2.4 Availability

The Telemetry Downlink shall provide an availability of at least **[**Redacted**]**.

3.2.1.7.6.2.5 Elevation Angle

The Telemetry Downlink shall operate at elevation angles of **[**Redacted**]**.

3.2.1.7.6.2.6 Link Margin

The Telemetry Downlink shall meet all performance and functional requirements specified herein at EOL with a link margin of at least **[**Redacted**]**.

3.2.1.7.6.2.7 [Redacted**]**

[Redacted**]**

3.2.1.7.6.2.8 [Redacted**]**

[Redacted**]**

3.2.1.7.6.2.9 Modulation

a) The Telemetry Downlink shall use **[**Redacted**]** modulation as specified in the **[**Redacted**]**.

b) Any processing of the original data stream before transmission shall result in a **[**Redacted**]**

3.2.1.7.6.2.10 Radio Frequency

The nominal Telemetry Downlink carrier frequency shall be **[**Redacted**]**.

3.2.1.7.6.2.11 Antenna Coverage: Special / Contingency Modes

a) Telemetry Downlink antenna coverage shall support all RF performance requirements specified herein (e.g. all downlink rates, both real-time and stored telemetry, BER, availability, elevation angle, etc.) with a **[**Redacted**]** when transmitting within **[**Redacted**]**.

b) A minimum elevation angle up to **[**Redacted**]** shall be permitted.

It shall be permissible to require ground commands in order to **[**Redacted**]** for operation in this mode, for example to switch from **[**Redacted**]** to **[**Redacted**]**

3.2.1.7.6.2.12 Antenna Coverage: Normal Operating Modes

Telemetry Downlink antenna coverage shall support all RF performance requirements specified herein (e.g. all downlink rates, BER, link margin, etc.) as follows:

[Redacted**]**

3.2.1.7.6.2.13 Antenna Polarization

The Telemetry Downlink antenna shall use **[**Redacted**]**

3.2.1.7.6.2.14 Adjustable RF Output Power

The Telemetry Downlink shall provide the capability to adjust RF output power levels by ground command (real-time or stored), in increments sufficient to meet the link margin and interference limits specified in Sections 3.2.1.7.6.2.6 Link Margin and 3.1.2.1 Non-interference with Outside Systems, at any altitude over the range specified in Section 3.2.1.1.2.1 General Orbit Compatibility.

[Redacted**]**

3.2.1.7.7 [Redacted**]**

[Redacted**]**

3.2.1.7.7.1 [Redacted**]**

[Redacted**]**

3.2.1.7.7.1.1 [Redacted**]**

[Redacted**]**

3.2.1.7.7.1.2 [Redacted**]**

[Redacted**]**

3.2.1.7.7.1.3 [Redacted**]**

[Redacted**]**

3.2.1.7.7.1.4 [Redacted**]**

[Redacted**]**

3.2.1.7.7.1.5 [Redacted**]**

[Redacted**]**

3.2.1.7.7.1.6 [Redacted**]**

[Redacted**]**

3.2.1.7.7.1.7 [Redacted**]**

[Redacted**]**

3.2.1.7.7.1.8 [Redacted**]**

[Redacted**]**

3.2.1.7.7.1.9 [Redacted**]**

[Redacted**]**

3.2.1.7.7.1.10 [Redacted**]**

[Redacted**]**

3.2.1.7.7.1.11 [Redacted**]**

[Redacted**]**

3.2.1.7.7.1.12 [Redacted**]**

[Redacted**]**

3.2.1.7.7.1.13 [Redacted**]**

[Redacted**]**

3.2.1.7.7.1.14 [Redacted**]**

[Redacted**]**

3.2.1.7.7.1.15 [Redacted**]**

[Redacted**]**

3.2.1.7.7.1.16 [Redacted**]**

[Redacted**]**

3.2.1.7.7.1.17 [Redacted**]**

[Redacted**]**

3.2.1.7.7.2 [Redacted**]**

[Redacted**]**

3.2.1.7.7.2.1 [Redacted**]**

[Redacted**]**

3.2.1.7.7.2.2 [Redacted**]**

[Redacted**]**

3.2.1.7.7.2.3 [Redacted**]**

[Redacted**]**

3.2.1.7.7.2.4 [Redacted**]**

[Redacted**]**

3.2.1.7.7.2.5 [Redacted**]**

[Redacted**]**

3.2.1.7.7.2.6 [Redacted**]**

[Redacted**]**

3.2.1.7.7.2.7 [Redacted**]**

3.2.1.7.7.2.8 [Redacted**]**

[Redacted**]**

3.2.1.7.7.2.9 [Redacted**]**

[Redacted**]**

3.2.1.7.7.2.10 [Redacted**]**

[Redacted**]**

3.2.1.7.7.2.11 [Redacted**]**

[Redacted**]**

3.2.1.7.7.2.12 [Redacted**]**

[Redacted**]**

3.2.1.7.7.2.13 [Redacted**]**

[Redacted**]**

3.2.1.7.7.2.14 [Redacted**]**

[Redacted**]**

3.2.1.7.7.2.15 [Redacted**]**

[Redacted**]**

3.2.1.7.7.2.16 [Redacted**]**

[Redacted**]**

3.2.1.7.7.2.17 [Redacted**]**

[Redacted**]**

3.2.1.7.7.2.18 [Redacted**]**

[Redacted**]**

3.2.1.7.7.2.19 [Redacted**]**

[Redacted**]**

3.2.1.7.7.2.20 [Redacted**]**

[Redacted**]**

3.2.1.7.8 EPDS

3.2.1.7.8.1 Functional Requirements

The EPDS shall perform the following functions under the Conditions and Operational Scenarios specified below:

a) Provide sufficient power to all Spacecraft Bus and Instrument equipment to

[Redacted**]**

3.2.1.7.8.2 Realistic Worst Case Conditions

EPDS performance shall be evaluated under realistic worst-case conditions **[**Redacted**]**, including, but not limited to:

[Redacted**]**

3.2.1.7.8.3 Operational Scenarios

a) EPDS performance shall be evaluated using the following operational scenarios for the range of orbits specified in Section 3.2.1.1.2.1 General Orbit Compatibility. For requirements verification, it is acceptable to perform in-depth analysis **[**Redacted**]**

3.2.1.7.8.4 Instrument Power

The EPDS shall provide power to the Instrument as specified in Section 3.1.3.1.3 Power Interfaces.

3.2.1.7.8.5 [Redacted**]**

[Redacted**]**

3.2.1.7.8.6 [Redacted**]**

[Redacted**]**

3.2.1.7.8.7 [Redacted**]**

[Redacted**]**

3.2.1.7.8.8 [Redacted**]**

[Redacted**]**

3.2.1.7.9 Structures and Mechanisms

3.2.1.7.9.1 Functional Requirements

The Structure shall perform the following functions:

a) Support all Bus and Instrument equipment through all mission phases, including pre-launch, launch, initialization, normal operations, and EOL disposal.

b) **[**Redacted**]**

3.2.1.7.9.2 Factors and Margins of Safety

[Redacted**]**

3.2.1.7.9.3 Mechanisms

3.2.1.7.9.3.1 [Redacted**]**

[Redacted**]**

3.2.1.7.9.3.2 Accessibility

Deployment devices shall be accessible with minimum disturbance to the relative position of the mechanisms or their thermal control hardware.

3.2.1.7.9.3.3 Thermal Constraints

There shall be no thermal constraints against the operation of any mechanism at any time during the Satellite Mission Life such that:

[Redacted**]**

3.2.1.7.9.3.4 [Redacted**]**

[Redacted**]**

3.2.1.7.9.3.5 [Redacted**]**

[Redacted**]**

3.2.1.7.10 Thermal Control

3.2.1.7.10.1 Functional Requirements

The Thermal Control subsystem shall autonomously perform the following functions under the Conditions and Operational Scenarios specified below:

[Redacted**]**

3.2.1.7.10.2 Realistic Worst Case Conditions

Thermal Control Subsystem performance shall be evaluated under realistic worst-case conditions (i.e. precluding combinations of conditions that can not physically occur), including, but not limited to:

[Redacted**]**

3.2.1.7.10.3 Operational Scenarios

a) The Thermal Control Subsystem performance shall be evaluated using the following operational scenarios for the range of orbits specified in Section 3.2.1.1.2.1 General Orbit Compatibility. For requirements verification, it is acceptable to perform in-depth analysis **[**Redacted**]**

3.2.1.7.10.4 [Redacted**]**

[Redacted**]**

3.2.1.7.10.4.1 [Redacted**]**

[Redacted**]**

3.2.1.7.10.4.2 [Redacted**]**

[Redacted**]**

3.2.1.7.10.4.3 [Redacted**]**

[Redacted**]**

3.2.1.7.10.4.4 [Redacted**]**

[Redacted**]**

3.2.1.7.10.4.5 [Redacted**]**

[Redacted**]**

3.2.1.7.10.4.6 [Redacted**]**

[Redacted**]**

3.2.1.7.10.4.7 [Redacted**]**

[Redacted**]**

3.2.1.7.10.4.8 [Redacted**]**

3.2.1.7.10.4.9 [Redacted**]**

[Redacted**]**

3.2.1.7.10.5 [Redacted**]**

[Redacted**]**

3.2.1.7.11 Direct Tasking

The Satellite shall provide Direct Tasking capabilities as specified below, with the following definitions of key terms:

[Redacted**]**

3.2.1.7.11.1 [Redacted**]**

[Redacted**]**

3.2.1.7.11.1.1 [Redacted**]**

[Redacted**]**

3.2.1.7.11.1.2 [Redacted**]**

[Redacted**]**

3.2.1.7.11.1.3 [Redacted**]**

[Redacted**]**

3.2.1.7.11.1.4 [Redacted**]**

[Redacted**]**

3.2.1.7.11.1.5 [Redacted**]**

[Redacted**]**

3.2.1.7.11.1.6 [Redacted**]**

[Redacted**]**

3.2.1.7.11.1.7 [Redacted**]**

[Redacted**]**

3.2.1.7.11.2 [Redacted**]**

[Redacted**]**

3.2.1.7.11.2.1 [Redacted**]**

[Redacted**]**

3.2.1.7.11.2.2 [Redacted**]**

[Redacted**]**

3.2.1.7.11.2.3 [Redacted**]**

[Redacted**]**

3.2.1.7.11.2.4 [Redacted**]**

[Redacted**]**

3.2.1.7.11.2.5 [Redacted**]**

[Redacted**]**

3.2.1.7.11.3 [Redacted**]**

[Redacted**]**

3.2.1.7.11.3.1 [Redacted**]**

[Redacted**]**

3.2.1.7.11.3.2 [Redacted**]**

[Redacted**]**

3.2.1.7.11.3.3 [Redacted**]**

[Redacted**]**

3.2.1.7.11.3.4 [Redacted**]**

[Redacted**]**

3.2.1.7.11.3.5 [Redacted**]**

[Redacted**]**

3.2.1.7.11.3.6 [Redacted**]**

[Redacted**]**

3.2.1.7.11.3.7 [Redacted**]**

[Redacted**]**

3.2.1.7.11.3.8 [Redacted**]**

[Redacted**]**

3.2.1.7.11.3.9 [Redacted**]**

[Redacted**]**

3.2.1.7.11.3.10 [Redacted**]**

[Redacted**]**

3.2.1.7.11.4 [Redacted**]**

[Redacted**]**

3.2.1.7.11.4.1 [Redacted**]**

[Redacted**]**

3.2.1.7.11.4.2 [Redacted**]**

[Redacted**]**

3.2.1.7.11.4.3 [Redacted**]**

[Redacted**]**

3.2.1.7.11.4.4 [Redacted**]**

[Redacted**]**

3.2.1.7.11.4.5 [Redacted**]**

[Redacted**]**

3.2.1.7.11.4.6 [Redacted**]**

[Redacted**]**

3.2.1.7.11.4.7 [Redacted**]**

[Redacted**]**

3.2.1.7.11.4.8 [Redacted**]**

[Redacted**]**

3.2.1.7.11.4.9 [Redacted**]**

[Redacted**]**

3.2.1.7.11.5 [Redacted**]**

3.2.1.7.11.5.1 [Redacted**]**

[Redacted**]**

3.2.1.7.11.5.2 [Redacted**]**

[Redacted**]**

3.2.1.7.11.5.3 [Redacted**]**

[Redacted**]**

3.2.1.7.11.5.4 [Redacted**]**

[Redacted**]**

3.2.1.7.11.5.5 [Redacted**]**

[Redacted**]**

3.2.1.7.11.5.6 [Redacted**]**

[Redacted**]**

3.2.1.7.11.5.7 [Redacted**]**

[Redacted**]**

3.2.2 Physical Characteristics

3.2.2.1 Size Constraints

The size of the integrated Satellite shall be compatible with the specified Launch Vehicles and Shipping Constraints.

3.2.2.2 Mass Constraints

The total Satellite mass (including all parts of the Launch Vehicle adapter / separation mechanism that remain with the Satellite after separation) shall not exceed the limits established by the **[**Redacted**]** and the **[**Redacted**]**.

[Redacted**]**

3.2.2.3 Shipping Constraints

The Satellite and associated Ground Support Equipment (GSE), including the shipping container, shall be designed to allow transportation to the Launch Site via the **[**Redacted**]** or by **[**Redacted**]** and **[**Redacted**]**.

3.2.3 Reliability

3.2.3.1 End of Life Ps

[Redacted**]**

3.2.3.2 [Redacted**]**

[Redacted**]**

3.2.3.3 [Redacted**]**

[Redacted**]**

3.2.3.4 Cycle-Limited Items

Items whose life is limited by the total number of operating cycles shall meet all on-orbit performance requirements after operating for **[**Redacted**]** the predicted number of cycles, including all cycles incurred during both the Mission Life and during ground testing. Cycle-limited items shall include at a minimum:

[Redacted**]**

3.2.3.4.1 [Redacted**]**

[Redacted**]**

3.2.3.4.2 [Redacted**]**

[Redacted**]**

3.2.4 Availability and Maintainability

3.2.4.1 Fault Recovery Timeline

The Satellite equipment provided by the SSI shall be designed to allow recovery from any fault conditions and single event upsets or latch-ups within **[**Redacted**]** of ground operator intervention, with the exception of **[**Redacted**]**, which shall take no longer than **[**Redacted**]**

3.2.4.2 Environmental Conditions

The Satellite shall meet all functional and performance requirements after exposure to the following environments.

3.2.4.2.1 Launch Induced Environments

[Redacted**]**

3.2.4.2.2 On-Orbit Environments

On-orbit environments shall be consistent with operation in the Mission Orbit for the Mission Life and shall include, at a minimum:

[Redacted**]**

3.2.4.2.3 Pre-Launch Environments

Except for any specific testing aimed at verifying the design margins, the Satellite shall not be subjected to any environments that exceed the launch and on-orbit environments. This includes integration and test activities, transportation, launch site processing, and the period the Satellite is within the Launch Vehicle Fairing prior to launch.

3.3 Satellite Design and Construction

3.3.1 General

The Satellite Design and Construction shall be performed per standard SSI practices in accordance with the Environmental Design and Test Specification and the DigitalGlobe Space Segment Specification Addendum, including at a minimum the following items:

[Redacted**]**

3.3.2 SEUs

[Redacted**]**

3.3.3 Immunity to Latch-Up

[Redacted**]**

3.3.4 Cleanliness and Contamination Control

[Redacted**]**

3.3.4.1 [Redacted**]**

[Redacted**]**

3.3.4.2 [Redacted**]**

[Redacted**]**

3.3.4.3 [Redacted**]**

[Redacted**]**

3.3.4.4 [Redacted**]**

[Redacted**]**

3.3.5 Safety

The Satellite shall be designed to allow for safe handling, operation, transportation, fuel loading and pressurization through all mission phases. It shall comply with the specific requirements of EWR 127-1, including at a minimum:

[Redacted**]**

3.3.6 [Redacted**]**

[Redacted**]**

4. VERIFICATION

Requirements verification shall be performed per standard SSI practices, in accordance with the DigitalGlobe Space Segment Specification Addendum and the Statement of Work.

5. QUALITY ASSURANCE

Quality Assurance shall be performed per standard SSI practices, in accordance with the DigitalGlobe Space Segment Specification Addendum and the Statement of Work.

FOIA CONFIDENTIAL TREATMENT PORTIONS OF THIS EXHIBIT MARKED BY [**Redacted**] HAVE BEEN OMITTED PURSUANT TO A REQUEST FOR CONFIDENTIAL TREATMENT FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION

WorldView 3 Payment Milestone Schedule
Exhibit 3 to WV3 Satellite Agreement # 60150

Item #	Invoice Date	*Line Item*	Description	Completed	Milestone Value	Cumulative Milestones	Termination Liability
1	[**Redacted**]		**Milestone 1 Total Value**		[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]				
2	[**Redacted**]		**Milestone 2 Total Value**		[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]		[**Redacted**]		
		b	[**Redacted**]		[**Redacted**]		
		c	[**Redacted**]		[**Redacted**]		
		d	[**Redacted**]		[**Redacted**]		
3	[**Redacted**]		**Milestone 3 Total Value**		[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]		[**Redacted**]		
		b	[**Redacted**]		[**Redacted**]		
		c	[**Redacted**]		[**Redacted**]		
		d	[**Redacted**]		[**Redacted**]		
4	[**Redacted**]		**Milestone 4 Total Value**		[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]		[**Redacted**]		
		b	[**Redacted**]		[**Redacted**]		
		c	[**Redacted**]		[**Redacted**]		
		d	[**Redacted**]		[**Redacted**]		
5	[**Redacted**]		**Milestone 5 Total Value**		[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]		[**Redacted**]		
		b	[**Redacted**]		[**Redacted**]		
		c	[**Redacted**]		[**Redacted**]		
		d	[**Redacted**]		[**Redacted**]		
6	[**Redacted**]		**Milestone 6 Total Value**		[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]		[**Redacted**]		
		b	[**Redacted**]		[**Redacted**]		
		c	[**Redacted**]		[**Redacted**]		
		d	[**Redacted**]		[**Redacted**]		
7	[**Redacted**]		**Milestone 7 Total Value**		[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]		[**Redacted**]		
		b	[**Redacted**]		[**Redacted**]		
		c	[**Redacted**]		[**Redacted**]		
		d	[**Redacted**]		[**Redacted**]		
8	[**Redacted**]		**Milestone 8 Total Value**		[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]		[**Redacted**]		
		b	[**Redacted**]		[**Redacted**]		
		c	[**Redacted**]		[**Redacted**]		
		d	[**Redacted**]		[**Redacted**]		
9	[**Redacted**]		**Milestone 9 Total Value**		[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]		[**Redacted**]		
		b	[**Redacted**]		[**Redacted**]		
		c	[**Redacted**]		[**Redacted**]		
		d	[**Redacted**]		[**Redacted**]		
10	[**Redacted**]		**Milestone 10 Total Value**		[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]		[**Redacted**]		
		b	[**Redacted**]		[**Redacted**]		
		c	[**Redacted**]		[**Redacted**]		
		d	[**Redacted**]		[**Redacted**]		
		e	[**Redacted**]		[**Redacted**]		
11	[**Redacted**]		**Milestone 11 Total Value**		[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]		[**Redacted**]		
		b	[**Redacted**]		[**Redacted**]		
		c	[**Redacted**]		[**Redacted**]		
		d	[**Redacted**]		[**Redacted**]		
12	[**Redacted**]		**Milestone 12 Total Value**		[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]		[**Redacted**]		

		b	**[**Redacted**]**	**[**Redacted**]**		
		c	**[**Redacted**]**	**[**Redacted**]**		
		d	**[**Redacted**]**	**[**Redacted**]**		
13	**[**Redacted**]**		**Milestone 13 Total Value**	**[**Redacted**]**	**[**Redacted**]**	**[**Redacted**]**
		a	**[**Redacted**]**	**[**Redacted**]**		
		b	**[**Redacted**]**	**[**Redacted**]**		
		c	**[**Redacted**]**	**[**Redacted**]**		
		d	**[**Redacted**]**	**[**Redacted**]**		
14	**[**Redacted**]**		**Milestone 14 Total Value**	**[**Redacted**]**	**[**Redacted**]**	**[**Redacted**]**
		a	**[**Redacted**]**	**[**Redacted**]**		
		b	**[**Redacted**]**	**[**Redacted**]**		
		c	**[**Redacted**]**	**[**Redacted**]**		
		d	**[**Redacted**]**	**[**Redacted**]**		
15	**[**Redacted**]**		**Milestone 15 Total Value**	**[**Redacted**]**	**[**Redacted**]**	**[**Redacted**]**
		a	**[**Redacted**]**	**[**Redacted**]**		
		b	**[**Redacted**]**	**[**Redacted**]**		
		c	**[**Redacted**]**	**[**Redacted**]**		
		d	**[**Redacted**]**	**[**Redacted**]**		
		e	**[**Redacted**]**	**[**Redacted**]**		

WorldView 3 Payment Milestone Schedule
Exhibit 3 to WV3 Satellite Agreement # 60150

Item #	Invoice Date	*Line Item*	Description	Completed	Milestone Value	Cumulative Milestones	Termination Liability
16	[**Redacted**]		Milestone 16 Total Value		[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]		[**Redacted**]		
		b	[**Redacted**]		[**Redacted**]		
		c	[**Redacted**]		[**Redacted**]		
		d	[**Redacted**]		[**Redacted**]		
17	[**Redacted**]		Milestone 17 Total Value		[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]		[**Redacted**]		
		b	[**Redacted**]		[**Redacted**]		
		c	[**Redacted**]		[**Redacted**]		
		d	[**Redacted**]		[**Redacted**]		
18	[**Redacted**]		Milestone 18 Total Value		[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]		[**Redacted**]		
		b	[**Redacted**]		[**Redacted**]		
		c	[**Redacted**]		[**Redacted**]		
		d	[**Redacted**]		[**Redacted**]		
19	[**Redacted**]		Milestone 19 Total Value		[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]		[**Redacted**]		
		b	[**Redacted**]		[**Redacted**]		
		c	[**Redacted**]		[**Redacted**]		
		d	[**Redacted**]		[**Redacted**]		
20	[**Redacted**]		Milestone 20 Total Value		[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]		[**Redacted**]		
		b	[**Redacted**]		[**Redacted**]		
		c	[**Redacted**]		[**Redacted**]		
		d	[**Redacted**]		[**Redacted**]		
21	[**Redacted**]		Milestone 21 Total Value		[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]		[**Redacted**]		
		b	[**Redacted**]		[**Redacted**]		
		c	[**Redacted**]		[**Redacted**]		
		d	[**Redacted**]		[**Redacted**]		
22	[**Redacted**]		Milestone 22 Total Value		[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]		[**Redacted**]		
		b	[**Redacted**]		[**Redacted**]		
		c	[**Redacted**]		[**Redacted**]		
		d	[**Redacted**]		[**Redacted**]		
23	[**Redacted**]		Milestone 23 Total Value		[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]		[**Redacted**]		
		b	[**Redacted**]		[**Redacted**]		
		c	[**Redacted**]		[**Redacted**]		
		d	[**Redacted**]		[**Redacted**]		
24	[**Redacted**]		Milestone 24 Total Value		[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]		[**Redacted**]		
		b	[**Redacted**]		[**Redacted**]		
		c	[**Redacted**]		[**Redacted**]		
		d	[**Redacted**]		[**Redacted**]		
25	[**Redacted**]		Milestone 25 Total Value		[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]		[**Redacted**]		
		b	[**Redacted**]		[**Redacted**]		
		c	[**Redacted**]		[**Redacted**]		
		d	[**Redacted**]		[**Redacted**]		
26	[**Redacted**]		Milestone 26 Total Value		[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]		[**Redacted**]		
		b	[**Redacted**]		[**Redacted**]		
		c	[**Redacted**]		[**Redacted**]		
		d	[**Redacted**]		[**Redacted**]		
27	[**Redacted**]		Milestone 27 Total Value		[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]		[**Redacted**]		
		b	[**Redacted**]		[**Redacted**]		
		c	[**Redacted**]		[**Redacted**]		

		d	**[**Redacted**]**	**[**Redacted**]**		
28	**[**Redacted**]**		**Milestone 28 Total Value**	**[**Redacted**]**	**[**Redacted**]**	**[**Redacted**]**
		a	**[**Redacted**]**	**[**Redacted**]**		
		b	**[**Redacted**]**	**[**Redacted**]**		
		c	**[**Redacted**]**	**[**Redacted**]**		
		d	**[**Redacted**]**	**[**Redacted**]**		
29	**[**Redacted**]**		**Milestone 29 Total Value**	**[**Redacted**]**	**[**Redacted**]**	**[**Redacted**]**
		a	**[**Redacted**]**	**[**Redacted**]**		
		b	**[**Redacted**]**	**[**Redacted**]**		
		c	**[**Redacted**]**	**[**Redacted**]**		
		d	**[**Redacted**]**	**[**Redacted**]**		
30	**[**Redacted**]**		**Milestone 30 Total Value**	**[**Redacted**]**	**[**Redacted**]**	**[**Redacted**]**
		a	**[**Redacted**]**	**[**Redacted**]**		
		b	**[**Redacted**]**	**[**Redacted**]**		
		c	**[**Redacted**]**	**[**Redacted**]**		
		d	**[**Redacted**]**	**[**Redacted**]**		

WorldView 3 Payment Milestone Schedule
Exhibit 3 to WV3 Satellite Agreement # 60150

Item #	Invoice Date	*Line Item*	Description	Completed	Milestone Value	Cumulative Milestones	Termination Liability
31	[**Redacted**]		Milestone 31 Total Value		[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]		[**Redacted**]		
		b	[**Redacted**]		[**Redacted**]		
		c	[**Redacted**]		[**Redacted**]		
		d	[**Redacted**]		[**Redacted**]		
32	[**Redacted**]		Milestone 32 Total Value		[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]		[**Redacted**]		
		b	[**Redacted**]		[**Redacted**]		
		c	[**Redacted**]		[**Redacted**]		
		d	[**Redacted**]		[**Redacted**]		
33	[**Redacted**]		Milestone 33 Total Value		[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]		[**Redacted**]		
		b	[**Redacted**]		[**Redacted**]		
		c	[**Redacted**]		[**Redacted**]		
		d	[**Redacted**]		[**Redacted**]		
34	[**Redacted**]		Milestone 34 Total Value		[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]		[**Redacted**]		
		b	[**Redacted**]		[**Redacted**]		
		c	[**Redacted**]		[**Redacted**]		
		d	[**Redacted**]		[**Redacted**]		
35	[**Redacted**]		Milestone 35 Total Value		[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]		[**Redacted**]		
		b	[**Redacted**]		[**Redacted**]		
		c	[**Redacted**]		[**Redacted**]		
		d	[**Redacted**]		[**Redacted**]		
36	[**Redacted**]		Milestone 36 Total Value		[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]		[**Redacted**]		
		b	[**Redacted**]		[**Redacted**]		
		c	[**Redacted**]		[**Redacted**]		
		d	[**Redacted**]		[**Redacted**]		
37	[**Redacted**]		Milestone 37 Total Value		[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]		[**Redacted**]		
		b	[**Redacted**]		[**Redacted**]		
		c	[**Redacted**]		[**Redacted**]		
		d	[**Redacted**]		[**Redacted**]		
38	[**Redacted**]		Milestone 38 Total Value		[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]		[**Redacted**]		
		b	[**Redacted**]		[**Redacted**]		
		c	[**Redacted**]		[**Redacted**]		
		d	[**Redacted**]		[**Redacted**]		
39	[**Redacted**]		Milestone 39 Total Value		[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]		[**Redacted**]		
		b	[**Redacted**]		[**Redacted**]		
		c	[**Redacted**]		[**Redacted**]		
		d	[**Redacted**]		[**Redacted**]		
40	[**Redacted**]		Milestone 40 Total Value		[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]		[**Redacted**]		
		b	[**Redacted**]		[**Redacted**]		
		c	[**Redacted**]		[**Redacted**]		
		d	[**Redacted**]		[**Redacted**]		
41	[**Redacted**]		Milestone 41 Total Value		[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]		[**Redacted**]		
		b	[**Redacted**]		[**Redacted**]		
		c	[**Redacted**]		[**Redacted**]		
		d	[**Redacted**]		[**Redacted**]		
42	[**Redacted**]		Milestone 42 Total Value		[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]		[**Redacted**]		
		b	[**Redacted**]		[**Redacted**]		
		c	[**Redacted**]		[**Redacted**]		

		d	[**Redacted**]	[**Redacted**]		
43	[**Redacted**]		**Milestone 43 Total Value**	[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]	[**Redacted**]		
		b	[**Redacted**]	[**Redacted**]		
		c	[**Redacted**]	[**Redacted**]		
		d	[**Redacted**]	[**Redacted**]		
44	[**Redacted**]		**Milestone 44 Total Value**	[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]	[**Redacted**]		
		b	[**Redacted**]	[**Redacted**]		
		c	[**Redacted**]	[**Redacted**]		
		d	[**Redacted**]	[**Redacted**]		
45	[**Redacted**]		**Milestone 45 Total Value**	[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]	[**Redacted**]		
		b	[**Redacted**]	[**Redacted**]		
		c	[**Redacted**]	[**Redacted**]		
		d	[**Redacted**]	[**Redacted**]		
46	[**Redacted**]		**Milestone 46 Total Value**	[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]	[**Redacted**]		
		b	[**Redacted**]	[**Redacted**]		
		c	[**Redacted**]	[**Redacted**]		
		d	[**Redacted**]	[**Redacted**]		
47	[**Redacted**]		**Milestone 47 Total Value**	[**Redacted**]	[**Redacted**]	[**Redacted**]
		a	[**Redacted**]	[**Redacted**]		
			TOTALS	**$180,575,000**	**$180,575,000**	**$180,575,000**

FOIA CONFIDENTIAL TREATMENT REQUESTED

PORTIONS OF THIS EXHIBIT MARKED BY [**Redacted**] HAVE BEEN OMITTED PURSUANT TO A REQUEST FOR CONFIDENTIAL TREATMENT FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION

Exhibit 4 to Agreement 60150
Doc No. 10329659

Exhibit 4 to Agreement #60150

WORLDVIEW 3 SATELLITE SOFTWARE LICENSE AGREEMENT

THIS LICENSE AGREEMENT ("License") made this XXth day of August, 2010 ("Effective Date") by and between Ball Aerospace & Technologies Corp, having an office 1600 Commerce Street, Boulder, Colorado 80301 (hereinafter called "Contractor") and DigitalGlobe, Inc., having an office at 1601 Dry Creek Drive, Suite 260, Longmont, Colorado 80503 (hereinafter called "Customer"). As used in this License Agreement, "Party" means either Customer or Contractor as appropriate, and "Parties" means Customer and Contractor.

WHEREAS, Contractor has developed flight and ground computer software and source code that is required to support the WorldView 3 ("WV3") Satellite being built by Contractor under the Satellite Purchase Agreement 60150 (the "Agreement"); and

WHEREAS, Contractor is willing to grant Customer a license to use the WorldView3 Program Software and Customer desires to be granted a license to use the WorldView3 Program Software and source code for its use in association with **[**Redacted**]** the WV3 Satellite, which it is purchasing under the Agreement; and

WHEREAS, the Parties desire to set forth the rights granted with respect to the WorldView Program Software.

NOW THEREFORE, for good and valuable consideration set forth in the Agreement, and in consideration of the mutual terms and conditions herein contained, the Parties agree as follows:

1. Description of Licensed Materials

The licensed materials consist of:

[Redacted**]**

Licensed materials are:

a. computer software in machine-readable form ("Software")

b. source code relating to the WorldView 3 Satellite Software ("Source Code").

2. Right to Use

Subject to the terms, conditions and limitations of this License, Contractor hereby grants to Customer and Customer hereby accepts a **[**Redacted**]** (by **[**Redacted**]**), **[**Redacted**]** (except under the conditions identified in Section 27.1 of the Agreement), **[**Redacted**]** (except as specified in Section 4(c) , **[**Redacted**]** to use:

(a) the Software in the WorldView-3 Satellite; and

(b) the Software in the ground processing equipment used for the WV3 Satellite at any Customer facility, any US government owned ground station, and any facility that supports Customer's Direct Access Program; and

Customer shall have no right to **[**Redacted**]** to Software or Source Code or **[**Redacted**]** with other computer **[**Redacted**]**, except as provided in paragraphs 4(d), 4(e), and 4(f). Customer agrees that it will not attempt to do so. Customer expressly agrees that it shall not use the **[**Redacted**]** contained in the Software or the Source Code except for the purposes and uses authorized by this License.

3. Confidentiality

The Software and Source Code are valuable assets to Contractor and are Contractor's confidential and proprietary information. The Non-Disclosure Agreement that the Parties entered into pursuant to Exhibit 5 of the Agreement will govern the obligations of the Parties with respect to the treatment of the confidential Software and Source Code. The period limiting the use and disclosure of the Software and Source Code is extended to live **[**Redacted**]** from the date of receipt of the Software and/or the Source Code.

The provisions of this clause shall survive the completion and/or termination of this License and/or the Agreement.

4. Copying and Modifications

(a) Customer may make copies of the Software in machine-readable form and Source Code in support of its own use of the Software and Source Code as permitted by this License Agreement, provided all copyright notices and confidential/proprietary markings are maintained and reproduced.

(b) Customer may not remove, must reproduce and include all copyright notices and confidential/proprietary notices of Contractor on any copy of all or any portion of the Software. All copies shall be subject to the terms and conditions of this License.

(c) Except as set forth in this Section 4(c), Customer shall not sublicense, resell, license, or distribute the Software or Source Code to any third party. Customer may distribute the Software or the Source Code only to a third party (the "Sublicense") engaged by Customer to support the WV-3 Satellite and ground processing associated with the WV-3 Satellite, including; a. U.S. government owned ground stations and b. ground stations associated with Customer's Direct Access Program, provided that (1) Sublicensee agree to be bound by all obligations, restrictions, and limitations set forth in the License Agreement: provided, however, that such Sublicensee shall have no right to further sublicense or distribute the Software or the Source Code to any other third party; and (2) Customer notifies Contractor or the identities of such Sublicensees.

(d) In the event that the Source Code Escrow account is exercised pursuant to Section 17.6 of the Agreement, Customer may make modifications to the Software after the WV3 Instrument has been launched. Such modifications may correct defects in the Software, or may provide software **[**Redacted**]** conditions, which occur, or may represent enhancements as warranted to improve **[**Redacted**]** operations. If requested by Contractor, Customer shall provide to Contractor a report of the modifications, which may be a copy of the modified Software or Source Code, as applicable, or a list of the changes.

(e) Customer may use the WV3 Instrument Software, including **[**Redacted**]** at any time to develop ground operations software, including ground operations software in support of: a. U.S. government owned ground station(s) and/or b. Customer's Direct Access Program, for WorldView Satellites built for Customer by Contractor. Use of such Software or Source Code to support Satellites built by third party competitors is subject to prior written approval of Contractor.

(f) Customer may make changes to the ground software in order to tune, update, extend the functionality, and investigate WorldView Satellite anomalies, which may include modifications ot the underlying flight software source code or algorithms.

5. Ownership

Customer agrees that **[**Redacted**]** of the Software or the Source Code of any copyright rights therein. Title to and ownership of the Software and the Source Code furnished to Customer and all copyright rights herein are, and shall at all times remain, the property **[**Redacted**]**.

Customer shall retain sole title or ownership to any enhancements made to the Software in accordance with Section 4.f of this License.

6. Transfer of Rights

Customer shall not sell, assign or otherwise transfer its right to use the Software or Source Code to a third party except upon the conditions identified in Section 26.1 of the Agreement.

7. Consideration

The Software and the Source Code are furnished in association with the supply by Contractor of certain equipment and services under the Agreement. No separate consideration is provided for the rights granted hereunder, and accordingly this license shall be royalty free.

8. Warranty and Remedies

The provision in Section 15.3 of the Agreement that titled Contractor Warranties for Contract Deliverables, shall apply.

9. Terms and Termination

(a) This License Agreement shall extend for the duration of WV-3 Satellite development, launch, and on-orbit operations and shall be extended for an additional term only upon mutual written agreement by the Parties. However, in the event that Customer procures and then launches additional WorldView satellites, upon mutual written agreement of the Parties, this License shall be extended for the development, launch, and on-orbit operations of such satellites being built for Customer by Contractor.

(b) Contractor shall be entitled to terminate Customer's rights under this License Agreement in the event Customer is in material breach of any of the terms and conditions of this License. In the event of termination of this License for any reason, Customer shall, except to the extent Software has been incorporated into satellites already launched by Customer or in operational elements of Customer ground system, promptly either return the Software and Source Code to Contractor, or at the request of Contractor, destroy the Software and Source Code and all copies, including the archived copy referenced in Section 4(a) above, and certify in writing to Contractor that such has been done, and Customer shall make no further use of the Software or Source Code.

10. Proprietary Rights

The Software and the Source Code are valuable assets of Contractor and are Contractor's proprietary and confidential information. Customer agrees not to attempt to reverse engineer, recompile, disassemble or rewrite the Software or the Source Code or any portion thereof except as permitted by the terms of this License.

11. Additional Rights of Contractor-Obligations of Customer

(a) Customer acknowledges that Contractor shall at all times be entitled to control the use of the Software and the Source Code, and accordingly, Customer agrees not to allow third parties, other than subcontractors and consultants engaged by Customer to support the WV-3 Satellite pursuant to Sections 3 and 4(c) of this License, to have access to the Software or the Source Code.

(b) Subject to obtaining the required security and related clearances, Contractor shall at reasonable times during normal business hours and upon reasonable notice to Customer have the right to inspect the records of Customer, pertaining to the use of the Software and Source Code, to assure itself that Customer is complying with the terms and conditions of this License. The cost of such inspection shall be paid for by Contractor.

12. Injunctive Relief

Customer acknowledges and agrees that Contractor will be irreparably harmed if Customer violates the confidentiality obligations of this License or uses the Software or the Source Code contrary to the limitations and restrictions set forth in this License Agreement. Customer agrees that Contractor shall be entitled to injunctive relief and specific performance without the necessity of showing actual damages.

13. Liability

Section 26.13 of the Agreement, titled Limitation of Liability, of the Agreement shall apply to this License.

14. Dispute-Applicable Law

This License shall be governed and construed in accordance with the laws of the State of Colorado, without regard to its conflict of laws provisions.

15. Export Control

If the Software or the Source Code is exported outside the United States, Customer has the sole responsibility and obligation to obtain all necessary consents, licenses and/or approvals which may be required in connection therewith.

16. Construction

This License has been negotiated by the respective Parties hereto and the language of this License shall not be construed for or against any Party as a result of the Party having drafted this License.

17. Entire Agreement

This License constitutes the entire understanding of the Parties with respect to the subject matter of this License and supersedes all prior contemporaneous agreements or understandings. By signing this License each Party represents to the other that it has the authority to sign and that this License is enforceable against it in accordance with its terms.

IN WITNESS WHEREOF, the Parties have signed this License on the date set forth below:

DIGITALGLOBE, INC.	**BALL AEROSPACE & TECHNOLOGIES CORP.**
By: /s/ Yancey Spruill	**[**Redacted**]**
Its: Executive Vice President & Chief Financial Officer	**[**Redacted**]**
[Redacted**]**	**[**Redacted**]**

FOIA CONFIDENTIAL TREATMENT REQUESTED

PORTIONS OF THIS EXHIBIT MARKED BY [**Redacted**] HAVE BEEN OMITTED PURSUANT TO A REQUEST FOR CONFIDENTIAL TREATMENT FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION

Exhibit 5 to Agreement # 60150
Doc No. 10329665

Exhibit 5 to Agreement #60150

Bilateral Nondisclosure Agreement
Ball Aerospace & Technologies Corp. and DigitalGlobe Inc.

THIS AGREEMENT is effective on August 17, 2010 (hereinafter called the "Effective Date") between BALL AEROSPACE & TECHNOLOGIES CORP., having a principal place of business at 10 Longs Peak Drive, Broomfield, Colorado 80021 (hereinafter called the "Disclosing Party" or the "Receiving Party," as applicable) and DigitalGlobe Inc.(DigitalGlobe) having a principal place of business at1601 Dry Creek Drive, Suite 260 Longmont, Colorado 80593 (hereinafter called the "Disclosing Party" or the "Receiving Party," as applicable).

IN CONSIDERATION OF THE MUTUAL PROMISES AND COVENANTS CONTAINED HEREIN, the parties agree as follows:

1. **Purpose.** The purpose of the exchange of information between the parties is to enable the parties' performance of the WorldView 3 Satellite System contract. This Agreement imposes no obligation upon either party to supply any Proprietary Information to the other party, and the parties will attempt to limit the scope of Proprietary Information exchanged hereunder, disclosing only what is necessary to accomplish the above-stated purpose.

2. **Identification and Marking of Proprietary Information.** As used in this Agreement, the term "Proprietary Information" means the whole or any portion or phase of any scientific or technical information, not limited to all pricing, design, process, procedure, formula, or improvement; confidential business or financial information; listing of names, addresses, or telephone numbers; or other information that is: (i) reduced to writing or other documentary form or other tangible medium of expression, whether in human readable or machine readable form, and is identified as Proprietary Information with an appropriate legend; (ii) obtained through verbal or visual disclosure or inspection of apparatus or processes, provided that such information is specifically identified by the Disclosing Party as being proprietary and is subsequently confirmed by a written document, which may be delivered in physical form or via e-mail or similar electronic medium, within thirty (30) days after its initial disclosure; or (iii) derived by the Receiving Party from any of the foregoing. No written document or other material will be designated as Proprietary Information that is not, in good faith, believed to contain proprietary data or information.

3. **Exceptions to Proprietary Information.** Proprietary Information shall not include information that:

   a) is publicly known at the time of disclosure under this Agreement, or becomes publicly known after disclosure without breach of this Agreement by the Receiving Party;

   b) prior to disclosure under this Agreement was already in the possession of the Receiving Party as established by documentary evidence dated prior to the date of disclosure;

   c) after disclosure under this Agreement is obtained from a third party who is rightfully in possession of such information and not subject to a confidentiality obligation with respect to said information, or

   d) is independently developed by or for the Receiving Party without use of or recourse to the Proprietary Information of the Disclosing Party.

The fact that individual elements of the Disclosing Party's Proprietary Information may come within the above exceptions shall not relieve the Receiving Party of its obligations hereunder unless all elements and their specific combinations disclosed in such Proprietary Information come within the above exceptions.

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4. **Disclosure Period and Duration of Confidentiality Obligation.** Proprietary Information may be disclosed hereunder for a period of **[**Redacted**]** from the Effective Date. Either party may, upon the provision of thirty (30) days written notice, inform the other party that it is terminating this Agreement prior to the expiration of the disclosure period set forth above. However, termination of this Agreement shall not affect the rights and obligations of either party with respect to Proprietary Information disclosed hereunder prior to termination. Each party's obligations not to disclose or use Proprietary Information shall terminate upon the first to occur of the following events: (1) **[**Redacted**]** elapse from the date of the last disclosure of Proprietary Information hereunder, or (2) when all Proprietary Information of the Disclosing Party comes within the exceptions set forth in paragraph 3.

5. **Limitations on Use and Disclosure.** The Receiving Party shall not, without the prior written consent of the Disclosing Party: (i) use Proprietary Information other than for the purpose specified above and then only for the benefit of the Disclosing Party or (ii) disclose Proprietary Information to persons, including the U.S. Government or related organizations except as provided for herein, other than the Receiving Party's employees who have a need to know such Proprietary Information in order to carry out the purpose set forth above and who have entered into agreements which obligate them not to use or disclose Proprietary Information received from third parties.

6. **Copying and Reverse Engineering Prohibited.** The Receiving Party shall not reproduce or make copies, models, or replicas of the Proprietary Information of the Disclosing Party in addition to those provided without the prior written consent of the Disclosing Party, except and only to the extent that reproduction or copying is required to accomplish the purpose contemplated by this Agreement. All such authorized copies made shall be marked as Proprietary Information of the Disclosing Party. In the event Proprietary Information is furnished in the form of tangible property, such as sample product, or computer software, the Receiving Party agrees not to analyze, decompile, disassemble, decode, redesign, reverse engineer, or otherwise reproduce such tangible property or computer software, or attempt to do so, or permit a third party to take possession of such property or software.

7. **Marking of Derivative Proprietary Information.** The Receiving Party shall mark all notes, translations, and other documents prepared by it that incorporate all or any portion of the Proprietary Information of the Disclosing Party with a legend identifying such notes, translations, and documents as containing Proprietary Information of the Disclosing Party.

8. **Ownership of Modifications and Improvements to Proprietary Information.** The parties agree that all modifications and improvements to the subject matter of the Disclosing Party's Proprietary Information conceived during the course of discussions hereunder shall be owned by the Disclosing Party. The Receiving Party hereby assigns to the Disclosing Party all right, title, and interest it may have in such modifications and improvements and agrees to promptly execute all documents required to evidence the Disclosing Party's legal ownership thereof. All modifications and improvements covered by this paragraph shall also be considered Proprietary Information hereunder.

9. **Acknowledgement of Potential Future Competition.** Each party understands and acknowledges that the other party may concurrently, or in the future, be internally developing information that may be similar to the Disclosing Party's Proprietary Information. Accordingly, provided the Receiving Party complies with the terms and conditions of this Agreement, the Receiving Party shall not be precluded from developing products, processes, services, or computer software for itself or others that may compete with the products, processes, services, or computer software contemplated by the Disclosing Party's Proprietary Information.

10. **Limited Effect of Agreement.** No license or conveyance of any rights under any discoveries, inventions, patents, copyrights (published or unpublished), trade secrets, or other intellectual property rights of the Disclosing Party are granted to the Receiving Party, or implied by this Agreement or the exchange of Proprietary Information between the parties. Nothing in this Agreement or the course of dealings between the parties shall be construed to obligate either party to purchase any goods or services from the other party, or obligate either party to sell goods or services to the other party. This Agreement is not intended to constitute, create, or give effect to a joint venture, partnership, or formal business entity of any kind. Nothing herein shall be construed as providing for the sharing of profits or losses between the parties. Each party shall act as an independent contractor and not as an agent of the other party for any purpose whatsoever, and neither shall have any authority to bind the other, except as specifically set forth herein.

11. **Designated Recipients of Proprietary Information and Contractual Notices***:* All Proprietary Information exchanged hereunder shall be forwarded to the individuals designated below. However, all properly marked Proprietary Information shall be afforded the protection of this Agreement even if furnished to individuals other than the designated recipients or their delegate(s):.

Ball Aerospace & Technologies Corp.		Name of Organization:	DigitalGlobe Inc.
Attention:	**[**Redacted**]**	Attention:	Mr. Steve Linn
Address:	1600 Commerce Street	Address:	1601 Dry Creek Drive, Suite 260
Telephone:		Telephone:	
[Redacted**]**	Boulder, Colorado 80306	**[**Redacted**]**	Longmont, Colorado 80593
E-Mail:	**[**Redacted**]**	E-Mail:	**[**Redacted**]**

All contractual or administrative notices furnished hereunder shall be forwarded to the individuals designated below or their delegate(s).

Ball Aerospace & Technologies Corp.		DigitalGlobe Inc.	
Attention:	**[**Redacted**]**	Attention:	Barbara Soda
Address:	1600 Commerce Street Boulder Colorado 80301	Address:	1601 Dry Creek Drive Suite 260 Longmont, Colorado 80503
Telephone:	**[**Redacted**]**	Telephone:	**[**Redacted**]**
E-Mail:	**[**Redacted**]**	E-Mail:	**[**Redacted**]**

Either party may change its above-listed designated recipients or their contact information by providing written notice of the change to the other party.

12. **Return or Destruction of Proprietary Information.** Upon termination or expiration of this Agreement, whichever first occurs, or promptly after receiving a request from the Disclosing Party, the Receiving Party shall, at the Disclosing Party's option, return all of the Disclosing Party's Proprietary Information, or certify that it has destroyed all such Proprietary Information and all copies thereof. The Receiving Party shall also return or destroy all other documents containing any portion of the Disclosing Party's Proprietary Information, as well as all notes, summaries, translations, abstracts, and synopses thereof or relating thereto. Return or destruction of Proprietary Information pursuant to this paragraph shall not act to relieve either party of its obligations regarding disclosure or use set forth herein.

13. **Duty of Care Required.** Each party shall protect and preserve the confidentiality of Proprietary Information disclosed hereunder using the same degree of care that it uses in protecting its own Proprietary Information, but not less than the degree of care that would be used by a reasonable and prudent business person. Neither party shall be liable in damages for inadvertent disclosure of Proprietary Information received hereunder as long as the above-described standard of care has been exercised in its handling, and provided that the Receiving Party shall, upon discovery of any unauthorized use or disclosure of Proprietary Information by its organization, promptly notify the Disclosing Party and endeavor to prevent any further unauthorized use or disclosure. In the event Proprietary Information of a third party is disclosed hereunder, the Disclosing Party represents that it is authorized to make the disclosure, and the Receiving Party agrees to treat such Proprietary Information in the manner specified for treatment of the Disclosing Party's Proprietary Information.

14. **Compelled Disclosure.** In the event the Receiving Party is directed to disclose the Disclosing Party's Proprietary Information by a court order or other governmental action, it shall: (i) promptly notify the Disclosing Party of the court order or governmental action to provide the Disclosing Party with a reasonable opportunity to protect its Proprietary Information; (ii) at the request and sole expense of the Disclosing Party, cooperate reasonably with the Disclosing Party's efforts to contest or limit the scope of such order or action; and (iii) limit any disclosure to the minimum that will comply with such order or action.

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15. **Requirements for Disclosure to U.S. Government.** Proprietary Information may be disclosed to the U.S. Government by the Receiving Party only if: (i) the purpose set forth in Paragraph 1 above requires the disclosure; (ii) the Disclosing Party consents to the disclosure; (iii) the Receiving Party identifies the Proprietary Information at the time of disclosure as the Proprietary Information of the Disclosing Party; and (iv) the Receiving Party marks the Proprietary Information strictly in accordance with the applicable requirements of Parts 15 and 27, and the relevant Part 52 solicitation provisions and contract clauses, of the Federal Acquisition Regulation (FAR) and/or any applicable, parallel requirements contained in any pertinent agency FAR supplement.

16. **Export Control Limitations.** The Receiving Party shall not export (including sending or taking out of the U.S. and disclosing or providing access to a "foreign person" as defined in 22 CFR 120.16, located anywhere) any technical information furnished by the Disclosing Party without first complying with all requirements of the International Traffic in Arms Regulations and the Export Administration Regulations, including the requirement for obtaining an export license, if applicable. The Receiving Party shall first obtain the written consent of the Disclosing Party prior to submitting any request for authority to export any such technical information. The Receiving Party shall defend, indemnify, and hold the Disclosing Party harmless from all claims, demands, damages, costs, fines, penalties, attorney's fees, and other expenses and costs arising from its failure to comply with this paragraph, or any applicable U.S. export control statutes or regulations.

17. **Handling of Classified Material.** Any U.S. government classified documents or information disclosed hereunder shall be handled in accordance with the National Industrial Security Program Operating Manual (NISPOM) **[**Redacted**]**, its supplements, and other applicable U.S. government security statutes and regulations.

18. **Assignment.** Neither this Agreement, nor the rights conferred and obligations imposed hereunder, may be transferred or assigned without the prior written consent of the non-assigning party.

19. **Disclaimer of Implied Warranties.** NEITHER PARTY GRANTS ANY WARRANTY OR GUARANTEE, OR MAKES ANY REPRESENTATION WITH RESPECT TO ANY DISCLOSED INFORMATION, EITHER EXPRESSED, IMPLIED, OR STATUTORY, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.. Neither party provides any warranty or guarantee that the other party's use of Proprietary Information received under this Agreement will be free from claims by nonparties for infringement or misappropriation of intellectual property rights. No right of use is warranted by either party by the furnishing of Proprietary Information hereunder, and neither party provides any warranty or guarantee that its Proprietary Information is complete, accurate, or free from defects.

20. **Availability of Injunctive Relief.** Each party acknowledges that: (i) Proprietary Information of the other party may be disclosed hereunder on a confidential basis; (ii) any unauthorized use or release of Proprietary Information will allow the Receiving Party or third parties to unfairly compete with the Disclosing Party causing irreparable harm to the Disclosing Party; and (iii) due to the unique nature of the Proprietary Information, an award of monetary damages will not be an adequate remedy for its improper use or disclosure. Therefore, each party agrees that in the event of a breach or threatened breach of any material provision of this Agreement, the Disclosing Party shall be entitled to enforce such provision through appropriate injunctive relief: (i) without the necessity of proving that it has incurred losses or suffered damages from the breach, (ii) without the necessity of posting any bond or other security, and (iii) in addition to any other rights or remedies it may have at law, such as an award of monetary damages (if properly proven), or in equity, such as specific performance.

21. **Waiver.** The waiver of any provision of this Agreement by either Party or the failure of either Party to require performance of any provision of this Agreement shall not be construed as a waiver of the right to insist on strict contractual performance at some other time. The waiver by either Party of any right created by this Agreement in one or more instances shall not be construed as a continuing waiver of such right or any other right created by this Agreement.

22. **Severability.** The provisions of this Agreement are severable and if any provision hereof is determined to be invalid, illegal, or unenforceable, in whole or in part, the validity, legality, and enforceability of any of the remaining provisions or portions hereof shall not in any way be affected or impaired thereby and shall nevertheless continue to be binding on the parties. Any such invalid, illegal, or unenforceable provision shall be changed and interpreted so as to best accomplish the objectives of such provision within the limits of applicable law.

23. **Paragraph Headings**. Paragraph headings are inserted for reference purposes and convenience of use only and shall not affect the construction or interpretation of this Agreement.

24. **Governing Law.** This Agreement shall be construed in accordance with, and the rights of the parties shall be governed by, the laws of the State of Colorado.

25. **Modification and Execution Procedure**. No change, modification, alteration, or addition to any provision shall be binding unless in writing and signed by authorized representatives of both parties. This Agreement may be signed in one or more counterparts (including faxed copies), each of which shall be deemed one and the same original document.

26. **Entire Agreement.** This Agreement shall apply in lieu of and notwithstanding the contents of any specific legend or statement associated with any particular information or material exchanged. The duties of the parties shall be determined exclusively by the terms and conditions of this Agreement, which constitutes the complete understanding between the parties with respect to the subject matter hereof and supersedes any previous oral or written agreement with respect thereto.

BALL AEROSPACE & TECHNOLOGIES CORP.	DigitalGlobe, Inc
[Redacted**]**	By: /s/ Yancey Spruill]
[Redacted**]**	Title: Executive Vice President & Chief Financial Officer