

Kongsberg Satellite Services AS (“**KSAT**”) submits this narrative as a supplement to its application (FCC Form 312 Main Form, Schedule B and Schedule S) for authority to operate a receive-only earth station in conjunction with a non-U.S. licensed (Canadian) space station. The narrative consists of three main sections:

- Section 1 describes the nature of the application and services in response to FCC Form 312, Main Form, Question 43, and the remote control point in response to Schedule B, Question E17.
- Section 2 provides information on the non-U.S. licensed satellite operation in response to FCC Form 312, Main Form, Question 42a, and pursuant to 47 C.F.R. §§ 25.131(c) and 25.137.
- Section 3 provides justification for granting the following waiver requests in response to FCC Form 312, Main Form, Question 35: (i) Waiver of non-conforming frequency use; and (ii) waiver of non-geostationary satellite default processing rounds.

1. NATURE OF THE APPLICATION AND SERVICES: A RESPONSE TO QUESTIONS 43 AND E17

1.1. Request for Authorization

KSAT submits this information pursuant to 47 C.F.R. §§ 25.102, 25.115(b) and 25.131(j)(1) in support of its application for a license to operate a receive-only earth station in Fairbanks, Alaska, with a non-geostationary satellite operated by exactEarth Ltd., of Ontario, Canada (“**exactEarth**”): exactView-1 (“**EV1**,” formerly known as ADS-1B) (“**Satellite**”).

1.2. The Proposed Service

The proposed earth station is a receive-only station located in Fairbanks, Alaska. It is intended to be used for data acquisition from the Satellite in the 5167.5–5198.5 MHz band (feeder links). The Satellite operates in the mobile-satellite service (“**MSS**”) and is used for Satellite-based Automatic Identification System (“**AIS**”) signal reception from ship-based transponders; the Satellite will downlink AIS data to the receive-only station. The earth station antenna will receive signals from the Satellite during the “visible” portion of the Satellite’s orbit. The data will be relayed over the internet using a secure VPN connection to exactEarth’s facility in Cambridge, Ontario, Canada. The station will not be used for telemetry, tracking, and control for the Satellite. No intentional transmissions will occur from the earth station.

The earth station will be operated on a non-common carrier basis; KSAT is under contract to exactEarth to operate a global network of ground stations for the Satellite, including the proposed Alaska receive-only station. KSAT, in turn, has subcontracted with Iridium Satellite, L.L.C., of McLean, Virginia, for certain hosting services (including maintenance) for the earth station in Alaska.

1.3. Public Interest Statement

Granting a license to operate the proposed earth station is in the public interest. It promotes the availability of and timely access to AIS data. This data serves critical functions, such as *improving maritime situational awareness and enhancing maritime safety and port security*.¹ The data is used by merchant marines, naval forces, port authorities, coast guards, U.S. homeland security, and other national security agencies. AIS data is also a powerful aid in Search and Rescue operations as the data facilitates a rapid, targeted response to distress notifications. Finally, AIS data can help combat illegal, unreported and unregulated, or so-called “IUU,” fishing, which today is recognized as a major threat to maintaining sustainable fisheries.

Large vessels (over 300 gross tonnage) are required by the International Maritime Organization, pursuant to the International Convention for the Safety of Life at Sea,² to transmit AIS signals.³ AIS signals, transmitted at regular intervals via a maritime VHF transponder, broadcast information about a ship’s identity, type, position, course, speed, navigational status and other safety-related information automatically. Many smaller vessels, including all passenger vessels, are equipped with AIS as well.⁴

Satellite-based AIS reception helps alleviate the shortcomings associated with the relatively short range of terrestrial AIS transmissions, which is limited by the curvature of the Earth. Satellite-based AIS receivers are able to pick up the AIS transmissions of ships from orbit even when those ships would otherwise be out of range of other maritime or coastal AIS stations.

¹ See United States of America Proposals for the Work of the Conference, WAC/081(27.08.14) (noting the benefits of AIS in preparing the U.S. proposal to the 2015 World Radio Conference for the creation of two additional AIS channels).

² International Convention for the Safety of Life at Sea, *opened for signature* Nov. 1, 1974, *entered into force* May 25, 1980, 32 U.S.T. 47, 1184 U.N.T.S. 278.

³ See IMO.org, Automatic Identification Systems, <http://www.imo.org/en/OurWork/Safety/Navigation/Pages/AIS.aspx> (“The regulation requires AIS to be fitted aboard all ships of 300 gross tonnage and upwards engaged on international voyages, cargo ships of 500 gross tonnage and upwards not engaged on international voyages and all passenger ships irrespective of size. The requirement became effective for all ships by 31 December 2004.”) (last visited Nov. 20, 2015).

⁴ See *id.*

Placing the receive-only earth station in Alaska will reduce the signal latency of the time-sensitive AIS data. It will also promote the local economy, as it will engage local human and other resources in Fairbanks for the maintenance of the earth station and terrestrial relay of the downlinked data.

1.4. Applicant’s Legal and Technical Qualifications

KSAT, of Tromsø, Norway, operates a global network of ground stations primarily for satellite data acquisition and tracking and launch and early orbit phase services or “LEOPS” under contract to commercial and government satellite operators around the world. KSAT’s customers also include U.S. companies and U.S. Government agencies. KSAT’s ground station network includes high-latitude stations in Norway (Spitsbergen, Tromsø, Jan Mayen, Grimstad) and in Antarctica and mid-latitude stations (Dubai, South Africa, Singapore and Mauritius). KSAT operates all the stations from its headquarters at Tromsø, Norway, through the Tromsø Network Operations Center (“TNOC”).

KSAT (and its predecessor) has been in the ground station business for over 20 years and the company is considered a global leader in this industry.

KSAT is a limited liability commercial stock company, organized under the laws of Norway. The company’s executive management includes the following individuals:

Name	Position	Citizenship
Rolf Skatteboe	CEO	Norwegian
Arnulf Kjeldsen	COO	Norwegian
Alf Eirik	VP and Treasury	Norwegian

KSAT is jointly owned by Kongsberg Defence and Aerospace ASA (50%) and Space Norway AS (50%). Kongsberg Defence and Aerospace AS is a wholly-owned subsidiary of Kongsberg Gruppen ASA, which is listed on the Oslo Stock Exchange. The Norwegian Government owns 50.001% of the shares in Kongsberg Gruppen ASA; it owns 100% of Space Norway AS through the Norwegian Ministry of Trade, Industry and Fisheries.

Granting a license to KSAT is consistent with Section 310(a).⁵ The Commission has interpreted Section 310(a) to permit indirect foreign government ownership in a

⁵ 47 U.S.C. § 310 (2014).

licensee. It has said that “Section 310(a), however, does not expressly prohibit indirect foreign government control of licensees.”⁶ The Norwegian government’s ownership interest in KSAT is indirect and highly attenuated and therefore does not contravene Section 310(a).

Consistent with its interpretation of Section 310(a),⁷ and by way of example, in 2001, the Commission authorized⁸ the assignment of ground station licenses (which included common carrier licenses) to a Norwegian company, Telenor ASA, via its U.S. subsidiary, Telenor Satellite Inc.⁹ – despite the 79% Norwegian government ownership in Telenor ASA.¹⁰ (The license assignments were needed in connection with the acquisition of certain earth stations and other assets from Comsat/Lockheed Martin.¹¹) The Commission authorized the assignment to Telenor even though the assignment involved Section 214 licenses.¹²

KSAT is a commercial company entirely with transactions based solely on commercial considerations. The transaction for which the requested license is needed is all-commercial: KSAT is under a contract to the Canadian private company, exactEarth, to provide earth station support globally for the exactEarth Satellite system.

⁶ See Review of Foreign Ownership Policies for Common Carrier and Aeronautical Licenses, 26 FCC Rcd. 11703, 11709 (Aug. 9, 2011); Application of VoiceStream Wireless Corporation, Powertel, Inc., Transferors, and Deutsche Telekom AG, Transferee, for Consent to Transfer Control of Licenses and Authorizations Pursuant to Sections 214 and 310(d) of the Communications Act and for Declaratory Ruling Pursuant to Section 310 of the Communications Act, IB Docket No. 00-187, Memorandum Opinion and Order, 16 FCC Rcd. 9779 (2001) (“*DT-VoiceStream Order*”).

⁷ See Review of Foreign Ownership Policies for Common Carrier and Aeronautical Radio Licensees under Section 310(b)(4) of the Communications Act of 1934, as Amended, IB Docket No. 11-133, Second Report and Order, FCC 13-50, ¶ 8 (Apr. 18, 2013) (quoting *DT-VoiceStream Order*, *supra* note 6, ¶¶ 41-42) (explaining why Section 310(a) must allow indirect foreign government ownership when Section 310(b)(4) does so even for common carrier licensees).

⁸ In the Matter of Lockheed Martin Global Telecommunications, et al., Applications for Assignment of Section 214 Authorizations, Private Land Mobile Radio Licenses, Experimental Licenses, and Earth Station Licenses, Order and Authorization, FCC 01-369 (rel. Dec. 18, 2001) (“*Telenor Order*”).

⁹ *Telenor Order*, *supra* note 8, ¶ 1 (granting the application “to assign certain Title II common carrier authorizations and Title III radio licenses held by Comsat to Telenor Satellite.”).

¹⁰ See *Telenor Order*, *supra* note 8, ¶ 48 n.140 (“Telenor Satellite is subject to the ultimate control of a corporation of which approximately 79% is owned by a foreign government . . .”).

¹¹ In that case, a Telenor subsidiary, Telenor Satellite Services Holdings, Inc. (“TSSH”) itself a Delaware corporation, set up another Delaware corporation, Telenor Satellite, Inc., specifically to hold the FCC licenses.

¹² *Telenor Order*, *supra* note 8, ¶ 1

1.5. Earth Station Frequency Bands

The proposed earth station will acquire AIS data from the Satellite (via feeder links) in the following frequencies:

Center Freq. (MHz)	Lower Freq. (MHz)	Upper Freq. (MHz)	Bandwidth (MHz)	International Allocation	Domestic Allocation
5183	5167.5	5198.5	31	RR, fn. 5.447B	No; need waiver

1.5.1. International Allocations

The 5150–5216 MHz band has been allocated internationally for non-geostationary mobile satellite service (“MSS”) feeder links through footnote 5.447B, which provides as follows: “[T]he band 5150–5216 MHz is also allocated to the fixed-satellite service (space-to-Earth) on a primary basis. This allocation is limited to feeder links of non-geostationary-satellite systems in the mobile-satellite service and is subject to provisions of No. 9.11A.”¹³

The footnote applies here because: (i) The frequencies used (5167.5–5198.5 MHz) are within the band segment addressed by the footnote; (ii) the frequencies are used for feeder links; (iii) the Satellite is a non-geostationary satellite; and (iv) the Satellite is operating in the MSS bands as it is being used for satellite AIS detection in the 161.9625–161.9875 MHz (AIS-1) and 162.0125–162.0375 MHz (AIS-2) bands.¹⁴ (See Section 2.2.2(d), below, for a list of the Satellite’s relevant operating frequencies.) In compliance with footnote 5.447B and the authorization issued to exactEarth by the Canadian government,¹⁵ the Satellite has undergone coordination as required by ITU RR 9.11A.¹⁶ The Satellite operation has been registered with the ITU for these downlink frequencies. See Exhibit B, Technical Supplement.

¹³ ITU Radio Regulations, art. 5, note No. 5.447B.

¹⁴ ITU 2012 Radio Regulations, Appx. 18, Specific Note p (“Additionally, AIS 1 [161.975 MHz] and AIS 2 [162.025 MHz] may be used by the mobile-satellite service (Earth-to-space) for the reception of AIS transmissions from ships.”). *See also* ITU 2012 Radio Regulations, Appx. 18, Specific Note s (“Channels 75 [156.775 MHz] and 76 [156.825 MHz] are also allocated to the mobile-satellite service (Earth-to-space) for the reception of long-range AIS broadcast messages from ships . . .”).

¹⁵ exactEarth Conditions for Approval in Principle of the ADS Satellite Network — Industry Canada, Spectrum Management and Telecommunication, Industry Canada (May 2, 2014) (amended October 22, 2015), <http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf10818.html> (last visited Nov. 20, 2015) (“Canada Conditions for Approval”), sec. A(4) (“The satellites must be successfully notified to the ITU.”).

¹⁶ *See* ITU RR 9.11A (“[F]or a station for which the requirement to coordinate is included in a footnote to the Table of Frequency Allocations referring to this provision, the provisions of Nos. 9.12 to 9.16 are applicable”).

Footnote 5.447C imposes certain ITU coordination requirements on operations that are subject to footnote 5.447B and these requirements have been met.¹⁷ The Satellite will be operated on a non-interference basis in accordance with the license issued to exactEarth by the Canadian government.¹⁸ The power flux-density requirements in footnote 5.447B¹⁹ will be observed as they are a requirement of exactEarth’s Canadian license for the Satellite.²⁰

1.5.2. Domestic Allocation and Request for Waiver

Feeder link allocations in the in the 5150–5216 MHz band segment are not provided for in the Domestic Table of Frequency Allocations; footnote 5.447B is not included in the domestic allocations for the 5150–5250 MHz band.²¹ Accordingly, KSAT requests a waiver of the Commission’s rules for feeder link reception in the 5150–5216 MHz band. As explained further in Section 3, below, a waiver is warranted here since the operation

¹⁷ Footnote 5.447C provides: “Administrations responsible for fixed-satellite service networks in the band 5150–5250 MHz operated under Nos. . . . 5.447B shall coordinate on an equal basis in accordance with No. 9.11A with administrations responsible for non-geostationary-satellite networks operated under No. 5.446 [radiodetermination] and brought into use prior to 17 November 1995. Satellite networks operated under No. 5.446 brought into use after 17 November 1995 shall not claim protection from, and shall not cause harmful interference to, stations of the fixed-satellite service operated under No. . . . 5.447B.” The satellite operation has been registered with the ITU. See [Exhibit B](#), Technical Supplement.

¹⁸ ExactEarth Conditions for Approval in Principle of the ADS Satellite Network – Industry Canada, Spectrum Management and Telecommunication, Industry Canada (May 2, 2014) (amended October 22, 2015) (“**Canada Conditions for Approval**”), sec. A(19) (“In the band 5150-5250 MHz, should the operation of the satellite network cause unacceptable or harmful interference to the reception of any station entitled to protection, exactEarth shall immediately take measures to eliminate the interference, including, if necessary, ceasing operations.”). See section 1.7 below (listing other exactEarth licenses).

¹⁹ See ITU Radio Regulations, art. 5, note No. 5.447B (“The power flux-density at the Earth’s surface produced by space stations of the fixed-satellite service operating in the space-to-Earth direction in the band 5150–5216 MHz shall in no case exceed –164 dB (W/m²) in any 4 kHz band for all angles of arrival”).

²⁰ Canada Conditions for Approval, sec. A(18) (“In the band 5150-5216 MHz the power flux-density at the Earth’s surface produced by space stations of the fixed-satellite service operating in the space-to-Earth direction shall not exceed -164 dB(W/m²) in any 4 kHz band for all angles of arrival.”).

²¹ 47 C.F.R. § 2.106, containing the U.S. Table of Frequency Allocations, which in pertinent part provides:

Table of Frequency Allocations				4990-5925 MHz (SHF)		Page 41
International Table			United States Table			FCC Rule Part(s)
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table		
5150-5250 AERONAUTICAL RADIONAVIGATION FIXED-SATELLITE (Earth-to-space) 5.447A MOBILE except aeronautical mobile 5.446A 5.446B			5150-5250 AERONAUTICAL RADIONAVIGATION US260	5150-5250 AERONAUTICAL RADIONAVIGATION US260 FIXED-SATELLITE (Earth-to-space) 5.447A US344	RF Devices (15) Satellite Communications (25) Aviation (87)	
5.446 5.446C 5.447 5.447B 5.447C			US211 US307 US344	5.447C US211 US307		

of the earth station will not cause interference; nor does KSAT request protection from interference. The downlink serves the public interest by providing timely access to AIS data.

1.5.3. Coordination with Federal Users

The 5150-5250 MHz band is also allocated domestically to aeronautical radionavigation on a primary basis for federal uses. KSAT respectfully requests the Commission's assistance in coordinating with the National Telecommunications and Information Administration, as necessary.

1.6. The Receive-Only Earth Station and Remote Control Point

1.6.1. The Station

The proposed receive-only earth station will be hosted at Iridium's Alaska Ground Station in Fairbanks, Alaska, located at 900 Bidwell Avenue, Fairbanks, AK 99701. exactEarth will own the earth station antenna, consisting of the following equipment: A 5-meter C-band receive-only parabolic antenna, which KSAT has procured on exactEarth's behalf. The antenna is manufactured by Kongsberg Spacetec AS. While this model of antenna, "MEOS," is a standard make for other frequency bands, the C-band receive antenna to be used here is customized for the exactEarth application.

Iridium will provide the antenna structure, electrical power, network connection, and on-site maintenance and installation services, as well as related equipment racks in controlled indoor space under subcontract to KSAT, which will operate the earth station remotely from its TNOc in Tromsø, Norway.

The antenna will be covered by a radome. The total antenna structure height is 8.5 meters above ground level.²² While the antenna structure exceeds 6.1 meters, no prior FAA notification is required pursuant to 47 C.F.R. § 25.115(j) because the antenna structure will be shielded by existing permanent and substantial structures of greater height (including several adjacent structures that reach 13 meters in height or more²³).

²² All references to height in "meters" in this paragraph should be interpreted as "meters above ground level."

²³ See 47 C.F.R. § 17.7(e)(1) (exempting FAA notification for "[a]ny object that will be shielded by existing structures of a permanent and substantial nature . . . of equal or greater height, and will be located in the congested area of a city, town, or settlement where the shielded structure will not adversely affect safety in air navigation"). There are several existing structures near the proposed earth station site that are of a permanent and substantial nature: (1) Iridium has five existing antenna

No intentional radio transmissions or emissions will occur from the earth station. AIS data received by the station will be relayed directly over the internet to exactEarth's facility in Cambridge, Ontario.

1.6.2. Remote Control Point – A Response to Question E17

The receive-only earth station antenna will be operated remotely by KSAT from its TNOC in Tromsø, Norway. KSAT will communicate with the antenna over the internet using a secure VPN connection. The Commission has authorized foreign remote control of U.S. earth stations in several instances. For example, the Commission authorized Emerging Market Communications, L.L.C. to operate its U.S. earth station (hosted by Hawaii Pacific Teleport) from a remote control point in Buenos Aires, Argentina (EMC's network operations center).²⁴

KSAT will comply with Section 25.272 of the Commission's rules, including the requirement in section 25.272(d)(1) to "ensure that there is continuously available means of communications between the satellite network control center and the earth station operator or its remote control point."

1.6.3. Points of Contact

KSAT's TNOC can be reached 24/7 at +47 77 60 02 68. Iridium's POC at the site is Ed Greife, phone number (907) 451-9841. Iridium's Satellite Network Operations Center (SNOC) can be contacted 24/7 for emergency support if needed at (703) 724-8300.

1.7. The Foreign Satellite

The Satellite is operated by exactEarth and used for AIS detection service in the 161.9625–161.9875 MHz (AIS-1) and 162.0125–162.0375 MHz (AIS-2) bands. The Satellite was launched on July 22, 2012 and is operated under licenses issued by the Canadian government as follows and renewed as needed:

- (a) Radio License, Industry Canada (license no. 5124222) (Nov. 18, 2014); and
- (b) ExactEarth Conditions for Approval in Principle of the ADS Satellite Network – Industry Canada, Spectrum Management and Telecommunication, Industry

structures at the site that are approximately 13 meters high; (2) adjacent power lines located approximately 10 meters away from the proposed antenna structure are approximately 9 meters high; (3) a neighboring parking garage, located within 100 meters, is about 9 meters high; and (4) a telecommunications tower, located about 200 meters away, is approximately 40 meters in height.

²⁴ Emerging Markets Communications, L.L.C. Modification Request to Change Remote Control Point for Earth Station (E000127), FCC IBFS File No. SESMOD2010080300983 (granted Sept. 16, 2010).

Canada (May 2, 2014) (amended October 22, 2015) (“**Canada Conditions for Approval**”)

(“**Canadian Licenses**”). See Exhibit C, Canadian Licenses.

The Satellite will downlink AIS data (received from marine vessels in the mobile-satellite service) to the Fairbanks earth station using the 5167.5–5198.5 MHz band (space-to-Earth). KSAT does not seek authority for any other frequencies used by the Satellite.

1.8. Section 304 Waiver Statement

Pursuant to Section 304 of the Communications Act, 47 U.S.C. § 304, KSAT hereby waives any claim to the use of any particular frequency or of the electromagnetic spectrum as against the regulatory power of the United States because of the previous use of the same, whether by license or otherwise.

2. INFORMATION ON THE NON-U.S. LICENSED SATELLITE OPERATION PURSUANT TO 47 C.F.R. §§ 25.131(c) AND 25.137: A RESPONSE TO QUESTION 42a

KSAT provides this information in conformity with 47 C.F.R. §§ 25.131(c) and 25.137 for its proposed receive-only earth station to receive signals from the Satellite.

2.1. DISCO II Showing – Section 25.137(a)

The Commission considers requests to operate U.S. earth stations with non-U.S. licensed satellites in accordance within the framework established in the DISCO II Order.²⁵ Under the procedures relevant to KSAT established in the DISCO II Order, “a prospective U.S. earth station operator seeking to communicate with the non-U.S. space station must file an application for an initial earth station license, listing the non-U.S. space station as a ‘point of communication,’ and demonstrating that the space station meets all applicable Commission requirements.”²⁶ As part of the DISCO II framework, the Commission considers: “[T]he effect on competition in the United States, spectrum availability, eligibility and operating requirements, as well as national security, law

²⁵ Amendment of the Commission’s Regulatory Policies to Allow Non-U.S. Licensed Space Stations to Provide Domestic and International Service in the United States, Report and Order, FCC 97-398, 12 FCC Rcd. 24094 (1997) (“*DISCO II Order*”). See also Amendment of the Commission’s Regulatory Policies to Allow Non-U.S. Licensed Space Stations to Provide Domestic and International Satellite Service in the United States, 15 FCC Rcd. 7207 (1999) (“*DISCO II Recon Order*”).

²⁶ *DISCO II Recon Order*, supra note 25, ¶ 5. See generally 47 C.F.R. § 25.137.

enforcement, and trade and foreign policy concerns.”²⁷ As discussed in sections 2.1.1–2.1.3 and 2.2, below, KSAT satisfies the DISCO II criteria for obtaining the Commission’s authorization to communicate with the exactEarth Satellite using the proposed receive-only earth station in Fairbanks, Alaska.

2.1.1. Competitive Aspects

In the *DISCO II Order*, the Commission adopted a rebuttable presumption in favor of U.S. market entry for non-U.S. licensed satellites authorized by WTO member countries, on the assumption that the commitments by those countries under the WTO Basic Telecommunications Agreement are sufficient to ensure competition in the marketplace.²⁸ Reception of exactEarth Satellite signals falls within the DISCO II framework and the rebuttable presumption applies for the following reasons: First, the exactEarth Satellite is authorized by Canada,²⁹ a WTO member.³⁰ Second, MSS is covered under the WTO Basic Telecommunications Agreement as a Basic Telecommunications Service,³¹ and satellite-based reception of AIS signals from ships is a form of MSS.³² Accordingly, the DISCO II requirements have been satisfied. As

²⁷ *DISCO II Order*, *supra* note 25, ¶ 7.

²⁸ See *DISCO II Order*, *supra* note 25, ¶ 44 (“As proposed, we will apply the rebuttable presumption paradigm to a satellite system licensed by any WTO Member, including Members that did not make specific market access commitments for satellite services.”). See *Space Imaging Order*, *supra* note 23; see also Application of Inmarsat Mobile Networks, Inc. to Operate a Fixed-Satellite Service Gateway Earth Station Facility in Lino Lakes, Minnesota with the Inmarsat-5 F2 Space Station, Order and Authorization and Declaratory Ruling, FCC, DA 15-392, ¶ 6 (released Mar. 30, 2015) (“*Inmarsat Order*”) (“In the *DISCO II Order*, the Commission established a rebuttable presumption that entry by non-U.S. space stations licensed by WTO Members to provide services covered by the U.S. commitments under the WTO Agreement on Basic Telecommunications Services will further competition in the United States.” (emphasis in original)).

²⁹ See 47 C.F.R. § 25.137(a)(2) (obviating the need for an analysis of competitive opportunities “with respect to requests for authority to operate using a non-U.S. licensed satellite that is licensed by . . . a country that is a member of the [WTO] for services covered under the World Trade Organization Basic Telecommunications Agreement”).

³⁰ *Understanding the WTO: Members and Observers*, WORLD TRADE ORGANIZATION, https://www.wto.org/english/thewto_e/whatis_e/tif_e/org6_e.htm (last visited Nov. 17, 2015).

³¹ Under the WTO Basic Telecommunications Agreement, the United States has committed to open markets for all basic telecom services, including satellite services, with the exception of Direct Broadcast Satellite (“DBS”) services, Direct-to-Home (“DTH”) services, and Digital Audio Radio Services (“DARS”). See, e.g., General Agreement on Trade in Services, The United States of America Schedule of Specific Commitments, Supplement 2, GATS/SC/90/Suppl.2 (Apr. 11, 1997), available at https://www.wto.org/english/tratop_e/serv_e/telecom_e/telecom_commit_exempt_list_e.htm.

³² ITU 2012 Radio Regulations, Appx. 18, Specific Note p (“Additionally, AIS 1 [161.975 MHz] and AIS 2 [162.025 MHz] may be used by the mobile-satellite service (Earth-to-space) for the reception of AIS transmissions from ships.”). See also ITU 2012 Radio Regulations, Appx. 18, Specific Note s

shown in section 1.3, above, downlinking AIS data is in the public interest. Satellite AIS authorizations have also been granted to several U.S. entities by the Commission.³³

2.1.2. Spectrum Availability

The Commission also considers spectrum availability to be a factor in determining whether to allow a foreign-licensed satellite to serve the U.S. market.³⁴ The Satellite will downlink AIS data to the Fairbanks receive-only earth station in the 5167.5–5198.5 MHz band.

As stated in Section 1.5.1, this band is allocated internationally on a primary basis for MSS (space-to-Earth) feeder links through footnote 5.447B. Because there is no allocation for MSS feeder links in this band in the Domestic Table of Frequency Allocations, KSAT requests a waiver of the Commission’s rule to allow for this non-conforming use. As explained in Section 3, below, a waiver is justified based on precedent and Commission statements. The Satellite is required by the Canadian Licenses to be operated on a non-interference basis. KSAT does not request protection from interference.

The 5150–5250 MHz band is allocated on a co-primary basis to Aeronautical Radionavigation (for Federal and non-Federal uses) and Fixed Satellite Service (Earth-to-space) (for non-Federal uses). The downlink to the proposed Earth station will not interfere with other conforming uses in the band for the following reasons. First, the Satellite operation has been registered in the Master International Frequency Register. Second, a search of the FCC’s database for current FCC authorizations in the band reveals that there are no licensed Aeronautical Radionavigation operations in the relevant location (Alaska). Third, exactEarth has already coordinated its downlink operations with Globalstar, the only known licensee using the 5150–5250 MHz band in the state of Alaska, and Globalstar has confirmed that the Satellite downlink will not present an interference issue. See Exhibit B, Technical Supplement. Finally, KSAT

(“Channels 75 [156.775 MHz] and 76 [156.825 MHz] are also allocated to the mobile-satellite service (Earth-to-space) for the reception of long-range AIS broadcast messages from ships . . .”).

³³ See, e.g., Orbcomm License Corp. Application For Authority to Modify its Non-Voice, Non-Geostationary Satellite System, Order and Authorization, DA 08-633 ¶¶ 12-15 (FCC rel. Mar. 21, 2008).

³⁴ See *DISCO II Order*, *supra* note 25, ¶¶ 149–150 (“Further, spectrum considerations may arise in cases where the foreign service provider seeks access to the U.S. market by filing an earth station application to access an operating non-U.S. satellite. In these cases, we must determine whether, and to what extent, the proposed U.S. service will impact existing operations in the United States.”).

provides additional technical information, including antenna gain pattern and power flux density levels, which is also included within Exhibit B.

KSAT does not request authorization for any other frequencies.

2.1.3. National Security and Foreign Policy Issues

Granting this earth station application to operate with the exactEarth Satellite, authorized by the Canadian government, is consistent with the national security and foreign policy interests of the United States. exactEarth makes the satellite AIS data available under contract to the U.S. government, including to the U.S. Coast Guard and the National Oceanic and Atmospheric Administration. AIS data serves a critical function by improving maritime situational awareness and enhancing maritime safety and port security. The reception of AIS data by the proposed earth station is consistent with international agreements. The International Convention for the Safety of Life at Sea, to which the U.S. is a party, mandates that vessels of certain tonnage be equipped with AIS and the ITU Radio Regulations have long recognized the merits of satellite AIS by providing allocations for the service.

2.2. exactEarth Satellite: Legal and Technical Information – Section 25.137(b)

2.2.1. Legal Information

Pursuant to Section 25.137(b) of the Commission's rules, KSAT provides the following information on the Part 25 legal requirements, including information requested in Section 25.114, for the Satellite owner and operator, exactEarth, Ltd. exactEarth is organized under Canadian law. The company is owned jointly by COM DEV International Ltd., of Ontario, Canada, and Hisdesat Servicios Estrategicos S.A. of Madrid, Spain. The following is legal information on exactEarth:

- (a) exactEarth Address and Telephone Number.³⁵ 60 Struck Court, Cambridge, Ontario, Canada N1R 8L2; tel. +1 519-622-4445.
- (b) Regulatory Status.³⁶ The exactEarth Satellite is operated on a non-common carrier basis.³⁷
- (c) Basic Qualifications.³⁸ The answer to each of the basic qualifications Questions 36-39 on FCC Form 312, Main Form, is "No." In response to FCC Form 312 Question

³⁵ See FCC Form 312, Questions 1-8.

³⁶ See FCC Form 312, Question 21; 47 C.F.R. § 25.114(c)(11).

³⁷ 47 U.S.C. § 153(11).

40, as of Third Quarter 2015, COM DEV International Ltd., of Ontario, Canada, and Hisdesat Servicios Estrategicos S.A. of Madrid, Spain, each owns more than 10% of the voting stock of exactEarth.³⁹ The company is not subject to denial of Federal benefits for reasons described in Question 41 of FCC Form 312.

- (d) Coordinating Administration.⁴⁰ The exactEarth Satellite is authorized by the government of Canada, which is the ITU coordinating administration responsible for the exactEarth Satellite's operations.
- (e) Public Interest Considerations.⁴¹ Public interest considerations supporting grant of this applications are set forth in section 1.3, above.
- (f) Milestones, Bond and Related Requirements.⁴² The Satellite, which was launched on July 22, 2012, is in orbit and in service. Thus, this application does not raise issues relating to milestones or the posting of bonds under section 25.137(d) because the milestone and bond requirements do not apply to satellites already in orbit.

2.2.2. Technical Information

Section 25.137(b) requires the provision of "technical information for the non-U.S.-licensed space station of the kind that § 25.114 would require in a license application for that space-station, including but not limited to, information required to complete Schedule S." Schedule S is included with this application, and this section and Exhibit B, Technical Supplement, augment that information:

- (a) General description of the Satellite (§ 25.114(d)(1)). The Satellite is one among several existing and planned satellites operated by exactEarth for AIS detection. The Satellite was built by Surrey Satellite Technology Ltd. of the United Kingdom.
- (b) Lifetime (§ 25.114(c)(10)). The Satellite was launched by a Soyuz launch vehicle from Baikonur, Kazakhstan on July 22, 2012. The satellite has a design life of 5 years.
- (c) Satellite orbit information (§ 25.114(c)(6)). The Satellite is a non-geostationary satellite. Schedule S for the Satellite included in this application provides relevant orbital

³⁸ See FCC Form 312, Questions 36-41.

³⁹ See 3Q 2015 exactEarth LTD. Management's Discussion and Analysis, available at <http://investors.exactearth.com/financial-documents>.

⁴⁰ See FCC Form 312, Question 42b.

⁴¹ See 47 C.F.R. § 25.114(d)(6).

⁴² See 47 C.F.R. § 25.137(d).

information, including (i) number of space stations and orbital planes; (ii) the inclination of the orbital plane; (iii) the orbital period; (iv) the apogee; (v) the perigee; (vi) the argument of the perigee; (vii) active service arc;⁴³ (viii) right ascension of the ascending node, and (ix) for each satellite in each orbital plane, the initial phase angle at the reference time.⁴⁴

(d) *Frequencies (§ 25.114(c)(4), § 25.114(c)(7))*. The Satellite operates pursuant to its Canadian Licenses in the following frequency bands:

Frequency Bands (MHz)	Usage Description	International Allocation	Domestic Allocation
161.9625–161.9875 MHz (AIS-1)	Receive AIS signals	Yes	Yes
162.0125–162.0375 MHz (AIS-2)	Receive AIS signals	Yes	Yes
5150-5250 MHz (space to Earth)	Downlink AIS data	Yes	No

Only the bottom row is relevant to this application, and the portion of the band used is: 5167.5-5198.5 MHz. See Schedule S and Exhibit B, Technical Supplement, for additional details on the frequencies used by the Satellite. KSAT is not seeking authorization for any other frequencies.

(e) *Power Flux Density Levels (§ 25.114(c)(8))*. The power flux-density requirements in footnote 5.447B⁴⁵ will be observed as they are a requirement of the Canadian Licenses.⁴⁶

(f) *Tracking, Telemetry and Control Arrangements (§ 25.172)*. The primary telemetry, tracking, and control (TT&C) for operations of the Satellite is handled through a ground station in Surrey, UK. In addition, KSAT’s TNOCC facility in Tromsø, Norway, serves as a satellite network operations center.

⁴³ Not applicable to the Satellite.

⁴⁴ Not applicable to the Satellite.

⁴⁵ See ITU Radio Regulations, art. 5, note No. 5.447B (“The power flux-density at the Earth’s surface produced by space stations of the fixed-satellite service operating in the space-to-Earth direction in the band 5150–5216 MHz shall in no case exceed –164 dB (W/m²) in any 4 kHz band for all angles of arrival”).

⁴⁶ Canada Conditions for Approval, sec. A(18) (“In the band 5150-5216 MHz the power flux-density at the Earth’s surface produced by space stations of the fixed-satellite service operating in the space-to-Earth direction shall not exceed -164 dB(W/m²) in any 4 kHz band for all angles of arrival.”).

(g) Physical Characteristics of the Space Station

The Satellite was manufactured by Surrey Satellite Technology Ltd., of the U.K., with a mass at lift-off approx. 87.7 kg including fuel, End-of-Life power at equinox of approx. 57 W. See Exhibit B, Technical Supplement for additional details.

(h) Coordination Considerations. The Satellite is notified and recorded in the ITU's Master International Frequency Register as part of the ADS satellite network. See Exhibit B, Technical Supplement for the ITU registration information. The Satellite operates on a non-interference basis as required by the Canada Conditions for Approval.⁴⁷

(i) Orbital Debris (§ 25.114(d)(14)).

The Commission's rules require "[a] description of the design and operational strategies that will be used to mitigate orbital debris For non-U.S.-licensed space stations [such as the Satellite], the requirement to describe the design and operational strategies to minimize orbital debris risk can be satisfied by demonstrating that debris mitigation plans for [the Satellite] are subject to direct and effective regulatory oversight by the national licensing authority."⁴⁸

exactEarth is required by the Canada Conditions for Approval to take the following measures: "The licensee, at the end-of-life of the satellite, must implement space debris mitigation measures in accordance with best industry practices so as to minimize adverse effects on the orbital environment."⁴⁹ Thus, operations with the exactEarth Satellite will satisfy the Commission's rules as exactEarth is subject to the "direct and effective regulatory oversight" of its national licensing authority under its Canadian Licenses.

2.3. Processing Rules – Section 25.137(c): A Request for a Waiver

The Commission applies a modified processing round procedure for NGSO-like space station applications, because "NGSO systems generally cannot operate on the same spectrum without causing unacceptable interference to each other." KSAT requests a waiver of these procedures in favor of a first-come, first-served approach as used for GSO-like systems, because the rationale for applying the NGSO procedures does not apply here. See section 3.2, below.

⁴⁷ Canada Conditions for Approval, sec. 19.

⁴⁸ 47 C.F.R. § 25.114(d)(14)(v).

⁴⁹ Canada Conditions for Approval, sec. 21.

3. JUSTIFICATION OF WAIVER REQUESTS: A RESPONSE TO QUESTION 35

KSAT requests two waivers: for non-conforming domestic frequency use; and of the default processing rules for non-geostationary satellites.

The Commission may waive any of its rules if there is “good cause” to do so.⁵⁰ In general, a waiver is appropriate if: (i) Special circumstances warrant a deviation from the general rule; and (ii) such deviation would better serve the public interest than would strict adherence to the general rule.⁵¹ Generally, the Commission will grant a waiver of its rules in a particular case if the relief requested would not undermine the policy objective of the rule in question and would otherwise serve the public interest.⁵² KSAT submits that good cause exists for the Commission to waive its rules in this case, as explained below.

3.1. Waiver for Nonconforming Use of Frequencies

As explained in section 1.5.1, above, the 5150–5216 MHz band – which includes the proposed downlink band (5167.5–5198.5 MHz) – has been allocated internationally for non-geostationary MSS (which includes satellite AIS) space-to-Earth feeder links through footnote 5.447B. No such allocation exists in the Domestic Table of Frequency Allocations.⁵³ Accordingly, KSAT requests a waiver of Section 2.102 of the Commission’s rules⁵⁴ to permit the proposed nonconforming use of the 5167.5–5198.5 MHz band.

Good cause for a waiver exists here. First, the reception at the proposed earth station has no potential for causing interference. The downlink from the Satellite itself will also not cause interference because (i) its operations have been registered and coordinated with the ITU; (ii) it has coordinated its operations with Globalstar, the only other licensee found to be operating in the 5150–5250 MHz band in Alaska; and (iii) the operation complies with the power flux density limits imposed by footnote 5.447B of the ITU Radio Regulations. See Exhibit B, Technical Supplement.

The Commission has stated that it is inclined to grant waivers where there is little potential for interference: “[I]n considering requests for non-conforming spectrum

⁵⁰ See 47 C.F.R. § 1.3; see also *Northeast Cellular Tel. Co. v. FCC*, 897 F.2d 1164 (D.C. Cir. 1990); *WAIT Radio v. FCC*, 418 F.2d 1153 (D.C. Cir. 1969), cert. denied, 409 U.S. 1027 (1972).

⁵¹ *Northeast Cellular*, 897 F.2d at 1166.

⁵² *WAIT Radio*, 418 F.2d at 1157.

⁵³ See *supra* note 21 and accompanying text.

⁵⁴ 47 C.F.R. § 2.102(a) (requiring compliance with the U.S. Table of Frequency Allocations in 47 C.F.R. § 2.106).

uses, the Commission has indicated it would generally grant such waivers ‘when there is little potential for interference into any service authorized under the Table of Frequency Allocations and when the non-conforming operator accepts any interference from authorized services.’”⁵⁵ The Commission has stated repeatedly that where a station is merely receiving existing signals, as is the case here, there is no risk of additional interference.⁵⁶ KSAT does not seek protection from interference.

Second, the public interest is served by increasing the availability and timeliness of AIS data, which the earth station facilitates. The societal benefits of AIS are discussed in Section 1.3, above, and include maritime situational awareness, maritime safety and port security, among others.

3.2. Waiver of Default Processing Rules

The Commission has adopted a modified processing round procedure for NGSO-like space station applications,⁵⁷ because “NGSO systems generally cannot operate on the same spectrum without causing unacceptable interference to each other.”⁵⁸ KSAT requests a waiver of this default rule for its application to receive downlinked AIS data at the proposed receive-only earth station in Alaska, and requests that the Commission instead apply the first-come, first-served procedure used for GSO-like systems, as outlined in Section 25.158.⁵⁹

⁵⁵ contactMEO Communications, LLC, 21 FCC Rcd. 4035, at ¶ 25 (released Apr. 14, 2006). *See also* Orbcomm License Corp., *supra* note 33, ¶ 15 (“The Commission may grant a waiver of the Table of Allocations for non-conforming uses of spectrum when there is little potential for interference into any service authorized under the Table of Allocations.”).

⁵⁶ *See, e.g.,* Orbcomm License Corp., *supra* note 33, ¶ 15 (“Because Orbcomm will only receive existing AIS signals transmitted by maritime vessels, there is no risk of additional interference.”). *See, e.g.,* Comprehensive Review of Licensing and Operating Rules for Satellite Services, Notice of Proposed Rulemaking, IB Docket No. 12-267, FCC 12-117, ¶ 88 (rel. Sept. 28, 2012) (“Receive-only stations cannot cause interference, whether or not their antennas meet the [performance] standards in Sections 25.209(a) and (b).”).

⁵⁷ 47 C.F.R. § 25.137(c) (“A non-U.S. licensed NGSO-like satellite system seeking to serve the United States can be considered contemporaneously with other U.S. NGSO-like satellite systems pursuant to § 25.157 . . . if the non-U.S. licensed satellite system is: (1) In orbit and operating; (2) Has a license from another administration; or (3) Has been submitted for coordination to the [ITU].”).

⁵⁸ Amendment of the Commission’s Space Station Licensing Rules and Policies, First Report and Order, IB Docket No. 02-34, 18 FCC Rcd. 10760, 10773 ¶ 21 (2003) (“*First Space Station Licensing Reform Order*”). *See also* Space Imaging, LLC, Declaratory Order and Order and Authorization, FCC DA 05-1940 (July 6, 2005) (“*Space Imaging Order*”), at ¶ 3 (quoting *First Space Station Licensing Reform Order*).

⁵⁹ 47 C.F.R. § 25.158.

Granting the waiver is justified because the rationale for the default NGSO processing round does not apply here. The proposed downlink will not cause unacceptable interference; exactEarth has coordinated its operations in the 5150–5250 MHz band with Globalstar, the only NGSO licensee found to be operating in this band in Alaska. The downlink will occur only during brief intervals when the satellite is visible to the Alaska Earth station. Furthermore, the Satellite has been coordinated and registered with the ITU and is required by the Canadian Licenses to be operated on a non-interference basis. Accordingly, the proposed operation does not preclude other NGSO operations in this band in Alaska.

The Commission has said it is inclined to grant a waiver where there is “little potential for interference.”⁶⁰ It has also stated that “it is in the public interest to adopt a first-come, first-served procedure for as many types of satellite applications as possible, except in circumstances where licensing the first applicant to operate in a certain frequency band would prevent other applicants from using that spectrum.”⁶¹ Here the rationale for applying the NGSO processing round procedure does not apply, so the Commission may apply the first come, first served procedure.

In *Space Imaging, LLC*, the Commission granted a waiver of the NGSO processing round procedure in favor of a first-come, first-served approach for similar reasons.⁶² The Commission agreed that because the proposed operation did not preclude other EESS systems in the same band, it was not necessary to subject Space Imaging to a modified processing round procedure and that public interest was supported by a first-come, first-served approach; thus, the Commission concluded that applying such an approach would, “exped[ite] service to the public.”⁶³

Applying a first-come, first-served approach to KSAT’s application will ensure will promote timely availability of critical AIS data.

4. CONCLUSION

As demonstrated above, KSAT meets the legal and technical requirements for obtaining the requested receive-only earth station license under Title III of the Communications Act of 1934, as amended, and the Commission’s rules, and the grant of this application is in the public interest.

⁶⁰ See contactMEO Communications, LLC, *supra* note 55.

⁶¹ *Space Imaging Order*, *supra* note 58, at ¶ 4; *First Space Station Licensing Reform Order*, *supra* note 58, at 10793 ¶ 74.

⁶² *Space Imaging Order*, *supra* note 58.

⁶³ *Id.*