

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the matter of)	
)	
International Bureau Seeks)	IB Docket No. 16-50
Comment on the next ORBIT Act Report)	

COMMENTS OF INMARSAT

Inmarsat ("Inmarsat") submits these Comments in response to the Public Notice inviting input to be reflected in the Commission's progress report to Congress on implementing the Open-Market Reorganization for the Betterment of International Telecommunications Act (the "ORBIT Act").¹ The purpose of the ORBIT Act is to "promote a fully competitive global market for satellite communications services for the benefit of consumers and providers of satellite services and equipment by fully privatizing ...INTELSAT and Inmarsat."²

Inmarsat converted from an intergovernmental organization ("IGO") to a private company in 1999 in a manner that was ORBIT Act-compliant.³ In June 2005, the Commission found that Inmarsat had satisfied the requirement to effectuate a substantial dilution of former Signatory financial interests in the company.⁴ Just days later, Inmarsat reduced former Signatory and foreign government ownership even further by completing one of the most successful equity IPOs by a satellite services company. Today, Inmarsat's shares are traded on the London Stock

¹ Public Notice, Report No. SPB-256, DA 14-94 (rel. February 12,2014).

² *Id.* at 1. *See also* ORBIT Act, Pub. L. No. 106-180, 114 Stat 48, §2 (2000).

³ *See Comsat Corp. d/b/a Comsat Mobile Communications et.al.* 16 FCC Red 21661 (2001).

⁴ *Inmarsat Group Holdings Limited, Petition for Declaratory Ruling Pursuant to Section 621(5)(F) of the ORBIT Act*, 20 FCC Red 11366 (2005).

Exchange⁵ and no former Inmarsat Signatory owns five percent or more of the company and the aggregate ownership by foreign governments is nominal. Since its inception more than three decades ago, Inmarsat has remained on the cutting edge of satellite telecommunications and has been a guiding force in the global satellite telecommunications sector's vision of the future of telecommunications.

A. Future Landscape – 5G and Next Generation Satellite

An important part that future vision reaches beyond Inmarsat's traditional portfolio of safety services to the future of global telecommunication, with satellite serving an even more explicit role in expanding the potential of terrestrial networks. Inmarsat's new Global Xpress service explained below is able to provide high-bandwidth backhaul to remote environments, thereby widening the reach of terrestrial networks across the globe. Even the most advanced terrestrial system will forever be limited by the inability to reach a ship at sea or a soldier in the field without a satellite network connection. Moreover, through offloading, satellite networks increase the capacity of terrestrial networks. And when terrestrial networks become overloaded or compromised by storm, earthquake, or man-made disaster, satellite networks inevitably step in as a last line of communications.

Looking ahead to 5G—a technology for both “people and things”⁶—the availability of satellite networks will prove more fundamental. Developers of terrestrial 5G technology dare us to imagine “massive machine communication”⁷ over networks connecting “100 billion” things,⁸

⁵ *Inmarsat Scoops Award for Top UK Telecom Company*, Inmarsat plc (Feb. 25, 2013), <http://www.inmarsat.com/news/inmarsat-scoops-award-for-top-uk-telecom-company/>.

⁶ See Letter from Brian Hendricks, Head of Technology Policy and Government Relations, Nokia, to Marlene H. Dortch, Secretary, FCC, at attachment p. 8, GN Docket No. 14-177, et al. (filed Aug. 26, 2015).

⁷ *Id.*

⁸ Comments of Huawei Technologies, Inc., and Huawei Technologies, Ltd. at Appendix 1 p. 8, GN Docket No. 14-177, et al. (filed Jan. 15, 2015) (“Huawei Comments”).

and widespread adoption of “Internet of Things” (IoT) applications including “smart metering,”⁹ “smart sensors,”¹⁰ “vehicular connectivity,”¹¹ and “mission-critical machine control and monitoring.”¹² Inmarsat shares this vision, but with a much wider vision.

Satellite services provide capability and reliability where terrestrial services in many instances cannot. For example infrastructure and monitoring connectivity will not be limited to cities and areas with fiber infrastructure. Those same cities will not have to go dark and lose connectivity when disaster strikes. Networked and driverless cars will not have to pull over if a tower causes an interruption. Full automation of shipping vessels and aircraft will be available in areas without cell phone reception and “mission-critical” machine control will be available at all times, and not only when or where equipment is conveniently located. Remote areas of the globe will have a broadband lifeline to the modern world where it was previously impossible.

Inmarsat offers Global Xpress services through versatile, compact, and easy-to-use terminals that can bring connectivity to devices, cars, trucks, ships, planes, and other equipment, manned or unmanned. Critically, these terminals can deliver IoT applications to nearly any location in the world and provide seamless end-to-end connectivity when integrated with terrestrial carrier services.¹³ Satellite plays a crucial role in making our world a connected one and Inmarsat stands ready to bring that vision forward into the 21st century.

⁹ Letter from Jeffrey A. Marks, Senior Counsel for Regulatory Affairs, Alcatel-Lucent, to Marlene H. Dortch, Secretary, FCC, at attachment p. 4, GN Docket No. 14-177, et al. (filed May 11, 2015).

¹⁰ Huawei Comments at Appendix 1 p. 3.

¹¹ *Id.*

¹² Comments of Intel Corporation at 8, GN Docket No. 14-177, et al. (filed Jan. 15, 2015).

¹³ See Caleb Henry, “Ericsson and Inmarsat Partner on Connected Ship Products,” *SatelliteToday.Com* (Nov. 19, 2015), <http://www.satellitetoday.com/telecom/2015/11/19/ericsson-and-inmarsat-partner-on-connected-ship-products/> (announcing a partnership to provide “an end-to-end managed cloud solution that connects vessels at sea to shore-based operations including maintenance service providers, customer support centers, fleet/transportation partners, port operations and authorities” by combining Global Xpress with Ericsson’s maritime cloud services).

B. *Inmarsat's Services*

As the largest mobile satellite operator in the world, Inmarsat provides critical services to military and civilian government agencies, the maritime and aviation communities, the energy, mining, construction, and transportation industries, and others that require access to ubiquitous, reliable, and secure communications. These services include broadband communications to ships and planes, transportation safety services, secure battlefield communications, and machine-to-machine ("M2M") communications that allow customers to monitor and manage infrastructure and equipment all across the world. The U.S. military and Coast Guard, the Department of Homeland Security (including the Federal Emergency Management Agency (FEMA)), U.S. Executive Branch, Congressional officials, The New York City Fire Department, CNN, ABC, CBS, National Public Radio, the Red Cross, and nearly every major airline and shipping entity are examples of the users who rely on Inmarsat for their critical communications needs. Where no other communication service will reach, where weather or disasters preclude use of terrestrial networks, and where highly secure communications are needed, Inmarsat's system provides a vital, instantaneously available, and reliable link for private and governmental users alike.

Inmarsat, in an effort to respond to evolving customer needs and aggressive and highly competitive market forces,¹⁴ has continued to invest in technologies for the diverse mobile satellite service (MSS) and Fixed Satellite Service (FSS) customer base. Over the last decade, Inmarsat has invested well over \$1.5 billion in the deployment of its fourth-generation, Inmarsat 4 ("I-4") satellite network, which is today providing innovative MSS and FSS services to the

¹⁴ See generally, State of the Satellite Industry Report, THE SATELLITE INDUSTRY ASSOCIATION (September 2015), available at: <http://www.sia.org/wp-content/uploads/2015/06/Mktg15-SSIR-2015-FINAL-Compressed.pdf>. See generally, FCC Report to Congress as Required by the Orbit Act Sixteenth Report, I.B. Docket No.14-229 (2014).

United States and globally through the Broadband Global Access Network (“BGAN”) system¹⁵ with user terminal traffic routed through Inmarsat’s Satellite Access Station in Paumalu, Hawaii, connecting terminals to the public switched network and the Internet.¹⁶ The year 2013 marked the completion of the I-4 system with the launch of Alphasat; one of the most technically advanced telecommunications satellites ever constructed for civilian applications.¹⁷

In order to remain competitive in today's current MSS and FSS markets, Inmarsat's I-4 fleet is continuing to adapt to support IP-based communications. Using highly portable and easily deployed "notebook sized" antennas that are one-third the size, weight, and price of traditional Inmarsat terminals, BGAN can provide voice and broadband service at speeds of half a megabit per second and better. End users continue to deploy BGAN in new and innovative ways.¹⁸

¹⁵ See *High Data Rate BGAN Terminal Starts Video Revolution*, Inmarsat plc (April 2013), <http://www.inmarsat.com/news/high-data-rate-bgan-terminal-starts-video-revolution/>. See also, *Inmarsat Sets 'Pace of Innovation' with BGAN HDR*, Inmarsat plc (April 2014), <http://www.inmarsat.com/news/inmarsat-sets-pace-innovation-bgan-hdr/>.

¹⁶ See, File No. SES-LIC-20080306-00242, Call Sign E080059 (granted Dec.18, 2008); File No. SES-MFS-20080228-00207, Call Sign KA 25 (granted Dec. 18, 2008).

¹⁷ *Successful Launch for Inmarsat Alphasat Satellite*, Inmarsat plc (Jul. 25, 2013), <http://www.inmarsat.com/press-release/successful-launch-for-inmarsat-alphasat-satellite/>; *Alphasat Reaches Temporary Geostationary Orbit*, Inmarsat plc (Aug. 1, 2013) <http://www.inmarsat.com/press-release/alphasat-reaches-temporary-geostationary-orbit/>.

¹⁸ See, *BGAN-Powered Parrot Bebop Drone Takes Off*, Inmarsat plc (Mar. 10, 2015), <http://www.inmarsat.com/news/bgan-powered-parrot-bebop-drone-takes/>; *Follow Veteran Explorer's Sahara Ultra-Marathon Challenge*, Inmarsat plc (Apr. 2, 2015), <http://www.inmarsat.com/news/follow-veteran-explorers-sahara-ultra-marathon-challenge/>; *Join World-Record Chaser As He Journeys on the "Road of Hell"*, Inmarsat plc (Sept. 11, 2015), <http://www.inmarsat.com/news/join-world-record-chaser-as-he-journeys-on-the-road-of-hell/>; *Journey Into History*, Inmarsat plc (Oct. 1, 2015), <http://www.inmarsat.com/news/journey-into-history/>; *Most Connected Rowing Boat to Ever Cross the Atlantic*, Inmarsat plc (Feb. 8, 2016), <http://www.inmarsat.com/news/connected-rowing-boat-ever-cross-atlantic/>; *Inmarsat Engineers Support Media in Nepal*, Inmarsat plc (May 29, 2015), <http://www.inmarsat.com/news/inmarsat-engineers-support-media-nepal/>; *Inmarsat Supports Planet Water Foundation Campaign*, Inmarsat plc (Mar. 17, 2015), <http://www.inmarsat.com/news/inmarsat-supports-planet-water-foundation-water-campaign/>; *Project 24 Brings Clean Water to 24 Cambodian Communities*, Inmarsat plc (Mar. 24, 2015), <http://www.inmarsat.com/news/project-24-brings-clean-water-24-cambodian-communities/>.

In 2010, Inmarsat launched a worldwide Global Satellite Phone Service over its I-4 geostationary fleet with a modernized satellite phone handset called the IsatPhone Pro.¹⁹ Later with the 2014 release of the IsatPhone 2 handheld,²⁰ both handsets have been optimized to deliver superior performance over Inmarsat's advanced satellite network, and support satellite telephony, including circuit switched voice, voicemail, Bluetooth for hands free use, supplementary services, and text and email messaging. The IsatPhone Pro has proven to be a low cost competitor and invaluable in disaster situations across the globe. The IsatPhone 2 stands ready to carry that success into the future with even more flexibility for users through products and service such as the Isat Hub.²¹ The Isat Hub allows smartphone and tablet users to make calls and access 3G data speeds globally on their own device using Inmarsat for the hotspot and backhaul connection to the PSTN and the Internet.²²

Inmarsat has continued to expand in the area of low data rate services, which represents a growth area for the company's land portfolio. Low data rate services provide tracking, monitoring, and M2M applications. Inmarsat's current portfolio includes IsatM2M, providing

¹⁹ *Inmarsat Launches IsatPhone Pro*, BusinessWire (Jun. 14, 2010), <http://www.businesswire.com/news/home/20100614006976/en/Inmarsat-Launches-IsatPhone-Pro#.VPTBLLPF8mc>.

²⁰ *The Next-Generation IsatPhone 2 Satellite Phone Has Arrived*, Inmarsat plc (Mar 24, 2014), <http://www.inmarsat.com/news/next-generation-isatphone-2-satellite-phone-arrived/>.

²¹ *New Life-Saving Emergency Response Facility for IsatPhone 2*, Inmarsat plc (Feb 4, 2015), <http://www.inmarsat.com/news/isatphone-2-introduces-life-saving-emergency-response-facility/>; *IsatPhone Pro Boosts Morale of Solo Female Sailor*, Inmarsat plc (Dec. 16, 2014), <http://www.inmarsat.com/news/isatphone-pro-boosts-morale-solo-female-sailor/>; *IsatPhone Pro Brings Peace of Mind to Bhubesi Pride*, Inmarsat plc (May 27, 2014), <http://www.inmarsat.com/news/isatphone-pro-brings-peace-mind-bhubesi-pride/>; *Journalists Can Always Be Connected With The Isatphone 2*, Inmarsat plc (Apr. 10, 2014), <http://www.inmarsat.com/news/journalists-can-always-connected-isatphone-2/>.

²² *IsatHub Brings Global Connectivity to Smart Devices*, Inmarsat plc (Sep. 16, 2014), <http://www.inmarsat.com/news/isathub-brings-global-connectivity-smart-devices/>; *Inaugural Preview of IsatHub Service at CommunicAsia*, Inmarsat plc (Jun. 20, 2014), <http://www.inmarsat.com/news/inaugural-preview-isathub-service-communicasia/>; *Bringing the Amazon Adventure to You*, Inmarsat plc (Dec. 11, 2015), <http://www.inmarsat.com/news/bringing-the-amazon-adventure-to-you/>.

tracking services. Inmarsat launched the IsatData Pro service and the IsatPhone Link,²³ which is based on the IsatPhone Pro. Inmarsat also offers the BGAN M2M service for monitoring and Supervisory Control and Data Acquisition (SCADA) solutions, which are an increasingly popular service.²⁴ Inmarsat has made significant investments into developing its M2M services for wide ranging applications.²⁵ The first BGAN M2M terminal also received type approval in 2015, giving customers within industries like transportation and logistics, precision farming, construction and mining a completely new level of remotely managing and monitoring high value assets, such as heavy machinery.²⁶

Inmarsat, its distributors, device manufacturers and Value Added Resellers continue to evolve the current service offerings to better meet the needs of existing and potential customers for L-band and Ka-band services, which include the public and private sectors, as well as non-governmental and inter-governmental organizations. Public safety customers count on Inmarsat for a wide array of public safety and emergency response applications, including natural disaster

²³ See *Isatphone Link*, Inmarsat plc (2015), <http://www.inmarsat.com/service/isatphone-link/>

²⁴ *Inmarsat, SkyWave Partner to Launch IsatData Pro*, *Satellite Today* (Mar. 17, 2011), <http://www.satellitetoday.com/telecom/2011/03/17/inmarsat-skywave-partner-to-launch-isatdata-pro/>; *New BGAN M2M Lets Machines Talk Across Globe*, Inmarsat plc (Jan. 26, 2012), <http://www.inmarsat.com/news/new-bgan-m2m-lets-machines-talk-across-globe/>.

²⁵ *Inmarsat Enhances M2M Opportunities After Sale of SkyWave to ORBCOMM*, Inmarsat plc (Nov. 7, 2014), <http://www.inmarsat.com/press-release/inmarsat-enhances-m2m-opportunities-sale-skywave-orbcomm/>; *New Australian Provider Pivotal Joins Inmarsat Distribution Network for M2M Services in the Asia-Pacific Region*, Inmarsat plc (Mar. 04 2014), <http://www.inmarsat.com/press-release/australian-provider-pivotal-joins-inmarsat-distribution-network-m2m-services-asia-pacific-region/>; *Inmarsat Becomes First Satellite Network for RacoWireless' Multi-Network M2M Service*, Inmarsat plc (Feb. 25, 2014), , <http://www.inmarsat.com/press-release/inmarsat-becomes-first-satellite-network-racowireless-multi-network-m2m-service/>; *Inmarsat Satellite Services Added to KORE's Global Connect Portfolio, Offering M2M Users Truly Global, Always-On Connectivity*, Inmarsat plc (Nov. 13 2013), <http://www.inmarsat.com/press-release/inmarsat-satellite-services-added-to-kores-global-connect-portfolio-offering-m2m-users-truly-global-always-on-connectivity/>; *Inmarsat and ORBCOMM to Form Strategic Alliance to Collaborate on M2M Opportunities*, Inmarsat plc (Nov. 5, 2013), <http://www.inmarsat.com/press-release/inmarsat-and-orbcomm-to-form-strategic-alliance-to-collaborate-on-m2m-opportunities/>.

²⁶ *First Mobile BGAN M2M Terminal Type-Approved*, Inmarsat plc (Jun. 4, 2015), <http://www.inmarsat.com/news/first-mobile-bgan-m2m-terminal-type-approved/>.

recovery²⁷ ranging from cyclone preparedness and relief in Vanatu²⁸ to Ebola outbreak containment in West Africa,²⁹ and to disaster response in New Orleans during Hurricane Katrina,³⁰ and the recent earthquake disaster in Nepal.³¹ Inmarsat's service also supports relief assistance in other ways, such as linking rural communities without telecommunications to medical professionals across the globe to help diagnose and treat medical conditions.³² Inmarsat

²⁷ For example, Inmarsat BGAN technology played a critical role in supporting government and non-government agencies such as Télécoms Sans Frontières and the American Red Cross, as well as international news organizations in response to global disasters including the 2013 Philippines typhoon. *ITU Deploys Satellite Communication Equipment in Philippines*, International Telecommunication Union (2013), <http://www.itu.int/en/ITU-D/Emergency-Telecommunications/Pages/Response.aspx>. See also *Inmarsat Works Around the Clock to Support Télécoms Sans Frontières (TSF) in the Philippines*, Inmarsat plc (2013) <http://www.inmarsat.com/press-release/inmarsat-works-around-the-clock-to-support-telecoms-sans-frontieres-tsf-in-the-philippines/>; *Thousands of Families in Philippines Use Free Call Lifeline*, Inmarsat plc (Dec. 4, 2013), <http://www.inmarsat.com/news/thousands-families-philippines-use-free-call-lifeline/>; *TSF Partners Presented with Award for Corporate Social Responsibility*, Télécoms Sans Frontières (2013), <http://www.tsfi.org/en/news/events/223-tsf-capacityawards>.

²⁸ *Emergency Telecoms Provided in Wake of Cyclone Pam*, Inmarsat plc (Mar. 18, 2016), <http://www.inmarsat.com/news/emergency-telecoms-provided-wake-cyclone-pam/>; *Telecoms Support Continues for Cyclone Hit Vanatu*, Inmarsat plc (Mar. 25, 2015), <http://www.inmarsat.com/news/telecoms-support-continues-cyclone-hit-vanatu/>

²⁹ *Inmarsat Introduces BGAN Link Mobility Initiative To help NGOs Efforts Against Ebola Crisis*, Satcom Global, (2014), <http://www.satcomglobal.com/news/bgan-link-initiative>. See also *ITU Deploys Satellite Communication Equipment in Sierra Leone*, International Telecommunications Union, (2014), <http://www.itu.int/en/ITU-D/Emergency-Telecommunications/Pages/Response.aspx>.

³⁰ The Federal Emergency Management Administration (FEMA) has five Mobile Emergency Response Support (MERS) detachments consisting of trained personnel and mobile response assets placed across the country. MERS detachments are designed to provide communications capabilities and operational and logistical support to first responders and each has a suite of vehicle assets to provide support and can concurrently support a large Disaster Field Office and multiple field operating sites within the disaster area.” MERS communications components consist of Ku-band Inmarsat equipment. *The Federal Response to Hurricane Katrina: Lessons Learned*, George Bush Presidential Archives (February 2006), <http://georgewbush-whitehouse.archives.gov/reports/katrina-lessons-learned.pdf>.

³¹ *TSF Re-Establishes Communications in Nepal*, Inmarsat plc (Apr. 29, 2015), <http://www.inmarsat.com/news/tsf-reconnects-search-rescue-teams-nepal/>; *Calling Operations Connect 7,000 People in Nepal*, Inmarsat plc (Jun. 15, 2015), <http://www.inmarsat.com/news/calling-operations-connect-7000-people-nepal/>; *Humanitarian Calling Operations Continue in Nepal*, Inmarsat plc (May 08, 2015), <http://www.inmarsat.com/news/humanitarian-calling-operations-continue-nepal/>.

³² *Inmarsat Brings Life-Saving Connectivity to Remote African Village*, Inmarsat plc (Dec 2, 2014), <http://www.inmarsat.com/press-release/inmarsat-brings-life-saving-connectivity-remote-african-village/>. See also, *Inmarsat and Global eHealth Foundation Join Forces to Bring Healthcare to the World's Poorest Communities*, Inmarsat plc (2014), <http://www.inmarsat.com/press-release/inmarsat-global-ehealth-foundation-join-forces-bring-healthcare-worlds-poorest-communities/>.

recently reached the fifteenth year of its humanitarian partnership with Télécoms Sans Frontières,³³ which has been a true long term litmus test of the resilience and dependability of Inmarsat services, deploying lifesaving Inmarsat services not only in natural disaster scenarios but also in war zones as a result of recent civil wars³⁴ and terror-related conflicts.³⁵ Further public applications include defense, homeland security, aeronautical and maritime navigation, distress messaging, search and rescue operation coordination, and public scientific research.³⁶

C. The Global Xpress Service

The existing I-4 satellite constellation and its capabilities in the L-band comprise the backbone of Inmarsat's current industry-leading satellite service offerings. To ensure Inmarsat's customers receive the products and services they need for cost-effective and mission critical communications, Inmarsat has continued its track record of innovation and introduced its next-generation Global Xpress service in 2013.³⁷ Inmarsat's response to the growing need for additional bandwidth around the globe, came in the form of a \$1.6 billion investment in three Inmarsat-5 ("I-5") Ka-band satellites for its Global Xpress program; a new global high-speed

³³ *Celebrating 15 Years of Humanitarian Partnership*, Inmarsat plc (Nov. 16, 2015), <http://www.inmarsat.com/news/celebrating-15-years-of-humanitarian-partnership/>.

³⁴ *Inmarsat Connectivity Improves Medical Care for Refugees*, Inmarsat plc (Mar. 3, 2015), <http://www.inmarsat.com/news/inmarsat-connectivity-improves-medical-care-refugees/>.

³⁵ *Satellite Technology Continues to 'Save Lives' in Syria*, Inmarsat plc (Feb. 11, 2015), <http://www.inmarsat.com/news/satellite-technology-continues-save-lives-syria/>. See also, *Displaced Iraqi Children Access Education via Inmarsat*, Inmarsat plc (Jul. 1, 2014), <http://www.inmarsat.com/news/displaced-iraqi-children-access-education-via-inmarsat/>; *TSF Reconnects Iraqi Children to Education Once Again*, Inmarsat plc (Sep. 5, 2014), <http://www.inmarsat.com/news/scientists-use-bgan-share-expedition-data-real-time/>; *Inmarsat Enables Vital Coordination Efforts in Iraq*, Inmarsat plc (Jul. 25, 2014), <http://www.inmarsat.com/news/inmarsat-enables-vital-coordination-efforts-iraq/>; *Inmarsat Enables Emergency mHealth in Nepal*, Inmarsat plc (Aug. 6, 2015), <http://www.inmarsat.com/news/inmarsat-enables-emergency-mhealth-in-nepal/>.

³⁶ *Scientists Use BGAN to Share Expedition Data in Real Time*, Inmarsat plc (Nov. 14, 2014), <http://www.inmarsat.com/news/scientists-use-bgan-share-expedition-data-real-time/>.

³⁷ *Another Giant Leap for Mankind*, Inmarsat plc (2013) <http://www.inmarsat.com/about-us/our-satellites/global-xpress/>.

satellite broadband service, marking the first time a commercial satellite operator has utilized Ka-band radio frequencies to deliver a global satellite service.³⁸ The Global Xpress program consists of three satellites in geostationary orbit with gateway operations being performed at a recently constructed gateway earth station located in Lino Lakes, MN, which uses Ka-band spectrum, including the critical 27.5-28.35 GHz for uplink transmissions.

The third and final I-5 satellite launched in August 2015 and completed the Global Xpress constellation.³⁹ With all satellites launched and successfully relocated to their final orbital locations, global commercial service was officially achieved in December 2015.⁴⁰ In an effort to make the Global Xpress program even more robust, Inmarsat also ordered a fourth Global Xpress Ka-band satellite from Boeing for delivery and launch later this year to provide redundancy and ensure the Global Xpress program lives up to the demonstrated resilience and certainty that Inmarsat's customers have come to expect from Inmarsat services.⁴¹

In the build up to completion of the I-5 constellation and Global Xpress coming online in 2015, Inmarsat has entered into major partnerships with Honeywell, Boeing and others⁴² to deliver products and services, including for in-flight connectivity to business, commercial, and

³⁸ The first satellite, Inmarsat-5 F1 entered commercial service on July 1, 2014 and provides Global Xpress services in Europe, the Middle East, Africa, and Asia. The second I-5 satellite launched in early 2015 and the final I-5 satellite is expected to launch later in 2015, with global coverage expected in the second half of 2015.

³⁹ *Successful Launch of Third Global Xpress Satellite Confirmed*, Inmarsat plc (Aug. 29, 2015), <http://www.inmarsat.com/news/inmarsat-confirms-successful-launch-of-the-third-global-xpress-gx-satellite/>.

⁴⁰ *Inmarsat Confirms Global Commercial Service Introduction (CSI) for Global Xpress Constellation*, Inmarsat plc (Jan. 4, 2016), <http://www.inmarsat.com/press-release/inmarsat-confirms-global-commercial-service-introduction-csi-for-global-xpress-constellation/>.

⁴¹ *Inmarsat to Purchase Fourth Inmarsat-5 Satellite from Boeing*, Inmarsat plc (Oct. 1, 2013), <http://www.inmarsat.com/press-release/inmarsat-to-purchase-fourth-inmarsat-5-satellite-from-boeing/>.

⁴² *Honeywell and Boeing Team Up on GX Aviation Technology*, Inmarsat plc (Apr. 15, 2013), <http://www.inmarsat.com/news/honeywell-and-boeing-team-up-on-gx-aviation-technology/>.

government aviation customers around the world.⁴³ In addition to aviation, the list of partners and manufacturers for Global Xpress continues to expand for land, air, and sea applications.⁴⁴

D. Looking Forward

The I-4 and Global Xpress program complete Inmarsat's global coverage and ability to provide high-speed telecommunications the world over. Although Global Xpress is still in its infancy and already represents a leap forward in communications services, Inmarsat announced a further \$600 million investment in a new Inmarsat-6 (I-6) satellite constellation, adding depth and increased capabilities to the wide breadth of global coverage already achieved by existing services.⁴⁵ The I-6 constellation is comprised of two next generation satellites, each with a dual payload supporting both of Inmarsat's L-band and Ka-band services. The new I-6 satellites will bolster and maximize Inmarsat's offerings in both bands to its customers.

One such offering is in the area of global flight tracking and aviation safety services. In the wake of the Malaysia Airlines MH370 tragedy, the call for robust tracking systems has never been louder.⁴⁶ Answering that call, Inmarsat and its partners provide position reporting data using Automatic Dependent Surveillance-Contract (ADS-C). ADS-C is a function on an aircraft that broadcasts position, altitude, vector and other information for use by air traffic control personnel for surveillance and by airlines for flight following purposes. ADS-C is most often employed in the provision of Air Traffic Services (ATS) over transcontinental or transoceanic

⁴³ "Home Equivalent" In-Flight Connectivity Takes a Step Closer, Inmarsat plc (Feb. 11, 2014), <http://www.inmarsat.com/news/home-equivalent-flight-connectivity-takes-step-closer/>.

⁴⁴ See *Global Xpress Partners*, Inmarsat plc (2015), <http://www.inmarsat.com/service/gx-partners/>.

⁴⁵ *Inmarsat Awards Contract to Airbus for Two Sixth-Generation Mobile Communication Satellites*, Inmarsat plc (Dec. 23, 2015), <http://www.inmarsat.com/press-release/inmarsat-awards-contract-to-airbus-for-two-sixth-generation-mobile-communication-satellites/>

⁴⁶ This service is being offered to all 11,000 commercial passenger aircraft, which are already equipped with an Inmarsat satellite connection, 90 per cent of the world's long haul commercial fleet. *Inmarsat To Provide Free Global Airline Tracking Service*, Inmarsat plc (2014), <http://www.inmarsat.com/press-release/inmarsat-provide-free-global-airline-tracking-service/>.

areas where other sources of surveillance are not available. ADS-C provides active aircraft position tracking by transmitting the current position and the next two anticipated aircraft positions, as programmed into the aircraft's flight management system. It is this contract anticipated 'intent' feature of the ADS-C system that allows flight dispatchers and air traffic controllers to track an aircraft's progress and effectively manage the airspace.

Inmarsat has both safety and leadership interests in the announcements made by the International Civil Aviation Organization ("ICAO") regarding the establishment of global flight tracking standards.⁴⁷ As described above, Inmarsat uses ADS-C today to provide global commercial aircraft surveillance and flight following. In an effort to expand the use of this existing global flight tracking technology, Inmarsat supported the first trial demonstration of the ICAO flight tracking standards, endorsed by the recently concluded High Level Safety Conference, with Airservices Australia and Qantas and Virgin Australia airlines.⁴⁸ The tests concluded with success, proving that Inmarsat's existing ADS-C capabilities meet the latest ICAO defined requirements and regulatory performance criteria.⁴⁹ Information collected from this trial can be used by aviation stakeholders, including ICAO, for the development of flight tracking concept of operations and standards. Space-based ADS-C is an existing and reliable position reporting and aircraft tracking technology in use today by most oceanic commercial transport aircraft. With such capabilities already in its portfolio, Inmarsat is ready to help not

⁴⁷ See ICAO HLSC Declaration and Conclusions and Recommendations calling for "promptly implementing the Global Aeronautical Distress and Safety System (GADSS) concepts of operations, including normal tracking every fifteen minutes and distress tracking every minute", available at http://www.icao.int/Meetings/HLSC2015/Documents/Declaration_and_Recommendations/MONTR%C3%89AL%20DECLARATION%20ON%20PLANNING%20FOR%20AVIATION%20SAFETY%20IMPROVEMENT.pdf.

⁴⁸ *Australian Deputy PM Announces Flight Tracking Trial With Inmarsat*, Inmarsat plc (Mar. 1, 2015), <http://www.inmarsat.com/news/australian-deputy-pm-announces-flight-tracking-trial-inmarsat/>. The embedded video describes the ADS-C service.

⁴⁹ *Inmarsat Concludes Successful Evaluation of Oceanic Flight Tracking to Meet ICAO's New Global Standard*, Inmarsat plc (Sep. 10, 2015), <http://www.inmarsat.com/press-release/inmarsat-concludes-successful-evaluation-of-oceanic-flight-tracking-to-meet-icaos-new-global-standard/>.

only shape but also participate in the future concepts of the next generation of flight safety.

As Inmarsat celebrates a quarter century of saving lives at sea, with 600 distress alerts from vessels in 2015 alone, this year marked a point of reflection for Inmarsat's innovative communications solutions and critical life-saving emergency services in the maritime sector.⁵⁰ That robust foundation is steeped in experience, dependability, and capability and is a history of success that Inmarsat looks to bring into the future of not only maritime safety services but also aviation safety and flight tracking.

Inmarsat respectfully submits the above information to assist the Commission in preparing its forthcoming report to Congress.

Respectfully Submitted,

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⁵⁰ *Inmarsat C Marks Quarter Century of Saving Lives at Sea*, Inmarsat plc (Mar. 1, 2016), <http://www.inmarsat.com/press-release/inmarsat-c-marks-quarter-century-saving-lives-sea/>