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Director, Spectrum Regulatory Best Practices
Innovation, Science and Economic Development Canada
235 Queen Street
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Re: *Canada Gazette*, Part 1, October 6, 2017 and December 30, 2017 Consultation on the Spectrum Outlook 2018 to 2022, SLPB-006-17 and SLPB-010-17

Introduction

1. The following written submissions are being filed on behalf of our client, Iridium Satellite Canada Ltd. ("Iridium Canada") in response to the above-referenced *Consultation on the Spectrum Outlook 2018 to 2022*, SLPB-006-17 and SLPB-010-17.¹ Following introductory comments, we will provide responses to some of the specific questions specifying question numbers for ease of referencing.
2. The Canadian communications industry is rapidly evolving with innovation coming from existing providers and new entrants. With consumer and industry requests for new services, enhanced capabilities and faster speeds comes a need for additional spectrum to meet that demand. In the Spectrum Consultation, the Department emphasizes its commitment to promoting innovation-led growth and determining which existing operations are innovating and growing and which spectrum bands it should consider releasing over the next five years to support that growth. To promote a robust wireless economy, the Department names three pillars that matter to Canadian families and businesses: providing quality networks, service coverage and affordable prices to ensure that Canadian consumers and businesses are afforded the opportunity to "benefit from advanced wireless telecommunications services and applications."² As a leading Mobile Satellite Service (MSS) provider that provides true global satellite coverage, Iridium Canada has integrated these pillars into its own business model.

Background

3. Iridium Canada is a wholly owned indirect subsidiary of Iridium Communications Inc. ("Iridium"). Iridium MSS has been available to Canadians for nearly twenty years. Iridium is the world's second largest provider by revenue of mobile voice and data communications services via

¹ Spectrum Management and Telecommunications, Innovation, Science and Economic Development Canada, *Consultation on the Spectrum Outlook 2018 to 2022*, SLPB-006-17 (October 6, 2017) and SLPB-010-17 (December 30, 2017) ("Consultation").

² *Id.* at 2.

satellite, and the only commercial provider of communications services offering truly global coverage. Iridium operates the largest commercial constellation ever launched into space: a system architecture of sixty-six, low-earth orbit, cross-linked satellites spread across six near-circular orbital planes that converge over the North and South poles. The satellite network provides communications services to regions of the world where terrestrial wireless or wireline networks do not exist or are limited, including remote land areas, open ocean, airways, and the polar regions.

4. After nearly twenty years of operations, Iridium is replacing its current satellite system with Iridium NEXT, a state-of-the-art-satellite system that will boost Iridium's existing capabilities and enable Iridium to provide its customers with extended capacity and higher throughput services. To date, Iridium has launched forty of its next-generation satellites and anticipates bringing its full constellation of 66-satellites and nine in-orbit spares into operation in 2018. Iridium NEXT is positioned to markedly increase Iridium's ability to meet growing demand for global mobile communications on land, in the air, and at sea. Iridium NEXT will enhance already existing partnerships and enable the formation of new and innovative partnerships with businesses around the world.
5. Iridium's customer base continues to increase. From 2012 through 2016, Iridium experienced an average global growth of 10 percent which increased to 13 percent growth from 2016 through 2017.³ Notably, Iridium's growth in Canada has met or surpassed its overall global growth over the past three years.⁴ Iridium's largest growing segment is its Machine-to-Machine (M2M) business, providing the ability to track things anywhere at any time – including areas that terrestrial networks do not and will likely never cover. Iridium is increasingly relied on across a wide swath of industries for data tracking and Internet of Things applications, including heavy equipment partners like Caterpillar and Komatsu and consumer partners like Garmin expanding distribution of their popular inReach® products. Iridium's IoT services are currently used by eight of the top 20 heavy equipment OEM including five of the top 10. Connections for these partners open up capabilities for contractors and organizations that do work in remote and hard-to-reach areas. Over half of Iridium's almost 1 million subscriptions are now IoT companies looking to connect their devices. This growth has been accomplished on Iridium's first-generation constellation which will be fully retired upon Iridium NEXT's full deployment. Iridium NEXT's extended capacity provides additional capability for expansion of, Iridium's customer base.
6. Continued deployment of Iridium NEXT satellites will enable new services and partnerships that will bring even more benefits to operations in the air, on land, and in the sea. In 2018, Iridium plans to introduce Iridium Certus™, its new faster broadband service consisting of newly designed maritime mobile earth stations, land mobile earth stations, aeronautical mobile earth stations. These next generation earth stations are designed to make use of the enhanced operational characteristics of the Iridium NEXT constellation. Iridium Certus will provide a new multi-service

³ Iridium, Quarterly Report (Form 10-Q) (October 26, 2017) ("Iridium 10-Q"), <https://www.sec.gov/Archives/edgar/data/1418819/000162828017010171/irdm10-q93017.htm>.

⁴ Iridium Satellite Canada, Ltd., 2017 Annual Report for MSS License Holders (April 1, 2017); Iridium Satellite Canada, Ltd., 2016 Annual Report for MSS License Holders (April 1, 2016); Iridium Satellite Canada, Ltd., 2015 Annual Report for MSS License Holders (April 1, 2015) (submitted as a confidential report).

communications platform that will bring a more efficient and cost-effective way to achieve 100 percent global connectivity in 2018.⁵ The initial Iridium Certus terminals will debut at speeds of 352 Kbps later upgradable to 704 Kbps through a firmware upgrade.

7. Iridium service providers and value-added resellers provide a variety of services to the Canadian government, businesses, and private citizens. For example, in 2017 Shared Services Canada announced the award of three contracts with MetOcean Telematics and Track24 Canada Ltd. to provide MSS to the Government of Canada noting that Iridium "complement[s] Shared Services Canada's ability to provide worldwide mobile connectivity services, including coverage of the North and South Poles."⁶ Parks Canada rangers and fire wardens use Iridium satellite phones and pagers to report possible emergency situations; Environment and Climate Change Canada equips buoys with Iridium transceivers to transmit surface current, sea-surface temperatures and provide GPS positioning and other information of the buoys at sea; and the Department of National Defence uses Iridium's tracking and messaging equipment and services to track and send messages to their personnel. Iridium has established partnerships with a variety of businesses in Canada, including M2M businesses such as KORE Telematics Inc., Trimble, Premier GPS, Inc., ROM Communications, JouBeh Technologies, Inc., and Appareo.
8. It is more important than ever to be able to extend global communications to aircraft and vessels. Aireon LLC ("Aireon"), a joint venture owned by NAV CANADA, Iridium and three European air navigation service providers ("ANSPs"), plans to provide a space-based automatic dependent surveillance-broadcast ("ADS-B") solution that will provide a global air traffic surveillance service and deliver near real-time aircraft position updates. Aireon has already entered into agreements with NAV CANADA and several other ANSPs to provide such service. Aireon's revolutionary solution will help ensure that planes never go missing and is enabled by specially designed receivers installed on every Iridium NEXT satellite.
9. Likewise, Iridium expects to receive recognition from the International Maritime Organization ("IMO") as a Global Maritime Distress and Safety System ("GMDSS") provider as early as 2018. Iridium GMDSS service would provide global safety-of-life service to commercial maritime vessels. In recent years, Arctic shipping routes have been used more heavily, including along the Northwest Passage which traverses northern Canada. However, maritime safety communications services have been limited to less reliable, High Frequency services for the polar regions. Iridium plans to deliver affordable, GMDSS to the polar region by 2020.

⁵ Press Release, Iridium, *Iridium Announces First Land-Mobile Service Providers for Iridium Certus(SM): Iridium Certus to Redefine Mobile-Broadband Connectivity for Mission-Critical Applications* (Feb. 7, 2018), <http://investor.iridium.com/releasedetail.cfm?ReleaseID=1056677>; Press Release, Iridium, *Maritime Industry Readies for a New Era of Choice with Iridium Certus(SM) Global Launch Partners: Industry Leaders Ready to Offer Next-Generation Pole-to-Pole Satellite Broadband Connectivity for Maritime Applications* (Feb. 14, 2018), <http://investor.iridium.com/releasedetail.cfm?ReleaseID=1057485>.

⁶ Press Release, Shared Services Canada, *Government of Canada Makes Investments in Telecommunications Infrastructure – Iridium Satellite Services contracts allows federal departments to better serve Canadians* (July 26, 2017), https://www.canada.ca/en/shared-services/news/2017/07/government_of_canadamakesinvestmentsin-telecommunicationsinfrastr.html.

Answers to Specific Questions in the Consultation

Set out below are Iridium's responses to questions raised in the Consultation document that relate specifically to its MSS operations.

Question 9 – ISED is seeking comments on the above demand assessment for MSS and earth observation applications for the period 2018-2022. Is there additional information on demand, which is not covered above, that should be considered?

10. ISED cites a Technavio report which states that the anticipated growth of the MSS industry will be eight percent by 2020.⁷ The Technavio report does not reflect the robust growth Iridium has experienced over the past seven years and expects to experience in the future. Iridium's subscribers worldwide totaled 949,000 in as of September 30, 2017, an increase of 13 percent from approximately 838,000 subscribers as of September 30, 2016.⁸ Iridium also reported a five-year compound annual growth rate of ten percent from 2011 through 2016.⁹ Ten percent of Iridium's overall revenue is invoiced to distributors located in Canada¹⁰ and at least ten percent of Iridium's overall revenue has been invoiced by distributors located in Canada since 2009.¹¹ Additionally, the relative growth of Iridium's service in Canada has increased significantly in recent years and surpassed the global rate of growth.
11. Finally, Iridium's growth over the past seven years has been with Iridium's first-generation satellite system. Iridium's robust growth and anticipated growth has occurred in only 8.725 MHz of spectrum for both uplink and downlink communications. Iridium expects to complete the launch of its second-generation constellation in 2018 and launch its Iridium Certus service in 2018. When Iridium NEXT and Iridium Certus are fully operational, Iridium anticipates experiencing even more robust growth in Canada and around the world. That growth will put increasing demands on a system that presently provides significant and growing service on Iridium's 8.725 MHz of spectrum.¹²
12. As the Department considers its allocations for MSS spectrum, it should note that the Technavio report does not adequately reflect the success that Iridium has experienced and expects to continue to experience with the launch of Iridium NEXT. Iridium's success must be given due consideration as the Department considers satellite innovation through 2022.

⁷ Consultation at 18 (*citing* Technavio, Global Mobile Satellite Services Market 2016-2020, Sept. 2016).

⁸ Iridium 10-Q at 17.

⁹ Iridium 2016 Annual Report: Launching A New Era in Space at 2 (April 2017), http://files.shareholder.com/downloads/ABEA-3ERWFI/4515380088x0x935525/A3DE22E4-130B-453A-875D-C11F2CFA685C/IRDM_ICI_2016_Annual_Report_FINAL_3.17.17.pdf.

¹⁰ Iridium, Annual Report (Form 10-K) at 16 (Feb. 23, 2017) ("Iridium 2016 Annual Report"), https://www.sec.gov/Archives/edgar/data/1418819/000156459017002101/irdm-10k_20161231.htm.

¹¹ See Iridium, Annual Report (Form 10-K) at 14 (March 16, 2010), <https://www.sec.gov/Archives/edgar/data/1418819/000119312510058393/d10k.htm>; Iridium 2016 Annual Report at 16.

¹² Iridium operates its uplink and downlink in the 1617.775-1626.5 MHz band and shares the 1617.775-1618.725 MHz portion of the band with Globalstar. See Iridium Canada Spectrum Licence, File No. 3150-1 (769136 SL) (April 6, 2017).

Question 10 – ISED is seeking comments on the above demand assessment for FSS/BSS for the period 2018-2022. Is there additional information on demand, which is not covered above, that should be considered with regard to the below bands? A) C-band, b) Ku-band, c) Ka-band

13. Iridium has no comment on this question at this time but may wish to provide comments as part of the reply phase of this proceeding.

Question 11 – What and how will technology developments and/or usage trends aid in relieving traffic pressures and addressing spectrum demand for satellite services? When are these technologies expected to become available?

14. Iridium has no comment on this question at this time but may wish to provide comments as part of the reply phase of this proceeding.

Question 12 – What satellite applications (e.g. broadband Internet, video broadcasting, backhaul, etc. do you consider a priority for the period 2018-2022?

15. As described above, Iridium plans to complete the deployment of its second-generation Iridium NEXT satellites in 2018 which will enable a host of new capabilities for its customers including new services at higher capacity and speeds. Those new Iridium Certus services will power maritime, land mobile, aviation and the new satellites will continue to support satellite time and location services. Iridium and our distribution partners plan to continue to develop customized products, services, and applications targeted to the land mobile, maritime, aviation, M2M, and government market needs in Canada.

Conclusion

16. In its assessment of the MSS industry in Canada, the Department should note the robust growth that Iridium has experienced and expects to continue to experience through 2022 and beyond. Iridium is growing at a rate that far exceeds Technavio's predictions and expects to continue to grow. Consequently, the Department, in determining whether to provide additional spectrum for MSS, should carefully consider real-world growth of Iridium and other MSS providers.

Thank you for your consideration of these comments.

Sincerely,
Dentons Canada LLP



Gregory Kane, Q.C.
Counsel

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