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

In the Matter of	)	
	)	
Telesat Canada	)	File No. SAT-PDR-20161115-00108
	)	
Petition for Declaratory Ruling to Grant Access to the U.S. Market for Telesat's NGSO Constellation	)	

TELESAT CANADA'S RESPONSE TO COMMENTS OF SPACE EXPLORATION TECHNOLOGIES CORP.

In the above-referenced Petition for Declaratory Ruling ("Petition"), Telesat Canada ("Telesat") seeks access to the U.S. market for Telesat's planned low earth orbit ("LEO"), non-geostationary satellite orbit ("NGSO") satellite system (the "Telesat LEO Constellation" or "LEO Constellation").

Telesat's LEO Constellation will be comprised of over 100 advanced satellites that will deliver high capacity, high speed, low latency data services with a distributed space architecture designed to enhance network security and resiliency and the ability to provide coverage anywhere in the world. The innovative design combines polar and inclined orbits, incorporates advanced technologies that will make effective and efficient use Ka-band spectrum to bring needed services to the public, including many presently underserved areas. Innovation, Science and Economic Development Canada (formerly Industry Canada) has authorized Telesat to launch and operate this LEO Constellation, and Telesat has filed the Petition for authority to serve the U.S. market.

Space Exploration Technologies Corp. ("SpaceX") filed Comments with respect to Telesat's Petition. [1] Telesat hereby responds to SpaceX's Comments. Telesat demonstrates that the Comments provide no basis for delaying a grant of Telesat's Petition.

I. DISCUSSION

A. SpaceX's Assertions Are Vague and Unsubstantiated

The limitations SpaceX seeks to impose on Telesat's operations have no basis in the Commission's rules. Even SpaceX does not argue that they do. There is, therefore, no basis for these restrictions.

Furthermore, while calling for restrictions, SpaceX does not clearly articulate what it believes those restrictions should be. For example, SpaceX asks the Commission to "consider whether any grant of Telesat's application should be conditioned so as to encourage deployment of [narrow] beams" instead of wider beams, but exactly what "encouragement" SpaceX has in mind it does not say.[2] Such a vague suggestion without even a hint of a Commission rule that would support it, is no basis for a condition on a grant of Telesat's Petition.

B. The Commission Previously Disposed of Similar SpaceX Arguments

SpaceX acknowledges that "the Telesat system includes many technical characteristics that may facilitate coordination and spectrum sharing with other NGSO

[1] *Comments of Space Exploration Technologies Corp*, File No. SAT-PDR-20161115-00108 (filed June 26, 2017) ("*SpaceX Comments*").
[2] *Id.* at 2.

systems."[3] Nevertheless, SpaceX claims Telesat's system design potentially could make inefficient use of spectrum. SpaceX's argument is similar to an argument it made against OneWeb.[4] Based on this argument, SpaceX sought as to One Web, and now seeks as to Telesat, that operational limits be imposed to facilitate what it calls "spectrum sharing."

The Commission determined with respect to OneWeb that this issue should be resolved in the Commission's pending NGSO rulemaking proceeding, not in individual application proceedings.[5] To that end, the Commission conditioned OneWeb's grant on the outcome of the rulemaking.[6] The same result should obtain here. Telesat has no objection to accepting a condition similar to the condition the Commission applied to OneWeb, stating that any earth station licenses granted in the future "would be subject to modification to bring them into conformance with any rules or policies adopted by the Commission in the future."[7]

C. SpaceX's Comments Are Inconsistent with its NGSO Rulemaking Filings

SpaceX's Comments conflict with the positions SpaceX has taken in the Commission's Ka-band NGSO NPRM proceeding.

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[3] *Id.* at 1.

[4] *See Comments of Space Exploration Technologies Corp,* In re WorldVu Satellites Limited Petition for a Declaratory Ruling Granting Access to the U.S. Market for the One Web NGSO System, IBFS File No. SAT-LOI-20160428-00041 (August 15, 2016) at 8-17.

[5] *See WorldVu Satellites Limited, Petition for a Declaratory Ruling Granting Access to the U.S. Market for the OneWeb NGSO FSS System, IBFS File No. SAT-LOI-20160428-00041*, Order & Declaratory Ruling, FCC 17-77 (June 23, 2017) ("*OneWeb Grant*") at ¶12, referencing *Update to Parts 2 and 25 Concerning Non-Geostationary, Fixed-Satellite Service Systems and Related Matters*, 31 FCC Rcd. 13651 (2016) (the "*NGSO NPRM*").

[6] *Id.*

[7] *Cf. OneWeb Grant* at ¶ 26.

For example, SpaceX, having urged the Commission to expand the applicability of its 10-degree avoidance angle as a measure of interference between systems, without regard to system parameters,[8] complains in its Comments that such an angle would not adequately define interference as between the Telesat and SpaceX systems.[9] Telesat demonstrated in its submissions in the Ka-band NGSO NPRM proceeding that the 10-degree avoidance angle does not adequately define when interference between NGSO systems will occur.[10] SpaceX's Comments support Telesat's position.

Similarly, in its Comments SpaceX requests that the Commission impose EIRP density limits on Telesat's earth station uplink beams, arguing that such limits are necessary to provide for "equitable and efficient spectrum sharing among non-homogeneous NGSO systems."[11] In its reply comments in the NGSO rulemaking, however, SpaceX argued against these limits:

> "The *NPRM* requested comment on the possibility of adopting EIRP density limits on NGSO FSS uplink transmissions, downlink power limits, and earth station receive gain criteria similar to those applicable to GSO systems. In theory, adopting such default limits could facilitate spectrum sharing among NGSO systems. However, SpaceX agrees with Boeing and OneWeb that adopting such limits at this early stage in the development of NGSO systems could constrain ongoing technological development and future innovation."[12]

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[8] *See Comments of Space Exploration Technologies Corp.*, *Update to Parts 2 and 25 Concerning Non-Geostationary, Fixed-Satellite Service Systems and Related Matters*, IB Docket Np. 16-408 (February 27, 2017) at 16-21.
[9] *See* SpaceX Comments at 5.
[10] *See Comments of Telesat Canada*, *Update to Parts 2 and 25 Concerning Non-Geostationary, Fixed-Satellite Service Systems and Related Matters*, IB Docket Np. 16-408 (February 27, 2017) at 9-10 and Attachment A.
[11] *See* SpaceX Comments at 5.
[12] *See Reply Comments of Space Exploration Technologies Corp.*, *Update to Parts 2 and 25 Concerning Non-Geostationary, Fixed-Satellite Service Systems and Related Matters*, IB Docket Np. 16-408 (April 10, 2017) at 13.

SpaceX cannot have it both ways. There cannot be a 10-degree avoidance standard when it suits SpaceX's purposes and no such standard when it does not. And there should not be constraints on uplink transmissions just because SpaceX has now decided that it would like to limit another system's operations. In any event, the appropriate context for resolving these issues is the NGSO rulemaking proceeding.

D. SpaceX's Complaints Against Telesat's System Design Do Not Withstand Scrutiny

SpaceX makes interference claims based on the width of Telesat's beams and the power of Telesat's uplink transmissions. Those claims should be rejected out of hand, because Telesat's beam widths and uplink power fully comply with Commission requirements. Telesat, however, notes the following:

First, the most significant factor in the potential for interference between Telesat's and SpaceX's systems is that the two systems will operate on the same frequencies in overlapping locations, not the width of Telesat's beams or the power of its earth station uplinks. Had Telesat chosen to design its system more like SpaceX's, which has over 4,000 satellites, the interference potential between the systems would be greater, not less.

Second, SpaceX's interference "analysis" is impossible to review. SpaceX has not provided even the most basic information; it has supplied neither a C/I assessment nor a link analysis. Based on what Telesat has been able to glean from SpaceX's filing and

its associated ITU submissions, however, SpaceX has substantially overstated the potential for interference.

Telesat's variable beam width and the power of its uplinks are essential elements of Telesat's economically and spectrally efficient system design. This technology enables Telesat to tailor the breadth and depth of its coverage to the requirements of particular areas. The power of Telesat's ground segment uplinks translates directly into the capacity of its service. Cut that power and capacity is reduced. SpaceX should not be permitted to hide behind a claim of frequency sharing to hamstring Telesat's service to the public.

E. The Deficiencies in SpaceX's Positions Underscore the Benefits of Relying on ITU Coordination Procedures

Finally, SpaceX ignores the role of ITU coordination procedures and the priority rules that are associated with them. The Commission should look to these time-tested procedures, not one applicant's positions that vary from proceeding to proceeding, for the clarity and certainty that is required to resolve NGSO sharing issues.

II. CONCLUSION

Telesat urges the Commission to grant Telesat's Petition, consistent with the action taken by the Commission with respect to OneWeb's petition for access to the U.S. market. Nothing in SpaceX's Comments warrants delaying such favorable action.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that on this 7th day of July, 2017, a copy of the foregoing Response to Comments of Space Exploration Technologies Corp was sent by first-class, United States mail to the following:

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