

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

| | | |
|---------------------------------|---|--------------------------------------|
| In the Matter of |) | |
| |) | |
| Audacy Corporation |) | File No. SAT-LOA-20161115-00117 |
| |) | |
| The Boeing Company |) | File No. SAT-LOA-20161115-00109 |
| |) | |
| Karousel LLC |) | File No. SAT-LOA-20161115-00113 |
| |) | |
| LeoSat MA, Inc. |) | File No. SAT-PDR-20161115-00112 |
| |) | |
| O3b Limited |) | File Nos. SAT-MOD-20160624-00060 and |
| |) | SAT-AMD-20161115-00116 |
| |) | |
| Space Exploration Holdings, LLC |) | File No. SAT-LOA-20161115-00118 |
| |) | |
| Space Norway AS |) | File No. SAT-PDR-20161115-00111 |
| |) | |
| Theia Holdings A, Inc. |) | File No. SAT-LOA-20161115-00121 |
| |) | |
| ViaSat, Inc. |) | File No. SAT-PDR-20161115-00120 |

**TELESAT CANADA'S CONSOLIDATED REPLY TO OPPOSITIONS
TO PETITIONS TO DENY**

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**TELESAT CANADA'S CONSOLIDATED REPLY TO OPPOSITIONS
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Telesat Canada ("Telesat") filed Petitions to Deny ("Petitions") each of the above-referenced applications and petitions ("Applications") that seek license or authority to serve the U.S. market using non-geostationary satellite orbit ("NGSO") satellite systems.

Each of the applicants and petitioners (“Applicants”) have filed Oppositions to Telesat’s Petitions.¹ Telesat hereby replies to these Oppositions.

I. INTRODUCTION AND SUMMARY

As Telesat stated in its Petitions, if the Applications are granted unconditionally, Telesat’s NGSO system will suffer in-line interference from operation of the Applicants’ NGSO systems on overlapping frequencies and coverage areas. Telesat demonstrated in its submissions in the Commission’s pending NGSO rulemaking proceeding that the current default rules, because they are premised on an unrealistic assumption that a fixed ten-degree separation angle can serve as an indication of when harmful interference will occur, are unworkable and will not protect Telesat against such interference.²

In addition, most of the Applicants fail to acknowledge the role and importance of ITU coordination and notification procedures and priority in addressing such

¹ See, Audacy Corporation (“Audacy”), Opposition and Response of Audacy Corporation, File No. SAT-LOA-20161115-00117 (filed July 7, 2017) (“Audacy Opposition”); The Boeing Company (“Boeing”), Opposition and Response, File No. SAT-LOA-20161115-00109 (filed July 7, 2017) (“Boeing Opposition”); Karousel LLC (“Karousel”), Karousel LLC’s Response to Comments and Opposition to Petitions, File No. SAT-LOA-20161115-00113 (filed July 7, 2017) (“Karousel Opposition”); LeoSat MA, Inc. (“LeoSat”), Opposition and Response of LeoSat MA, Inc., File No. SAT-PDR-20161115-00112 (filed July 7, 2017) (“LeoSat Opposition”); O3b Limited (“O3b”), Opposition and Response of O3b Limited, File No. SAT-AMD-20161115-00116 (filed July 7, 2017) (“O3b Opposition”); Space Exploration Holdings, LLC (“SpaceX”), Consolidated Opposition to Petitions and Response to Comments of Space Exploration Holdings, LLC, File No. SAT-LOA-20161115-00118 (filed July 7, 2017) (“SpaceX Opposition”); Space Norway AS (“Space Norway”), Response of Space Norway as to Comments and Opposition to Petitions to Deny, File No. SAT-PDR-20161115-00111 (filed July 7, 2017) (“Space Norway Opposition”); Theia Holdings A, Inc. (“Theia”), Consolidated Opposition and Response, File No. SAT-LOA-20161115-00121 (filed July 7, 2017) (“Theia Opposition”); ViaSat, Inc. (“ViaSat”), Consolidated Opposition and Reply Comments of ViaSat, Inc., File No. SAT-PDR-20161115-00120 (filed July 7, 2017) (“ViaSat Opposition”).

² See *Comments of Telesat Canada, Update to Parts 2 and 25 Concerning Non-Geostationary, Fixed-Satellite Service Systems and Related Matters*, Notice of Proposed Rulemaking, 31 FCC Rcd 13651 (2016) (“NGSO NPRM”) at 6-15 (Feb. 27, 2017) (“Telesat NGSO NPRM Comments”); *Reply Comments of Telesat Canada, NGSO NPRM*, at 4-12.

interference situations. None of them acknowledges that, under ITU rules, their proposed systems will have to operate on a non-interference, unprotected basis *vis-à-vis* Telesat's system if the parties cannot reach agreement after good faith coordination.

Aside from Space Norway, which seeks a super-priority position,³ and LeoSat, which acknowledges the necessity of relying on ITU coordination to resolve interference,⁴ the other Applicants would rely on band segmentation when coordination agreements cannot be reached, without regard to consideration of the applicable provisions of the ITU Radio Regulations. As Telesat demonstrated in its submissions in the Commission's NGSO rulemaking, however, band segmentation would leave every system with insufficient bandwidth, which would undercut the Commission's goal of facilitating a viable broadband service. Further, given uncertainties as to how many NGSO systems will be built and how quickly they will be built, band segmentation would discourage investment in such systems, as it would be impossible to know in advance how much usable capacity such systems would have available to them.

The Commission addressed these issues in its recent grant of OneWeb's petition for access to the U.S. market for its NGSO system by imposing two important conditions.⁵ First, the Commission conditioned its grant of the OneWeb petition on OneWeb's compliance with ITU requirements.⁶ Second, the Commission conditioned

³ Telesat addresses these Space Norway claims separately in Section IV below.

⁴ LeoSat Application at 10.

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 (rel. June 23, 2017) ("*OneWeb Grant*").

⁶ *OneWeb Grant*, ¶ 23(a).

its grant on the outcome of the NGSO NPRM.⁷ The Applicants have provided no basis for departing from this precedent when the Commission acts on their Applications.

II. ANY GRANT OF THE APPLICATIONS SHOULD BE CONDITIONED ON THE OUTCOME OF THE COMMISSION'S NGSO NPRM.

In each of its Petitions, Telesat urged the Commission to condition all grants on the outcome of the Commission's NGSO rulemaking proceeding. Several of the Applicants expressly state that they will accept such a condition.⁸ Others are more equivocal; for example, Theia argues that issues raised against it relative to interference and international coordination should be left for resolution in the Commission's NGSO rulemaking, but does not make explicit whether it would accept a condition to a grant requiring compliance with the outcome of that proceeding.⁹ Simply stated, neither Theia's nor none of the Applicants' Oppositions affords a basis for departing from the recent OneWeb precedent.

III. INTERFERENCE EVENTS WILL OCCUR AND NO CASE IS PRESENTED THAT THE CURRENT FIXED ANGLE APPROACH ACCURATELY DEFINES THE AREA IN WHICH THEY WILL OCCUR.

If the Commission conditions all grants on the outcome of the NGSO NPRM proceeding, there is no need to resolve NGSO sharing issues with respect to each of the Applications. These issues are best resolved in the rulemaking proceeding. In resolving these sharing issues, however, the Commission should reject certain arguments made by the Applicants in their Oppositions.

⁷ *OneWeb Grant*, ¶¶ 12 and 26.

⁸ *See, e.g., LeoSat Opposition* at 11; *Space Norway Opposition* at 10.

⁹ *See Theia Opposition* at 4.

Theia, for example, tries to assume away most of the problem by presenting a hypothetical analysis that purports to show that, “[a]ssuming a protection angle of 5 degrees, the percentage of time that an in-line interference event would occur between Theia and Telesat constellations is less than 1% over most of the earth.”¹⁰ Yet, Theia offers not a scintilla of explanation as to why it believes such an angle bears any relationship to the angles from which harmful interference occurs. Not only is that angle only half of the angle that is now set out in the Commission’s rules, as a true measure of interference it is even less adequate. Applying the same methodology that Telesat presented in its Comments in the NGSO NPRM,¹¹ Telesat calculates that the angle necessary to avoid interference to Telesat from Theia’s system, which will vary, would need to be at least 12 degrees. Within that broader angle, the number of times interference would be predicted to occur would be greater than calculated by Theia under its assumed 5 degree angle of separation. Further, it is impossible to determine exactly how often interference would occur, whether within a 5 or 12-degree angle, without knowing the location of Theia’s gateway locations, which Theia has not disclosed.

Audacy asserts that the in line interference events that would result from its system operation would be fewer than those presented by other systems because it will not rely heavily on use of overlapping Ka-band frequencies as would other systems –

¹⁰ See Theia Opposition at 19 and Appendix A.

¹¹ See Telesat NGSO NPRM Comments, at Attachment A.

that is, it would use such frequencies only for back up feeder links to three satellites.¹² Telesat accepts this argument as far as it goes. Audacy's more limited use of Ka-band spectrum, by definition, will reduce the number of in line interference events among systems. In developing sharing rules, however, the Commission needs an approach that accommodates systems like Audacy's as well as systems that make more intensive use of shared spectrum, such as Telesat's.

While some of the Oppositions cite to the Commission's current separation angle/default band segmentation rules,¹³ none makes the case that a fixed separation of 10 degrees or any other fixed separation angle adequately serves as a demarcation point for harmful interference among varying systems. For example, although O3b complains that: "Telesat repeats here the arguments it made in the NGSO rulemaking that a single separation angle is insufficient to account for all in-line events," it adds that "O3b agrees with this observation...."¹⁴

Finally, SpaceX states that "it generally supports the Commission's in-line events sharing regime."¹⁵ Yet, in its Comments on Telesat's petition seeking U.S. Market Access, SpaceX's alleges interference from Telesat's system from as much as a thirty-

¹² See Audacy Opposition at 3.

¹³ See, e.g., ViaSat Comments at 12.

¹⁴ O3b Comments at 3. O3b adds that, "in its own NGSO NPRM comments [O3b] has proposed a range of angular separations for defining in-line events." *Id.* While the matter is best left to be addressed in the rulemaking proceeding, Telesat observes that O3b made no showing in the rulemaking proceeding that any angle from the range it asked the Commission to choose would correspond to a measure of the angle at which various systems would cause or receive harmful interference to or from other systems. As demonstrated by Telesat in its Comments in the rulemaking proceeding, a single angle cannot accommodate the range from which interference will be received, depending upon the operating parameters of the particular systems involved.

¹⁵ SpaceX Comments at 17.

degree angle.¹⁶ It seems that SpaceX supports a fixed ten-degree angle only sometimes.¹⁷

IV. SPACE NORWAY'S SUPER PRIORITY POSITION CLAIM FOR ITS PROPOSED HEO OPERATIONS AND ITS DENIAL OF TELESAT'S ITU PRIORITY POSITION ARE MERITLESS

Telesat already has responded to Space Norway's claim that its Highly Elliptical Orbit (HEO) system should be treated in GSO primary spectrum like a GSO system, *i.e.*, NGSO systems should be required to protect its HEO system and its HEO system should not be required to protect NGSO systems.¹⁸ That response need not be repeated here and is hereby incorporated by reference.

Space Norway now, however, seeks to bolster its claim for protection by claiming that "fundamental principles long recognized by both the ITU and the FCC require providing small, less bandwidth-intensive, regional systems some level of protection from large, more bandwidth-intensive, global NGSO constellations." Space Norway offers not a single Commission or ITU citation to support this contention and, despite the assertion of "long recognized" policy, we know of no basis for it. Space Norway's claim, therefore, should be flatly rejected by the Commission.

¹⁶ See *Comments of Space Exploration Technologies Corp*, File No. SAT-PDR-20161115-00108 (filed June 26, 2017) at 3.

¹⁷ See *Telesat Canada's Response to Comments of Space Exploration Technologies Corp*, File No. SAT-PDR-20161115-00108 (filed July 7, 2017) at 4-5.

¹⁸ See *Telesat Canada's Response to Comments of Space Norway AS*, File No. SAT-PDR-20161115-00108 (filed July 7, 2017) at 2-3.

Space Norway also questions the significance of Telesat's date priority at the ITU. Space Norway, however, has mischaracterized the ITU's coordination and notification procedures.

Space Norway cites an ITU procedural rule¹⁹ that, along with other ITU rules and regulations, describes the duty of Administrations to seek mutually acceptable solutions to resolve coordination issues. That duty is also recognized in the Commission's OneWeb decision, noting that ITU regulations:

"require[] both parties in coordination to "make every possible mutual effort to overcome [coordination] difficulties, in a manner acceptable to the parties concerned."²⁰ Telesat fully recognizes this obligation and stands ready to work with others seeking to coordinate their systems with Telesat's NGSO system.²¹

The fact that parties must first attempt to reach mutually acceptable solutions, however, says nothing about the consequences of not being able to come to an agreement. In such cases, the relevant provisions of Article 11 of the ITU Radio Regulations apply, which require that a system will have to operate on a non-interference, unprotected basis vis-à-vis another system that has a date priority. Given, however, that pursuant to ITU requirements, all Administrations must coordinate in good faith, Article 11's procedure is not a "winner take all" rule. Accordingly, and as discussed in greater detail in the section that follows,

¹⁹ Rules of Procedure for the Radio Regulations, § 9.6(1)(c) (ITU, 2017).

²⁰ See OneWeb Grant at n. 33.

²¹ Telesat categorically rejects Space Norway's claim of a refusal on Telesat's part to engage in coordination discussions with Space Norway.

the condition the Commission applied to the OneWeb Grant²² ordering the applicability of the relevant provisions of the ITU Radio Regulations in the absence of a coordination agreement also should be applied to a grant of any of the Applications.

V. THE GRANT OF ANY OF THE APPLICATIONS SHOULD BE SUBJECT TO AN UNAMBIGUOUS CONDITION REQUIRING COMPLIANCE WITH ITU COORDINATION REQUIREMENTS

Telesat demonstrated in its Petitions that the grant of every Application should be conditioned on compliance with ITU requirements, just as the Commission conditioned OneWeb's grant. Specifying such a condition is consistent with Commission rules and precedent, as well as with U.S. treaty obligations. Nothing presented in the Oppositions contradicts the basis or need for such a condition.

A single Applicant, LeoSat, unambiguously states that it will accept a condition on a grant of ITU compliance that would match the condition applied to the OneWeb grant.²³

Boeing states that it will accept such a condition,²⁴ but then fails to recognize the importance of it.²⁵ Thus, Boeing argues that its "[a]cknowledgement of the need for ITU coordination does not, however, equate to precedence in NGSO interference events

²² OneWeb Grant at ¶ 23.a.

²³ See LeoSat Opposition at 10-11.

²⁴ See Boeing Opposition at 10; SpaceX Opposition at 17.

²⁵ While not as fleshed out, SpaceX's position on this matter appears similar to that of Boeing. See SpaceX Comments 17.

based on ITU priority.”²⁶ But Boeing fails to recognize either: (i) the second sentence of the OneWeb condition, stating “[i]n the absence of a coordination agreement, ...communications must comport with applicable provisions of the ITU Radio Regulations,”²⁷ or (ii) the Commission’s explanation in its decisions that such ITU compliance “require[es] the immediate cessation of harmful interference actually caused to a recorded assignment with which coordination is required but has not been effected.”²⁸

Similarly, O3b asserts that its current grant already has an “ITU coordination condition” and that it will accept a similar one to the one under which it already operates.²⁹ What O3b fails to say, however, is that the existing O3b condition, while requiring compliance with coordination agreements, does not include the second sentence of the OneWeb condition, requiring ITU compliance in the absence of a coordination agreement.³⁰ The full OneWeb condition, including its second sentence, should apply to O3b.

Theia makes a different argument, maintaining that no ITU compliance condition is needed, because all Applicants will be subject to Section 25.111(b) of the Commission’s rules relative to ITU coordination requirements.³¹ Telesat agrees with Theia, in part, at least as to the application and importance of Section 25.111(b), which

²⁶ Boeing Comments at 11-12.

²⁷ OneWeb Grant at ¶23.a.

²⁸ OneWeb Grant at n.33.

²⁹ O3b Comments at 2-3.

³⁰ See *O3b Limited*, Call Sign S2935, File Nos. SAT-LOI-20141029-00118& SAT-AMD-20150115-00004, grant-stamped Jan. 22, 2015, corrected and re-issued June 2, 2015, Attachment to Grant at 1, ¶ 2.

³¹ See Theia Opposition at 19.

provides, among other things: “No protection from interference caused by radio stations authorized by other Administrations is guaranteed unless ITU procedures are timely completed or, with respect to individual Administrations, coordination agreements are successfully completed.”³² But Theia ignores the last sentence of the same Commission rule, which provides that: “A license for which such procedures have not been completed may be subject to additional terms and conditions required for coordination of the frequency assignments with other Administrations.”³³ That is the exactly the circumstance here and demonstrates why the requested condition of ITU compliance should be specified.

ViaSat and Karousel argue that ITU priority and compliance have no bearing on applications under consideration by the Commission in a processing round. ViaSat premises its argument on two paragraphs of the Commission’s 2003 Space Station Licensing Reform Order that are most noteworthy in that the two paragraphs do not mention ITU rules, compliance or priority.³⁴ ViaSat fails even to mention, much less address, specific language in the same Order that refutes ViaSat’s position:

“As is the case now in processing rounds,” licenses are issued “subject to the outcome of the international coordination process. The Commission is not responsible for the outcome of any particular satellite coordination and does not guarantee the success or failure of the required international coordination.

Moreover, we expect U.S. licensees to abide by international regulations when their systems are coordinated. This may mean that the U.S.-licensee may

³² 47 C.F.R. § 25.111(b).

³³ *Id.*

³⁴ Viasat Opposition at 15 and note 32.; see *Space Station Licensing Rule and Policies*, 18 FCC Rcd 10760, at ¶ 125 (2003) (“*Space Station Licensing Reform Order*”), at ¶¶40-41.

not be able to operate its system if the coordination cannot be appropriately completed.”³⁵

Karousel’s argument is even less on point. Karousel’s position seems to be that ITU priority should not apply to applications granted in a processing round because the Commission imposes bond requirements on grantees.³⁶ That position is a *non sequitur*; the Commission’s bond requirements have no connection to ITU compliance. Karousel’s further suggestion that compliance with ITU date priority is a “novel” concept should be rejected out of hand. The Commission has been applying ITU priority principles for many decades, and there is no reason to depart from the Commission’s own rules, policies, and precedents, as well as U.S. treaty obligations.³⁷

There is, moreover, no justification – and Karousel offers none – for its charge that requiring compliance with ITU priorities would invite “regulatory gaming.”³⁸ What exactly Karousel suggests by this comment is impossible to know. If Karousel means to suggest warehousing “gaming,” both FCC milestones and similar requirements now under consideration by the ITU³⁹ will not allow any Applicant to hold authorizations or to access spectrum and orbital resources unless a proposed NGSO system is implemented in a timely manner. Furthermore, it is a widely recognized fact that Telesat is very much engaged in the relevant national and

³⁵ *Space Station Licensing Reform Order* at ¶96 (emphasis added).

³⁶ Karousel Comments at 8.

³⁷ Karousel Comments at 9.

³⁸ Karousel Comments at 9.

³⁹ See studies currently carried out by the ITU Working Party 4A under Issue A of WRC-19 Agenda Item 7, the last version of which is available at https://www.itu.int/dms_ties/itu-r/md/15/wp4a/c/R15-WP4A-C-0364!N06!MSW-E.docx (TIES account required)

international fora to make sure that such proposed new rules are developed, implemented and enforced.

VI. CONCLUSION

None of the Applications should be granted in their current form. At minimum, any grant should be subject to the conditions to the OneWeb grant that are referenced herein.

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July 14, 2017

CERTIFICATE OF SERVICE

I hereby certify that on this 14th day of July, 2017, a copy of the foregoing Telesat Canada's Consolidated Reply to Oppositions to Petitions to Deny was sent by first-class, United States mail to the following:

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