July 24, 2015

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Re: Intelsat License LLC Reply to Opposition of Space Exploration Technologies Corp. ("SpaceX") to Intelsat's Informal Objection to SpaceX Application, File No. 0356-EX-PL-2015

Dear Ms. Dortch:

Intelsat License LLC ("Intelsat") herein replies to SpaceX's July 20, 2015 opposition to Intelsat's informal objection to grant of SpaceX's above-captioned application for an experimental license until such time as SpaceX includes sufficient information in the public record to allow Intelsat to analyze how SpaceX intends to protect co-frequency geostationary operations, as well as avoid collision with geostationary satellites transiting low earth orbit.

Intelsat argued in its informal objection that certain technical information SpaceX originally sought to withhold from public inspection must be made public in order to allow assessment of the risk of harmful interference from operation of the SpaceX satellites into Intelsat's operations. Although SpaceX claimed that Intelsat's interference arguments should be rejected, SpaceX nevertheless contemporaneously supplied -- via a publicly-available Exhibit 2 entitled "Information Regarding Power Flux Density, Revision 2 -- some of the very type of technical information Intelsat was seeking to examine. Intelsat commends SpaceX for determining that this revised Exhibit 2 information is not, in fact, confidential. The information provided has been illuminating to Intelsat's analysis.

Following its review of the SpaceX calculations of pfd and epfd caused by MicroSat-1a/b, ES-A and ES-B transmissions, Intelsat has the following comments:

1) Although Intelsat believes that there will be pfd levels higher than those shown on Figure 4 of Exhibit 2 on sites with angles of arrival lower than 40° when the satellite is radiating toward sites with 40° arrival angle, there should be sufficient margin to comply with 25.208(b)(1) and (2);

2) The analysis provided by SpaceX to demonstrate compliance with 25.208(g) and (h) is limited to the criterion associated with 100% of the time. This does not ensure compliance with the masks in 25.208(g) and (h) or confirm that no harmful interference will be caused to GSO satellite networks operating in the same frequency bands; and

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3) The analysis provided by SpaceX to demonstrate compliance with 25.208(k) appears to associate 30 dB of transmit earth station antenna discrimination with 12° off-axis angles. However, no information is provided about the transmit earth station antenna gain or diameter, and its sidelobe pattern, to confirm this assumption.

In summary, Intelsat believes it still needs additional information on 1) how 25.208(g) and (h) criteria for time percentages other than 100% will be met; 2) the transmit earth station minimum antenna gain or diameter; and 3) the transmit earth station's associated sidelobe pattern.

SpaceX also stated that Intelsat's collision arguments should be rejected and that Exhibit 7 of the SpaceX application demonstrates "that the chances of a collision are remote and within acceptable limits." Intelsat flight operations engineers have examined Exhibit 7 and nevertheless have the following specific concerns with respect to collision avoidance mechanisms. SpaceX admitted that "each satellite has been designed without a propulsion system and has no pressure vessels on board." Given that:

1) Is SpaceX planning regularly to make available its satellite ephemeris data based on its tracking system to, in addition to JSpOC, either the Space Data Association or other entities for collision avoidance monitoring to ensure satellite launches and LEOP operations can be conducted safely? Given the "propulsion-less" nature of SpaceX's satellites, how will SpaceX satisfy its burden of proof under Section 5.64(b)(3), which states:

> If the space station operator is relying on coordination with another system, the statement shall indicate what steps have been taken to contact, and ascertain the likelihood of successful coordination of physical operations with, the other system.

2) How does SpaceX plan on adjusting the satellite orbits to avoid predicted close conjunctions with inactive space objects? SpaceX noted that its spacecraft "ha[s] the ability, upon receipt of a ground command, to orient itself at a given attitude in order to vary its cross-sectional area in the vector of motion." How is this orientation achieved? Is SpaceX committed to adjusting the satellite orbits in the event of a high probability close conjunction event? Can SpaceX provide more quantitative analysis showing the range of impact to the orbit by varying the spacecraft attitude?

3) Do the SpaceX satellites have a back-up tracking system (e.g., laser corner cubes) in the unfortunate event that the active tracking system on board fails – *i.e.*, both arrays fail to deploy? Does SpaceX intend actively to monitor the satellites for the duration of 8.9 to 38.7 years?

SpaceX has asked that this proceeding be classified as "permit-but-disclose." Intelsat agrees with SpaceX that given the technical nature of the issues herein, allowing the parties to communicate directly with the Commission will serve the public interest.

Very truly yours,

/s/ Susan H. Crandall

Susan H. Crandall
Associate General Counsel
Intelsat Corporation

Cc: David J. Den Herder, Sr. Counsel, Space Exploration Technologies Corp.
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