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September 19, 2016

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VIA ELECTRONIC FILING

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: Ex Parte Notice: *WorldVu Satellites Limited, Petition for a Declaratory Ruling Granting Access to the U.S. Market for the OneWeb System*, File No. SAT-LOI-20160428-00041; *The Boeing Company, Application for Authority to Launch and Operate a Non-Geostationary Low Earth Orbit Satellite System in the Fixed Satellite Service*, File No. SAT-LOA-20160622-00058

Dear Ms. Dortch,

On September 15, 2016, Kalpak Gude, Tim MacClay, and Michael Lindsay of WorldVu Satellites Limited, d/b/a OneWeb (“OneWeb”), together with legal counsel Jennifer Hindin and Madeleine Lottenbach of Wiley Rein LLP, met with Jose Albuquerque, Chip Fleming, Karl Kensinger, Kal Krautkramer, Kerry Murray, Stephen Duall, and Clay DeCell of the Federal Communication Commission’s (“FCC” or “Commission”) International Bureau.

The meeting participants discussed the overlapping proposals in the above-referenced pending applications to operate non-geostationary satellite orbit (“NGSO”) systems at a 1200 km orbital altitude. OneWeb explained some of the complexities inherent in operating a NGSO constellation with hundreds of satellites. OneWeb described its focus on safety and collision avoidance and noted that adding a second, much larger satellite constellation to OneWeb’s orbital altitude would present physical coordination challenges. OneWeb also expressed its willingness to work with The Boeing Company.

In addition, OneWeb discussed regulatory oversight of its orbital debris mitigation plan by the United Kingdom. OneWeb reviewed the guidance standards set forth by the United Kingdom Space Agency as well as OneWeb’s commitment to responsible design and operations. Attached is a copy of OneWeb’s presentation to the International Bureau staff on orbital debris mitigation.



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Pursuant to Section 1.1206(b)(2) of the FCC's rules, 47 C.F.R. § 1.1206(b)(2), this *ex parte* notification is being filed electronically for inclusion in the public record of the above-referenced proceedings.

Respectfully submitted,

/s/ Jennifer D. Hindin
Jennifer D. Hindin
Counsel to WorldVu Satellites Limited

Attachment

cc: Jose Albuquerque
Chip Fleming
Karl Kensinger
Kal Krautkramer
Kerry Murray
Stephen Duall
Clay DeCell



FCC Meeting
Washington, DC
15 Sep 2016

Debris Mitigation Requirement Sources

- OneWeb is bound by UKSA regulations as part of satellite operations license
 - Based on ISO 24113, largely traceable back to NASA standards
 - Applications are judged against guidelines meant to balance industry promotion with gov't liability for commercial actions it licenses
- At high level, OneWeb must demonstrate that it:
 - Has “a clear understanding of the hazards involved” in building and operating its constellation
 - Has made and will make “a reasonable attempt” at limiting these hazards
- In addition, OneWeb has generated its own internal requirements to assure business sustainability and promote environmental stewardship
 - Mission and satellite design approach has been to exceed regulatory requirements
 - Promoting principles of responsible satellite operations

UKSA Requirements Summary

Source	Requirement (paraphrased)
ISO 24113 6.1.1.1	Design shall avoid intentional release of debris
ISO 24113 6.2.2.1	Failure modes analysis shall result in $P \leq 10^{-3}$ of accidental fragmentation
ISO 24113 6.2.2.3	At end-of-life, satellite shall be depleted of all remaining on-board energy sources
ISO 24113 6.3.1.1	Probability of successful disposal shall be ≥ 0.90
ISO 24113 6.3.3.1	Satellite shall be deorbited within 25 years of the end of its mission
ISO 24113 6.3.4.1	Re-entry casualty risk threshold shall be in accordance with agency norms
IADC Guidelines 5.4	Limit probability of accidental collision with known objects during orbital lifetime

Responsible Design and Operations

- Space Situational Awareness
 - High-accuracy positional knowledge maintained and shared with other operators
 - Space data sharing agreements already in place with JSpOC
 - Strong radar signature facilitates independent tracking
- Maneuverability
 - High-efficiency, electric ion propulsion system
 - Nearly global TT&C visibility provides collision avoidance agility
 - Active conjunction monitoring and maneuvering from launch to reentry
- Disposal
 - Deorbit system is required to be the highest-reliability function on the satellite
 - Atmospheric reentry within approximately five years of decommissioning
 - “Designed-for-demise” upon reentry, with little (if any) surviving material