

LAW OFFICES
2007 GOLDBERG, GODLES, WIENER & WRIGHT
1229 NINETEENTH STREET, N.W.
WASHINGTON, D.C. 20036-2413

HENRY GOLDBERG
JOSEPH A. GODLES
JONATHAN L. WIENER
LAURA A. STEFANI
DEVENDRA ("DAVE") KUMAR

HENRIETTA WRIGHT
THOMAS G. GHERARDI, P.C.
COUNSEL

THOMAS S. TYCZ*
SENIOR POLICY ADVISOR
*NOT AN ATTORNEY

(202) 429-4900
TELECOPIER:
(202) 429-4912

e-mail:
general@g2w2.com
website: www.g2w2.com

April 18, 2007

BY HAND
EXPEDITED PROCESSING REQUESTED

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

FILED/ACCEPTED ORIGINAL
APR 18 2007
Federal Communications Commission
Office of the Secretary

Re: Tethers Unlimited, Inc.
Experimental License for Low Earth Orbit Satellite
Call Sign WE2XAH
File No. 0580-EX-PL-2006

Dear Ms. Dortch:

The Commission's Office of Engineering and Technology ("OET") has issued the above-referenced experimental license authorizing Tethers Unlimited, Inc. ("Tethers") to operate a low earth orbit mobile satellite system. Iridium Satellite, LLC, by its attorneys, respectfully requests that OET suspend or revoke Tethers' experimental license, pending further investigation, in light of the risk that Tethers' satellite will collide with one or more of Iridium's satellites.¹

Iridium operates a constellation of "Big LEO" satellites at an altitude of 780 km, and Iridium's in-orbit spare satellites are stationed at a lower altitude. The Iridium constellation consists of 66 non-geostationary orbit cross-linked satellites and has multiple in-orbit spares. Iridium delivers essential communications services to and from remote areas where no other form of communication is available.

Tethers' system consists of three tethered picosatellites. According to the narrative accompanying Tethers' experimental license application, the three picosatellites will be deployed in an elliptical orbit having an apogee of 803 km, a

¹ It is Iridium's understanding that Tether's satellite was launched within the last 48 hours.

perigee of 658.5 km, and an inclination of 98°. After ejection, a spring-based separation system will push one of the three picosatellites away from the other two, at which point it will deploy a 1-kilometer long, nonconductive, multi-line tether. Seven days later, the middle picosatellite will begin slowly crawling up and down the tether.

Tethers' application did not quantify the probability that its picosatellites will collide with particular systems. Rather, Tethers compared the number of "conjunctions" that its spacecraft would exhibit with cataloged space objects to the number of conjunctions that a 10m spacecraft is predicted to exhibit.² This comparison is based on a simulation that was conducted using software developed by Tethers.³

There is a significant risk that Tethers' picosatellites will collide with one of Iridium's spacecraft. Based on Iridium's preliminary analysis, a Tethers picosatellite will pass through the Iridium orbit 11 times per day for a period of years, and Tethers' own analysis shows that its system raises the probability of a "conjunction" by five percent.

A methodological defect, moreover, calls into question Tethers' entire orbital debris mitigation proposal. As stated above, Tethers' system will have an apogee of 803 km. The study on which Tethers relies, however, is based on a tethered satellite that is operating at an altitude of 600 km.⁴ Tether made no effort to account for this discrepancy, and it is undeniable that the risk of a conjunction will vary with altitude because some altitudes are more congested than others. By limiting its analysis to an altitude of 600 km, Tethers did not take into consideration the possibility of collision with the satellites of two major NGSO systems, Iridium and ORBCOMM.⁵ Moreover, Tethers should have simulated and analyzed the potential collision probability of its satellite system taking into account the actual orbital parameters of the Iridium and ORCOMM systems.

² Tethers narrative, p. 2.

³ See Tethers narrative, n. 1, and accompanying link.

⁴ Hoyt, R., Buller J., "Analysis of the Interactions of Space Tethers with Cataloged Space Objects," JPC 2005. (http://www.tethers.com/papers/MXER_Conjunction_Analysis.pdf), at 3. This analysis is cited in n.1 of the Tethers narrative and the accompanying text.

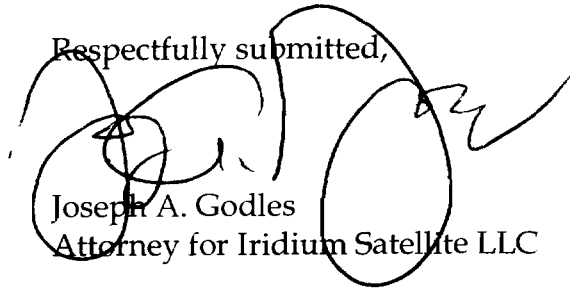
⁵ ORBCOMM has filed a request that Tethers' experimental license be revoked. See letter from Walter H. Sonnenfeldt, ORBCOMM, to James R. Burtles, FCC (April 16, 2007). ORBCOMM raises concerns that are similar to those expressed in this filing, and Iridium concurs with ORBCOMM's analysis.

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In light of the substantial risk of orbital collision posed by Tethers' system, Tethers' experimental license should be suspended or revoked.

Please direct any questions regarding this matter to the undersigned.

Respectfully submitted,

A handwritten signature in black ink, consisting of a large, stylized 'G' followed by a checkmark-like flourish.

Joseph A. Godles
Attorney for Iridium Satellite LLC

cc: Julius Knapp, FCC (via e-mail)
James Burtle, FCC (via e-mail)
Karl Kensinger, FCC (via e-mail)
Nestor Voronka, Tethers Unlimited, Inc. (via e-mail)