



## Radio Amateur Satellite Corporation

*Dr. Perry I. Klein, Vice President, Government Liaison*

**P. O. Box 27, Washington, DC 20044**

**ph. (202)488-7430, fax (202)479-4396, e-mail: [w3pk@amsat.org](mailto:w3pk@amsat.org)**

May 4, 2005

TO: The Secretary  
Federal Communications Commission  
445 Twelfth Street, S.W.  
Washington, DC 20554

RE: *Ex Parte* Meeting in IB Docket No. 02-54 In the Matter of Mitigation of Orbital Debris and AMSAT's Petition for Reconsideration of the Commission's Second Report and Order

On May 4, 2005, Richard M. Hambly, Dr. Thomas A. Clark and Dr. Perry I. Klein of the Radio Amateur Satellite Corp. (AMSAT) met with Stephen Duall, Karl Kensinger, John Martin, Robert Nelson and Sankar Persaud of the Commission's Satellite Division, International Bureau to discuss issues raised in AMSAT's petition for reconsideration of the Commission's Second Report and Order in the Mitigation of Orbital Debris. Also in attendance was Jonathan Siverling of ARRL, the National Association for Amateur Radio.

AMSAT presented a brief background and history of the organization and a summary of the several classes of satellites carrying amateur space stations according to size, ranging from the CUBESAT's measuring 10 centimeters on a side, to AMSAT-OSCAR 40 as the largest. It was pointed out that complete information is on the AMSAT website, [www.amsat.org](http://www.amsat.org)

AMSAT reiterated its assertion that it is not within the FCC's charter to formally regulate mitigation of orbital debris for amateur space stations.

A full-size CUBESAT model was shown to the group and it was explained that these university-built satellites are far too small to include propulsion hardware to de-orbit them and that their extremely small area and mass themselves are a means of mitigating orbital debris and the risk of causing damage. By extension, AMSAT made the same argument for the next larger group of satellites, the Microsat class, that are typically ~25 cm cubes weighing 10 kg.

The Commission noted that their principal concern is with LEO satellites with orbits higher than ~600 km. Below that critical altitude, orbits are self-cleaning over timescales < 25 years.

The lack of control over orbits was discussed. Amateur space stations are normally flown as secondary payloads and the builders must accept the orbit of the primary payload regardless of the altitude. Opportunities to fly as secondary payloads are costly and scarce, and especially rare at lower altitudes.

It was also noted that amateur space stations often fly on launch opportunities identified with short lead-times, so the orbit often is not known far in advance. The 27-month and 5-month advance notification time requirements of Section 97.207(g) have been impossible to meet in virtually every amateur space station case.

The license responsibility for space stations in the amateur-satellite service lies with individual volunteer control operators within the authority of their amateur operator and station licenses. Considerations of orbital debris are beyond the responsibility or knowledge of the control operator.

AMSAT mentioned that a group at the University of Florida is working on an approach to test the de-orbiting of CUBESATs by inflating a balloon to increase the effective area, but that this might not mitigate orbital debris very effectively, especially at higher altitudes, in part because the dimensions of the device used to increase drag significantly increase the probability of potential collisions.

AMSAT observed that the NASA model to calculate orbital lifetimes seemed to be in some cases in disagreement by a significant amount in comparison with the model AMSAT is using.

The question of what constitutes an acceptable orbital debris mitigation plan was mentioned and that more information was needed from the Commission if submission of a plan became necessary.

An original and one copy of this letter have been mailed addressed to the Secretary, and a copy has been filed electronically through the Commission's Electronic Comment Filing System (ECFS).

RESPECTFULLY SUBMITTED,

Radio Amateur Satellite Corporation (AMSAT)

By  \_\_\_\_\_

Dr. Perry I. Klein, W3PK  
Vice President, Government Liaison

cc (by e-mail): Stephen Duall, Karl Kensinger, John Martin, Robert Nelson, Sankar Persaud