

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

In the Matter of )  
 )  
SATELLITE INDUSTRY ASSOCIATION )  
 )  
Request for Blanket Waiver of )  
Section 25.283(c) of the Commission's Rules )

FILED/ACCEPTED

OCT - 1 2010

Federal Communications Commission  
Office of the Secretary

**BLANKET WAIVER REQUEST OF THE SATELLITE INDUSTRY ASSOCIATION**

The Satellite Industry Association ("SIA"), on behalf of its member companies, hereby requests that the Commission waive Section 25.283(c) of the Commission's Rules, 47 C.F.R. § 25.283(c), on a blanket basis with respect to all in-orbit satellites that are incapable of complying with the rule's requirements to vent excess propellant and relieve pressure vessels at the end of a spacecraft's operational life. Grant of the requested blanket waiver will serve the public interest by recognizing the impossibility of compliance, avoiding improper retroactive application of a rule to space stations that were constructed and launched in some cases years before the rule's requirements were even proposed, and facilitating efficient use of the Commission's administrative resources.

SIA is a U.S.-based trade association providing worldwide representation of the leading satellite operators, service providers, manufacturers, launch service providers, remote sensing operators, and ground equipment suppliers. SIA is the unified voice of the U.S. satellite industry on policy, regulatory, and legislative issues affecting the satellite business.<sup>1</sup>

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<sup>1</sup> SIA Executive Members include: Artel, Inc.; The Boeing Company; CapRock Government Solutions; The DIRECTV Group; Hughes Network Systems, LLC; DBSD North America, Inc.; Echostar Satellite Services, LLC; Integral Systems, Inc.; Intelsat, Ltd.; Iridium Satellite, LLC; Lockheed Martin Corporation.; Loral Space & Communications, Inc.; Northrop Grumman Corporation; Rockwell Collins Government Systems; SES WORLD SKIES; SkyTerra Communications, Inc; and TerreStar Networks, Inc. SIA Associate Members include: Arqiva

## I. FACTUAL BACKGROUND

### A. Section 25.283(c)

In 2004, the Commission adopted a rule requiring space station licensees to vent excess propellant and relieve pressure vessels at the end of life of the licensed space station.

Section 25.283(c), which went into effect on October 12, 2004, provides that:

*All space stations.* Upon completion of any relocation authorized by paragraph (b) of this section, or any relocation at end-of-life specified in an authorization, or upon a spacecraft otherwise completing its authorized mission, a space station licensee shall ensure, unless prevented by technical failures beyond its control, that all stored energy sources on board the satellite are discharged, by venting excess propellant, discharging batteries, relieving pressure vessels, and other appropriate measures.<sup>2</sup>

The rule was adopted as part of the measures relating to mitigation of orbital debris addressed in IB Docket No. 02-54. This provision, however, received scant attention from either the Commission or the parties in the course of that proceeding. Instead, most of the debate concerning post-mission disposal of spacecraft focused on the method of disposal (*e.g.*, atmospheric re-entry or maneuvering to a storage orbit) and the specific requirements that are appropriate for each method, including adoption of a formula for determining the minimum distance above the geostationary arc for post-mission disposal of geostationary satellites. In fact,

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Satellite and Media; ATK Inc.; Cisco Systems, Inc.; Cobham SATCOM Land Systems; Comtech EF Data Corp.; DRS Technologies, Inc.; EchoStar Satellite, LLC; EMC, Inc.; Eutelsat, Inc.; Globecom Systems, Inc.; Glowlink Communications Technology, Inc.; iDirect Government Technologies; Inmarsat, Inc.; Marshall Communications Corporation.; Panasonic Avionics Corporation; SatGE, Inc.; Spacecom, Ltd.; Spacenet Inc.; Stratos Global Corporation; TeleCommunications Systems, Inc.; Telesat Canada; Trace Systems, Inc.; and ViaSat, Inc. Additional information about SIA can be found at <http://www.sia.org>.

<sup>2</sup> 47 C.F.R. § 25.283(c) (emphasis added).

the text of the Commission's Notice of Proposed Rulemaking in the proceeding contains no mention of venting of propellant or relieving of pressure vessels at end of life.<sup>3</sup>

The changes to the Part 25 rules proposed in the *Orbital Debris Notice* do contain language regarding these matters, but the draft rules would not have imposed a mandatory requirement in this regard. Instead, the draft rules proposed to mandate the submission of information in satellite applications regarding whether the applicant intended to vent pressurized systems at end of life.<sup>4</sup> In addition, the draft rules would have authorized deorbit maneuvers with no additional authority required if certain conditions, including venting of excess propellant and relieving pressure vessels, were met and the deorbit plans otherwise conformed to Commission requirements.<sup>5</sup>

Similarly, the text of the Commission's decision in the proceeding does not mention venting of propellant or relieving pressure vessels at end of life.<sup>6</sup> Again, the focus of the discussion regarding end of life matters in the *Orbital Debris Order* is on standards for evaluating re-entry or deorbit maneuvers, including adoption of a formula to calculate the minimum perigee at end of life. Nevertheless, the Commission proceeded to adopt a mandatory venting rule that was different in both form and substance from the one proposed in the *Orbital Debris Notice*.

As adopted, the language of Section 25.283(c) imposes an absolute requirement on Commission licensees to vent excess propellant and relieve pressure vessels at end of life

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<sup>3</sup> See *Mitigation of Orbital Debris*, Notice of Proposed Rulemaking, IB Dkt No. 02-54, FCC 02-80, 17 FCC Rcd 5586 (2002) ("*Orbital Debris Notice*").

<sup>4</sup> *Id.* at Appendix B, draft Section 25.114 (xx2).

<sup>5</sup> *Id.* at Appendix B, draft Section 25.282(a).

<sup>6</sup> See *Mitigation of Orbital Debris*, Second Report and Order, IB Dkt No. 02-54, FCC 04-130, 19 FCC Rcd 11567 (2004) ("*Orbital Debris Order*"). The only mention of these matters is in footnote 92, which quotes an FAA regulation for launch vehicle upper stages that requires depleting residual fuel and venting any pressurized systems. See *id.* at 11580-81 n.92.

unless the licensee is prevented from doing so by technical failures beyond its control. No grandfathering applies to this requirement. In contrast, spacecraft that had been launched prior to release of the *Orbital Debris Notice* on March 18, 2002 were exempted from application of the de-orbit altitude formula codified in Section 25.283.<sup>7</sup>

**B. Impossibility of Performance**

As the Commission is aware, complete venting of excess propellant and relieving of pressure vessels at end of life is impossible for a number of FCC-licensed spacecraft in orbit today, including many that had been licensed and launched before the orbital debris rulemaking was even initiated. A number of spacecraft were designed to have pressure vessels on board the spacecraft sealed following transfer orbit or with regulator valves on the vessels that preclude full venting of the gases at end of life.

The Commission has expressly recognized that in such cases, it is impossible for the spacecraft operator to conform to the requirements of Section 25.283(c). For example, in a recent decision involving the AMC-2 satellite licensed to SIA member SES Americom, Inc., the Commission granted a waiver of Section 25.283(c) on its own motion. The Commission observed that venting the spacecraft's sealed oxidizer tanks "would require direct retrieval of the satellite, which is not currently possible."<sup>8</sup>

The same practical obstacle is present with respect to all in-orbit spacecraft that were not designed to allow full venting of pressure vessels at end of life. For operators of these satellites, there is simply nothing that they can do to comply with the stated requirements of Section 25.283(c).

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<sup>7</sup> 47 C.F.R. § 25.283(a) & (d).

<sup>8</sup> *SES Americom, Inc.*, File No. SAT-MOD-20100324-00056, Call Sign S2134, grant-stamped June 21, 2010, Attachment at ¶ 8.

Attached as Annex 1 hereto is a list of the spacecraft manufacturers and models whose design does not permit all pressure vessels to be relieved at end of life. SIA has also identified in the table the U.S.-licensed satellites of each model that are currently in orbit.

**II. A BLANKET WAIVER OF SECTION 25.283(c) IS JUSTIFIED FOR IN-ORBIT SPACECRAFT**

In light of these facts, SIA submits that granting blanket relief for all in-orbit spacecraft incapable of complying with Section 25.283(c) is consistent with Commission precedent and with the public interest.

As a threshold matter, grant of the requested waiver will avoid improper retroactive application of the Commission's rule. As the Commission recognized in the *Orbital Debris Order*, retroactive application of a rule is impermissible if it would "increase a party's liability for past conduct."<sup>9</sup> That would be the effect here if licensees were held liable for not meeting the standards of Section 25.283(c) with respect to spacecraft launched before adoption of the rule.

Even for spacecraft launched after Section 25.283(c) took effect, it would have been an unjustified burden to require modification of the satellite design in order to comply with the rule. The Commission has acknowledged this concern, considering and granting waivers of Section 25.283(c) on a case-by-case basis to permit launch and operation of spacecraft models that cannot comply with the rule's venting requirements. The rationale for these waiver grants has been that significantly changing the space station design at a late stage of construction would

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<sup>9</sup> *Orbital Debris Order*, 19 FCC Rcd at 11598 (¶ 78), citing *Celotronic Telemetry, Inc. v. FCC*, 272 F.3d 585, 588 (D.C. Cir. 2001).

pose an undue hardship.<sup>10</sup> Granting blanket relief will ensure consistent treatment of similarly situated licensees by uniformly applying the standards set in past individual waiver decisions.

Moreover, grant of the proposed relief will not compromise safe disposal of the spacecraft. The apparent intent of the venting requirement in Section 25.283(c) is to ensure that pressurized vessels do not result in an explosion or a leak that could propel the spacecraft out of its storage orbit or cause a collision. Satellite manufacturers have advised SIA that they design pressurized vessels to leak before they burst, eliminating the risk of an explosion. Further, as Annex 1 indicates, the remaining gas in pressurized vessels is very low at end of life (especially after the spacecraft is powered down and the temperature in the tanks drops). As a result, any leak would not create sufficient energy in the gas stream to structurally damage the spacecraft and generate debris.

At the same time, a leaking pressurized vessel could not cause a spacecraft to leave its storage orbit. Expulsion of pressurized gas would not perturb the orbit of a spacecraft sufficiently because the event would cause the spacecraft to tumble and the delta V (*i.e.* the thrust) would be randomly distributed, hence having very small effect on the orbit apogee and perigee. Given these facts, confirming that in-orbit spacecraft are exempt from complying with the strict requirement of Section 25.283(c) would not impose any material additional risk that residual gas in pressurized vessels could generate orbital debris.

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<sup>10</sup> See, e.g., *DIRECTV Enterprises LLC*, File No. SAT-LOA-20090807-00086, Call Sign S2797, grant-stamped Dec. 15, 2009, Attachment at ¶ 4 (granting a partial waiver of Section 25.283(c) for DIRECTV 12, a Boeing 702 model spacecraft, on grounds that requiring modification of satellite would present an undue hardship); *PanAmSat Licensee Corp.*, File Nos. SAT-MOD-20070207-00027, SAT-AMD-20070716-00102, Call Sign S2237, grant-stamped Oct. 4, 2007, Attachment at ¶ 7 (granting a partial waiver of Section 25.283(c) for Intelsat 11 on grounds of undue hardship).

Finally, granting across-the-board relief is clearly efficient and appropriate here given the common factual and regulatory issues raised. Blanket action in these circumstances is vastly preferable to continuing to handle this issue on a case-by-case basis, which would involve multiple redundant filings and waste Commission and operator resources.

**III. CONCLUSION**

For the foregoing reasons, SIA respectfully requests that the Commission take action to exempt operational spacecraft that cannot satisfy the requirements of Section 25.283(c) concerning venting excess propellant and relief of pressure vessels from the obligation to comply with those requirements.

Respectfully submitted,

The Satellite Industry Association

By: 

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**ANNEX 1**

<b>U.S.-Licensed Satellites</b>	<b>Design</b>	<b>Model</b>
Includes AMSC-1/MSAT-2; DIRECTV 1R, 4S, 10, & 11; Galaxy 3C & 11; Intelsat 2, 3R, 4, 5, 6B, 9 & 10; Spaceway 1, 2 & 3; XM-1, 2, 3 & 4; Waivers previously granted for DIRECTV 12 & Intelsat 1R	The helium pressurant for the vessels that are used during orbit raising was permanently isolated from the propulsion system by firing a pyrotechnic valve at beginning of on-orbit life such that the residual gas (about 5%) cannot be vented at end of life; xenon tanks have a regulator valve and cannot be vented after pressure drops below the set point of the valve.	Boeing 601, 601HP and 702 models
Includes AMC-1, 3, 4, 6, 7, 8, 10, 11, 15 & 16; EchoStar 1, 3, 4, 7, 10 & 12; Intelsat 805; Waivers previously granted for AMC-2, AMC-14, Intelsat 801, Intelsat 802, & NSS-5 Ku-band	Oxidizer tanks were sealed by firing a pyrotechnic valve following transfer orbit. Remaining oxidizer (less than 3% of tank volume) cannot be vented at end of life.	Lockheed Martin A2100 and 7000 models
Includes Galaxy 14 & 15; Waivers previously granted for Intelsat 11, Galaxy 12 & Horizons 2	Oxidizer tanks were sealed by firing a pyrotechnic valve following transfer orbit. Remaining oxidizer (less than 3% of tank volume) cannot be vented at end of life.	Orbital Sciences Star and Star 2 models
Includes AMC-5, 9 & 12; Galaxy 17; GE-23	Helium tanks were sealed by firing a pyrotechnic valve following transfer orbit. Remaining helium cannot be vented at end of life.	Thales Alenia (formerly Alcatel) Spacebus 2000, 3000 and 4000 models