

Before the
Federal Communications Commission
Washington, D.C. 20554

In the matter of)	
)	File No. SAT-LOA-19990427-00047
Lockheed Martin Corporation)	File No. SAT-AMD-20030730-00151
)	File No. SAT-AMD-20040130-00009
Application To Launch and Operate a)	File No. SAT-AMD-20040203-00011
Geostationary Orbit Space Station in the)	File No. SAT-AMD-20040706-00129
Radionavigation Satellite Service at 133° W.L.)	File No. SAT-AMD-20050210-00035
		Call Sign: S2372

ORDER AND AUTHORIZATION

Adopted: June 23, 2005

Released: June 23, 2005

By the Chief, International Bureau:

I. INTRODUCTION

1. In this Order, we grant authority to Lockheed Martin Corporation (Lockheed), to launch and operate a Radionavigation Satellite Service (RNSS) space station¹ aboard separately licensed PanAmSat Corporation's (Panamsat) Galaxy-XV satellite (Call Sign S2387)² to be located at 133° W.L.. Lockheed's proposed space station is a part of its Regional Positioning System (RPS).³ Grant of this application will serve the public interest by allowing Lockheed to provide valuable augmentation services to the existing US Global Positioning System. This grant will also further serve the public interest by providing effective use of the limited spectrum resource.

¹ As used in this Order and Authorization, the term "space station" has the meaning given in the International Telecommunication Union (ITU) Radio Regulations, *i.e.* one or more transmitters, or receivers or a combination of transmitters and receivers necessary for carrying on a radiocommunication service, and located on an object which is beyond, or is intended to go beyond, the major portion of the Earth's atmosphere. See ITU Radio Regulations S1.61 and S1.64.

² See Application of PanAmSat Licensee Corp. for Authority to Launch and Operate the Galaxy XV satellite at the 133° W.L. Orbital Location, File No. SAT-LOA-19991207-00119 as amended by SAT-AMD-20021029-00199, SAT-AMD-20030818-00156, SAT-AMD-20031103-00320 and SAT-AMD-20040603-00111 (stamp grant with conditions, issued by Robert Nelson, Chief, Engineering Branch, Satellite Division, FCC, August 11, 2004) (DA No. 04-2531) (*PanAmSat Galaxy XV authorization*).

³ Lockheed has a number of other RNSS applications pending before the Commission. This order only addresses Lockheed's RPS space station at the 133° W.L. orbital location. The other applications will be addressed in future orders.

II. BACKGROUND

A. Procedural History

2. In April 1999, Lockheed filed applications with the Commission for authority to launch and operate a global RNSS system, known as the Lockheed Martin Regional Positioning System ("LM-RPS") with satellites operating at the 79° W.L., 71° E.L., 131.8° E.L., 109° W.L., 129° W.L. and 11° E.L. orbital locations.⁴ This system, as originally proposed, consisted of twelve geostationary satellites that would provide navigation services from six orbital locations. Lockheed's April 1999 Applications were placed on public notice on May 27, 1999.⁵ On June 28, 1999, GE American Communication, Inc. (GE Americom), Globalstar, L.P. (Globalstar), and Motorola, Inc. (Motorola) filed comments. Additionally, the Boeing Company (Boeing) filed a petition to deny and PanAmSat Corporation (Panamsat) filed a petition to deny, in part.⁶ Lockheed subsequently filed a consolidated opposition to petition to deny and reply comments. Panamsat and Boeing both filed reply comments to Lockheed's consolidated opposition to petition to deny. For the reasons set forth below, we conclude that as a result of actions taken by the Commission and Lockheed's subsequent amendments, the issues raised by the commenters are no longer valid.

3. On July 30, 2003, Lockheed amended its applications, to (1) modify the requested radio frequencies, (2) clarify its Tracking, Telemetry and Command (TT&C) functions, (3) delete the 11° E.L. orbital location and (4) provide additional or revised technical information.⁷ Additionally, Lockheed modified its request for one of its proposed orbital locations, changing its original request for the 129° W.L. orbital location to 125° W.L.. Lockheed's July 2003 Amendment was placed on Public Notice.⁸ Panamsat filed comments on Lockheed's request for the 125° W.L. orbital location and Lockheed filed reply comments.⁹

4. In January and February 2004, Lockheed further amended its RPS application.¹⁰ These

⁴ See *Lockheed Martin Corp., Application for Authority to Launch and Operate a Global System of Geostationary Orbit Satellites in the Radionavigation Satellite Service*, File No. SAT-LOA-19990427-00047, filed April 27, 1999 (Lockheed Original April 1999 Application).

⁵ See Public Notice, Report No. SAT-00018, released May 27, 1999.

⁶ In its 1999 Petition to Deny in Part and Reply Comments, Panamsat raised arguments concerning Lockheed's proposed use of the extended C band frequencies for its TT&C operations. As a result of Lockheed's subsequent amendments to its application, we find that the arguments raised in Panamsat's petition and reply comments are no longer valid and rendered moot.

⁷ See *Lockheed Martin Corp., Amendment to Application for Authority to Launch and Operate a Global System of Geostationary Orbit Satellites in the Radionavigation Satellite Service*, File No. SAT-AMD-20030730-00151, filed July 30, 2003 (Lockheed July 2003 Amendment).

⁸ See Public Notice, Report No. SAT-00160, in reference to Lockheed's July 2003 Amendment, File No. SAT-AMD-20030730-00151, released August 18, 2003.

⁹ See Comments of PanAmSat Corporation, (filed September 17, 2003). See also Reply Comments of Lockheed Martin Corporation, (filed October 1, 2003). Lockheed's subsequent January 2004 and February 2004 amendments rendered Panamasat's concerns moot.

¹⁰ See *Lockheed Martin Corp., Amendment to Application for Authority to Launch and Operate a Global System of Geostationary Orbit Satellites in the Radionavigation Satellite Service*, File No. SAT-AMD-20040130-00009, filed January 30, 2004, (Lockheed January 2004 Amendment). Subsequently, Lockheed further amended its application on February 3, 2004. See also *Lockheed Martin Corp., Amendment Application for Authority to Launch and Operate a Global System of Geostationary Orbit Satellites in the Radionavigation Satellite Service*, File No. SAT-AMD-20040203-00011, filed February 3, 2004 (Lockheed February 2004 Amendment). Lockheed February 2004 Amendment, basically replaced in its entirety, Lockheed's previous January 2004 Application.

amendments were placed on Public Notice¹¹ and no comments were filed. With these amendments, Lockheed seeks authority to construct, launch and operate a RNSS payload, located onboard Panamsat's Galaxy-XV satellite. Panamsat is currently licensed by the Commission to operate its Galaxy XV satellite in the C-band at 133° W.L.¹² Lockheed further amended its application in July 2004,¹³ and in February 2005, in order to provide additional information requested by the Commission.¹⁴

5. Lockheed indicates that its proposed space station at the 133° W.L. orbital location (referred to as LM-RPS1), will operate in conjunction with and in full compatibility with the United States Global Positioning System (GPS) system, as part of the Federal Aviation Administration (FAA) Wide Area Augmentation System (WAAS), to provide more accurate navigation information with high integrity, in particular for the aviation community.¹⁵ The FAA WAAS system will provide GPS augmentation messages to two of Lockheed's uplink Earth stations, to be located within the U.S.¹⁶ These two uplink Earth stations will uplink the augmentation messages to the LM-RPS1 space station using the extended C-band.¹⁷ The received augmentation messages will then be broadcast in the downlink in the L-band¹⁸ to receive-earth stations. These augmentation messages contain error correction information that provides for differential correction of the GPS receive signals, resulting in more accurate GPS navigation information. This enhanced information will be used to improve aircraft navigation, automated farming, mining operations and other applications that rely on precise position and navigation information.¹⁹

B. Frequency Requests

6. In its original application filed in April 1999, Lockheed requested 21.8 megahertz of

¹¹ See Public Notice, Report No. SAT-00202, in reference to Lockheed's January 2004 and February 2004 Amendments, File Nos. SAT-AMD-20040130-00009 and SAT-AMD-20040203-00011, released March 19, 2004.

¹² See *PanAmSat Galaxy XV authorization*. We note that PanAmSat is currently licensed to operate in the conventional C-band, not the extended C-band.

¹³ See *Lockheed Martin Corp., Amendment to Application for Authority to Launch and Operate a Global System of Geostationary Orbit Satellites in the Radionavigation Satellite Service*, File No. SAT-AMD-20040706-00129, filed July 6, 2004 (Lockheed July 2004 Conforming Amendment). Lockheed filed this amendment in order to conform its technical specifications for the LM-RPS1 space station with Panamsat's Galaxy XV satellite.

¹⁴ See *Lockheed Martin Corp., Amendment to Application for Authority to Launch and Operate a Global System of Geostationary Orbit Satellites in the Radionavigation Satellite Service*, File No. SAT-AMD-20050210-00035, filed February 10, 2005 (Lockheed February 2005 Interference Analysis Amendment). In response to a letter sent by the FCC's Satellite Division, Lockheed amended its application to include an interference analysis, pursuant to Section 25.140(b)(2) of the Commission's rules. We note here that in requesting this information, we did not dismiss Lockheed's application as incomplete, because Lockheed's application and relevant amendments were filed prior to our June 16th Public Notice clarifying the requirements of Section 25.140(b)(2). See *Public Notice, International Bureau Satellite Division Information: Clarification of 47 C.F.R. § 25.140(b)(2), Space Station Application Interference Analysis*, No. SPB-195, 18 FCC Rcd 25099 (2003) as clarified by *International Bureau Satellite Division Information: Clarification of 47 C.F.R. § 25.140(b)(2), Space Station Interference Analysis, Public Notice*, SPB-207, DA 04-1708 (rel. June 16, 2004) (*June 16th 2004 Public Notice*).

¹⁵ See Lockheed February 2004 Amendment at p. 11.

¹⁶ *Id.* at p. 12.

¹⁷ For purposes of this *Order*, the term "extended C-band" refers to the 6425-6725 MHz frequency band.

¹⁸ For purposes of this *Order*, the term "L-band" refers to the 1559-1610 MHz (L1 frequency band) and the 960-1215 MHz (L5 frequency band).

¹⁹ See Lockheed February 2004 Amendment at p. 12.

spectrum within the 6625-6725 MHz frequency band for uplink control,²⁰ command and tracking functions and 12.4 megahertz of spectrum within the 3600-3700 MHz frequency band for downlink telemetry and tracking functions. Lockheed also requested authority to operate in the 1554.92-1595.92 MHz, 1207.1-1248.1 MHz, 1155.95-1196.95 MHz frequency bands for its service downlinks.²¹

7. In July 2003, Lockheed amended its applications by reducing the amount of spectrum it had originally requested for its service downlinks. Specifically, Lockheed reduced the requested spectrum from its original request of the 1554.92-1595.92 MHz frequency band, to the 1565.17-1585.67 MHz frequency band. It also reduces the requested spectrum from its original request of the 1155.95-1196.95 MHz frequency band, to the 1166.20-1186.70 MHz frequency band. Additionally, it withdrew its request for the 1207.1-1248.1 MHz frequency band.²²

8. In February 2004, Lockheed further amended its application to request the 6629.02-6649.52 MHz and 6680.17-6700.67 MHz frequency bands for data uplinks. Additionally, in its application Lockheed provided information concerning the TT&C frequencies at 6424-6425 MHz, 4197.875-4198.125 MHz and 4199.750-4200 MHz, that Panamsat requested in its application for authorization of its Galaxy XV satellite.²³ Lockheed confirmed that Panamsat would be performing the TT&C functions for the maneuvering and maintenance of the Galaxy XV spacecraft. In addition, Lockheed requested a waiver of Section 25.116(b)(1) of the Commission's rules, and a waiver of the bond requirement contained in Section 25.165 of the Commission's rules.

III. DISCUSSION

A. Processing Procedure

9. In the *First Space Station Reform Order*, the Commission adopted various procedural reforms to expedite the satellite licensing process.²⁴ The Commission indicated it would "apply the rules and procedures we adopt in this Order to pending applications, in cases where doing so will help further the goals of this proceeding to expedite service to the public and discourage speculation."²⁵

10. Specifically, the Commission can apply the new procedures to pending applications if "doing so does not impair the rights an applicant possessed when it filed its application, increase an applicant's liability for past conduct, or impose new duties on applicants with respect to transactions already completed."²⁶ In reviewing Lockheed's original 1999 applications and subsequent amendments, we find that processing Lockheed's applications under our new rules will not impair the rights of Lockheed when it filed its original application, or impose any new duty on Lockheed, or increase any liability for its past conduct.

11. Therefore, we must determine the appropriate processing of Lockheed's RNSS

²⁰ Lockheed proposes to use these control uplinks to uplink augmentation messages. See Lockheed Original April 1999 Application at p. 23.

²¹ See Lockheed Original April 1999 Application at pp. 33-34, Table 4.1-1.

²² See Lockheed February 2004 Amendment, Revised Table 4.1-1.

²³ *Id.*

²⁴ See Amendment of the Commission's Space Station Licensing Rules and Policies, *First Report and Order and Further Notice of Proposed Rulemaking*, IB Docket No. 02-34, 18 FCC Rcd 10760, 10776-77 (para.7) (2003) (*First Space Station Reform Order*).

²⁵ See *First Space Station Reform Order*, 18 FCC Rcd at 10820 (para. 275).

²⁶ *Id.* at 10820 (para. 276).

applications. In revising the satellite licensing rules, the Commission adopted two different licensing frameworks – a modified processing round approach for non-geostationary satellite orbit (NGSO)-like systems, and a “first-come, first-served” procedure for geostationary satellite orbit (GSO)-like systems.²⁷ The Commission defined GSO-like satellite systems as GSO satellites designed to operate with directional antennas.²⁸ Examples of the GSO-like satellite systems are those which use earth stations with antennas with directivity towards the satellites, such as FSS, and MSS feeder links which use GSO satellites.²⁹ The Commission defined NGSO-like satellite systems as NGSO satellite constellations, and GSO satellites communicating with earth stations with omni-directional antennas.³⁰ The Commission also noted that NGSO-like satellite systems, unlike GSO-like satellite systems, generally cannot operate on the same spectrum without causing unacceptable interference to each other.³¹ Accordingly, the Commission concluded that a band segmentation approach would be preferable for such applications because it would facilitate additional market entry.³²

12. In its original 1999 application and subsequent amendments, Lockheed requested authority to utilize frequencies in the L-band and C-band spectrum for its proposed radio-navigation satellite service. Lockheed requested FSS spectrum for its feeder uplinks. In the *First Space Station Reform Order*, the Commission adopted a first-come, first-served procedure for applications for feeder links to GSO spacecrafts.³³ Therefore, we conclude that this portion of Lockheed’s application will be considered a GSO-like satellite application and will be processed under the first-come, first-served rules.

13. Lockheed also requested authority to operate in the L1 and L5 frequency bands for its service downlinks. Since Lockheed’s proposed L-band earth station antennas would be omni-directional, this L-band portion of Lockheed’s request does not meet the requirement of “directionality” necessary for treatment as a GSO-like satellite application.³⁴ However, for the reasons set forth below, we find that the circumstances here warrant a waiver of our rules on our own motion.

14. The Commission’s rules may be waived when good cause is demonstrated.³⁵ The Commission may exercise its discretion to waive a rule where the particular facts make strict compliance inconsistent with the public interest.³⁶ In doing so, the Commission may take into account considerations of hardship, equity, or more effective implementation of overall policy on an individual basis.³⁷ Waiver of the Commission’s rules is therefore appropriate only if special circumstances warrant a deviation from the general rule, and such a deviation will serve the public interest.³⁸

²⁷ *Id.* at 10773 (para. 21).

²⁸ 47 C.F.R. § 25.158(a).

²⁹ 47 C.F.R. § 25.158(a); *First Space Station Licensing Reform Order*, 18 FCC Rcd at 10773 (para. 21).

³⁰ *First Space Station Licensing Reform Order*, 18 FCC Rcd at 10773 (para. 21).

³¹ *See First Space Station Licensing Reform Order*, 18 FCC Rcd at 10773 (para. 21).

³² *See First Space Station Licensing Reform Order*, 18 FCC Rcd at 10773 (para. 22).

³³ *See First Space Station Reform Order*, 18 FCC Rcd at 10810-10811 (paras. 125-130).

³⁴ *See* 47 C.F.R. § 25.158(a). *See also First Space Station Reform Order*, 18 FCC Rcd at 10773 (para. 21).

³⁵ *See* 47 C.F.R. § 1.3; *see also WAIT Radio v. FCC*, 418 F.2d 1153, 1159 (D.C. Cir. 1969), *cert. denied*, 409 U.S. 1027 (1972) (*WAIT Radio*).

³⁶ *See Northeast Cellular Telephone Co. v. FCC*, 897 F.2d 1164, 1166 (*Northeast Cellular*).

³⁷ *See WAIT Radio*, 418 F.2d at 1159; *Northeast Cellular*, 897 F.2d at 1166.

³⁸ *Id.* at 1159.

15. In the *First Space Station Reform Order*, the Commission indicated its concern that, in the absence of a modified processing round approach, a single NGSO-like applicant could use so much of the orbit-spectrum resource that additional market entry would be prevented. Therefore, the Commission retained a processing round approach, and indicated it would segment the available spectrum between applicants.³⁹ In this case, however, the U.S. GPS system is currently operating in the same frequencies that Lockheed is requesting for its LM-RPS1 downlink operations. Therefore, any other operations in this band must operate in conjunction with and be fully compatible with the U.S. GPS system.⁴⁰ Lockheed's planned operations are fully compatible with the U.S. GPS system, and would be compatible with future satellite systems in these frequency bands that are also compatible with the U.S. GPS system. Therefore, we find that potential future RNSS licensees in the L-1 and L-5 frequency bands, who must also be compatible with the U.S. GPS system, would not be prevented from using this spectrum. Moreover, these existing arrangements, including the ITU Resolution 609 and the presence of the U.S. GPS system in the band, constrain our ability to engage in band segmentation. Given these circumstances, we conclude that this portion of Lockheed's application, as amended, warrants GSO-like treatment. Therefore, we find good cause to waive the "directionality" requirement of Section 25.158 of the Commission's rules⁴¹ and consider this portion of Lockheed's LM-RPS1 application under the first-come, first-served licensing procedure.⁴²

16. Pursuant to Section 25.158(b)(3),⁴³ a GSO-like satellite license application will be granted only if the applicant meets the standards set forth in Section 25.156(a), and the proposed satellite will not cause harmful interference to a previously licensed satellite. Pursuant to Section 25.156(a), "the Commission will grant GSO-like applications if the Commission finds that the applicant is legally, technically and otherwise qualified, that the proposed facilities and operations comply with all applicable rules, regulations, and policies, and that grant of the application will serve the public interest, convenience and necessity."⁴⁴ Accordingly we review Lockheed's application to determine whether Lockheed is legally and technically qualified to hold a satellite license. For reasons discussed below, we find that Lockheed is legally and technically qualified.

B. Legal Qualification

17. In considering an application to launch and operate a new satellite system, we must determine whether a grant will serve the public interest. In making this determination, we consider whether the applicant is legally, technically and otherwise qualified to operate the satellite. Since Lockheed's legal qualifications are a matter of record with the Commission, we find that Lockheed is legally qualified to hold a satellite license.

³⁹ See *First Space Station Reform Order*, 18 FCC Rcd at 10773-74 (paras. 21-22).

⁴⁰ We recognize that the U.S. GPS system provides service of national importance to the U.S. Government, including the military, businesses, and civilians. Therefore, it is critical in licensing operations in these frequencies to ensure that potential licensees do not cause harmful interference to operations of the U.S. GPS system.

⁴¹ See 47 C.F.R. §§ 25.156, 25.157.

⁴² We also note that the transmissions involved in this case are compatible with each other in part because the transmissions are downlink only. Our decision here therefore may not be relevant to systems in which mobile earth terminals transmit and receive omni-directionally, in that such systems are generally not compatible with other systems in the same band.

⁴³ See 47 C.F.R. § 25.158(b)(3).

⁴⁴ See 47 C.F.R. § 25.156(a).

1. Request for Waiver of Section 25.116(b)(1)

18. In its February 2004 Amendments, Lockheed modified its requested orbital location from 125° W.L. to 133° W.L. Under Section 25.116(b)(1) of the Commission's rules, a change in orbital location pursued via an amendment is deemed to be a "major amendment" and is subject to public notice.⁴⁵ Lockheed requested a waiver of this rule.⁴⁶ However, after reviewing the amendment, we did not find that Lockheed's arguments sufficiently justified a waiver of the rule.⁴⁷ Therefore, Lockheed's request to waive Section 25.116(b)(1) is denied.

2. Hosted Payload Arrangement

19. LM RPS 1 will operate as a payload on the Galaxy XV satellite. Such arrangements, although infrequently used, are not without precedent.⁴⁸ This arrangement was addressed in connection with authorization of the Galaxy XV spacecraft.⁴⁹ In that authorization we required Panamsat to maintain control over TT&C operations in connection with any operations of the satellite, including any operations using the frequencies for which Lockheed seeks authorization. That required control includes the ability to discontinue or alter any such operations. Lockheed, however, remains responsible as a licensee for ensuring compliance with the terms and conditions of this license, including compliance with milestone and bond requirements, operating conditions, and Commission rules.

C. Technical Qualifications

1. Feeder Uplinks

20. Lockheed proposes to uplink augmentation messages to the LM-RPS1 space station using the extended C-band from two uplink earth stations within the U.S. Specifically, Lockheed seeks authority to operate in the 6629.02–6649.52 MHz and 6680.17–6700.67 MHz frequency bands.⁵⁰ These frequencies are allocated to the Fixed Service (FS) and Fixed Satellite Service (FSS) (Earth-to-space) on a primary basis and subject to footnotes 5.458 and 5.458A.⁵¹ Below, we address these footnotes and other issues for these frequency bands.

(a) Protection of Passive Services in the 6425-7025 MHz frequency band

21. Footnote 5.458 indicates that, in the 6425-7075 MHz frequency band, passive sensors

⁴⁵ See 47 C.F.R. § 25.116(b)(1).

⁴⁶ See Lockheed February 2004 Amendment at pp. 15-17.

⁴⁷ See 47 C.F.R. § 25.116(b)(4) "An amendment will be deemed a major amendment under the following circumstances: ... (4) If the amendment, or cumulative effect of the amendment, is determined by the Commission otherwise to be substantial pursuant to section 309 of the Communications Act." See also Public Notice Report No. SAT-00202 (released March 19, 2004). We note here that in the *First Space Station Reform Order*, the Commission adopted a proposal to treat major amendments to GSO-like satellite license applications as newly filed application and thus a major amendment to a license application would cause the license application to be moved to the end of the queue. See 18 FCC Rcd at 19821 (para. 136-140). We also note that since Lockheed's February 2004 Amendment was deemed a major amendment, Lockheed's license application was moved to the end of the queue, dated the date the February 2004 Amendment was filed.

⁴⁸ See, e.g., GTE Spacenet Corporation/Geostar Corporation, 2 FCC Rcd 5312 (1987) (RDSS payload aboard FSS satellite).

⁴⁹ See *PanAmSat Galaxy XV authorization* at p. 1.

⁵⁰ See Lockheed February 2004 Amendment, Revised Table 4.1-1.

⁵¹ See 47 C.F.R. § 2.106 footnote 5.458 and footnote 5.458A.

measurements are carried out over the ocean and that administrations should bear in mind the needs of the Earth exploration-satellite (passive) and space research (passive) services in their future planning of the bands 6425-7025 MHz.⁵² Lockheed states that it will comply with all applicable domestic and international requirements in coordination of its system.⁵³ Therefore, we remind Lockheed to bear in mind the needs of these services when designing and operating its LM-RPS1 system.

22. In 1999 GE Americom filed comments to Lockheed's RNSS application.⁵⁴ These comments were limited to Lockheed's proposed use of the extended C-band frequencies, specifically Lockheed's request for 21.8 MHz of spectrum in the 6625-6725 MHz frequency band and for 12.4 MHz of spectrum in the 3600-3700 MHz for TT&C operations.⁵⁵ In its comments, GE Americom raised concerns that Lockheed's request of extended C-band spectrum would add considerable pressure to the existing demand for use of the extended C band for TT&C for Ka and V-band GSO/FSS systems. Therefore, in its 1999 comments, GE Americom requested the Commission to defer action on Lockheed's proposed use of the extended C-band until the Commission resolved the needs of GSO/FSS licensees.⁵⁶ We find that as a result of subsequent Commission proceedings and Lockheed's subsequent amendments, the issues GE Americom raised in its comments are no longer valid and are dismissed as moot. In reference to GE Americom's comments regarding Lockheed's proposed use of the extended C-band frequencies in the 3600-3700 MHz frequency band, we note that Lockheed amended its application subsequent to GE Americom's filings and in its amendments stated that it no longer intended to seek these frequencies.⁵⁷ Additionally, with respect to the 6625-6725 MHz frequency band, we see no reason to depart from our policy of requiring FSS satellites to operate TT&C operations in the frequency bands in which their primary FSS operations occur.⁵⁸ Therefore, we find the arguments raised by GE Americom are not valid.

(b) Protection of Radio astronomy service.

23. Footnote 5.458A of the U.S. Table of Allocations indicates that space stations of the fixed-satellite service in the adjacent 6700-7025 MHz frequency band should take all practicable steps to protect spectral line observations of the radio astronomy service in the 6650-6675.52 MHz frequency band from harmful interference from unwanted emissions.⁵⁹ We note that portions of Lockheed's proposed feeder uplink operations, specifically, the 6700-6700.67 MHz frequency band fall within the band specified in this footnote. Lockheed stated in its February 2004 amendment that it will comply with all applicable domestic and international requirements in coordinating its system.⁶⁰ Therefore, we will require Lockheed to take all practicable steps to avoid causing harmful interference to the Radio astronomy service in the 6650-6675.52 MHz frequency band from unwanted emissions resulting from its use of the 6700-6700.67 MHz frequency band.

(c) Sharing arrangement between Lockheed's feeder uplink operations and terrestrial fixed systems in the 6525-6725 MHz frequency band.

⁵² See 47 C.F.R. § 2.106 footnote 5.458.

⁵³ See Lockheed February 2004 Amendment, Appendix J at 1.

⁵⁴ See GE American Communications, Inc. (filed June 28, 1999). (GE Americom Comments)

⁵⁵ *Id.*

⁵⁶ *Id.* at p. 2.

⁵⁷ See Lockheed February 2004 amendment, p. 6 and Revised Table 4.1-1.

⁵⁸ See 47 C.F.R. § 25.202(g).

⁵⁹ See 47 C.F.R. § 2.106 footnote 5.458A.

⁶⁰ See Lockheed February 2004 Amendment, Appendix J at 1.

24. The 6525-6725 MHz frequency band is allocated to FSS and the Fixed Service (FS), both on a primary basis.⁶¹ Section 25.203(a) of the Commission's rules requires that sites and frequencies for earth stations operating in frequency bands shared with equal rights between terrestrial and space services shall be selected, to the extent practicable, in areas where surrounding terrain and existing frequency usage so as to minimize the possibility of harmful interference between the sharing services.⁶²

25. Section 25.203(c) of the Commission's rules also requires that prior to filing its application, an earth station applicant shall coordinate the proposed frequency usage with existing terrestrial users and with applicants for terrestrial station authorizations.⁶³ Lockheed maintained in its February 2004 amendment that it will comply with all applicable domestic and international requirements in the coordination of its system.⁶⁴ Therefore, we will require Lockheed to coordinate its two feeder uplink earth station operations with all existing terrestrial users and all applicants for terrestrial station authorizations.

2. Radionavigation Satellite Service Downlinks

26. Lockheed requested authority to operate its service downlinks in the 1166.20-1186.70 MHz (GPS-L5) and the 1565.17-1585.67 MHz (GPS-L1) frequency bands. These frequency bands are allocated to both the Aeronautical Radionavigation service and the Radio Navigation Satellite (space-to-Earth) service, on a primary basis. However, the 1166.20-1186.70 MHz (GPS-L5) frequency band is subject to footnote US385⁶⁵ and Resolution 609 (WRC-03).⁶⁶ Below, we address this footnote, Resolution 609 (WRC-03), and protection of Global Positioning System (GPS).

(a) Protection of Aeronautical Radionavigation Service in the 1164-1215 MHz frequency band.

27. Within the United States, Footnote US385 of the U.S. Table of Frequency Allocations requires that radionavigation satellite services operating in the 1164-1215 MHz frequency band shall not cause harmful interference to, nor claim protection from, stations of the aeronautical radionavigation service.⁶⁷ Therefore, we will require Lockheed not to cause harmful interference to, nor claim protection from, stations operating in the aeronautical radionavigation service.

28. Internationally, the 1164-1215 MHz frequency band is allocated to both the radio navigation satellite service (RNSS) and the aeronautical radionavigation service (ARNS), on a primary basis, subject to ITU-R Resolution 609 (WRC-03). ITU-R Resolution 609 (WRC-03) requires that the equivalent power flux density (epfd) produced by all RNSS space stations operating in the 1164-1215 MHz frequency band, shall not exceed the aggregate epfd level of -121.5 dB(W/m²) in any 1 MHz band for all angles of elevation. The resolution further states that in order to achieve this objective, administrations operating or planning to operate RNSS systems shall agree cooperatively, through

⁶¹ See 47 C.F.R. § 2.106, U.S. Table of Frequency Allocations.

⁶² See 47 C.F.R. § 25.203(a).

⁶³ See 47 C.F.R. § 25.203(c).

⁶⁴ See Lockheed February 2004 Amendment, Appendix J at 1.

⁶⁵ See 47 C.F.R. § 2.106, US Table of Frequency Allocations, Footnote US385.

⁶⁶ See ITU-R Radio Regulation, Resolution 609 (WRC-03).

⁶⁷ See 47 C.F.R. § 2.106, US Table of Frequency Allocations, Footnote US385.

consultation meetings, to equitable shared aggregate epfd.⁶⁸

29 In the Report of the Second Resolution 609 (WRC-03) Consultation Meeting, it was concluded that, to date, all systems operating or planning to operate in the 1164-1215 MHz frequency band, including the LM-RPS1 space station, collectively have not exceeded the $-121.5 \text{ dB(W/m}^2\text{)}$ in any 1 MHz bandwidth.⁶⁹ Lockheed stated in its February 2004 Amendment, that it will comply with all applicable domestic and international requirements required for coordination of its system, as well as comply fully, to the extent applicable, with the consultation requirements of Resolution 609 (WRC-03).⁷⁰ Therefore, as part of its consultation requirements under ITU-R Resolution 609, we will require Lockheed to continue to participate in these consultation meetings and coordinate with other RNSS operators. Additionally, we will require Lockheed to report the results of these consultation meetings to the Commission within thirty days after the conclusion of the meetings.

(b) Protection of U.S. Global Positioning System (GPS)

30. We note that the U.S. GPS system uses the same frequencies that Lockheed is requesting for its LM-RPS1 space station downlinks. Specifically, these frequencies include the 1166.20-1186.70 MHz (GPS-L5) and the 1565.17-1585.67 MHz (GPS-L1) frequency bands. We recognize that the U.S. GPS system provides service of national importance to U.S. Government, including the military, businesses and civilians. Therefore, we find that it is critical that Lockheed's space station operations do not cause harmful interference to the operations of the U.S. GPS system. In its application, Lockheed assured the Commission that it would not cause harmful interference to the U.S. GPS system. Specifically, Lockheed maintained that its LM-RPS1 space station will operate in conjunction with and in full compatibility with the U.S. GPS system.⁷¹ Lockheed further assured that it will utilize similar signal structure and architecture to the U.S. GPS system (*i.e.* Code Division Multiple Access (CDMA)) in order to achieve maximum compatibility. Previously, the Commission has acknowledged that systems using CDMA architecture may be able to share the same spectrum, through coordination, without causing harmful interference to each other.⁷²

31. Therefore, upon review, we find that Lockheed LM-RPS1 space station operations will be compatible with and therefore will be able to share the L-band spectrum with the U.S. GPS system without causing harmful interference.⁷³ Nevertheless, we will require Lockheed to coordinate with the operator(s) of the U.S. GPS system in order to ensure maximum compatibility and to avoid causing any harmful interference to the U.S. GPS system from its operations. In the event of any interference, either from complaints received or its own observation, we will require Lockheed to immediately cease all operations and remedy the interference. Lockheed will also be required to inform the Commission within three days of such occurrence(s) explaining the specific measures taken to mitigate the interference.

⁶⁸ We note that to date, there have been two such consultation meetings and Lockheed has participated in both of these meetings for its RNSS system operating in the 1164-1215 MHz band on behalf of the U.S. administration.

⁶⁹ See Letter regarding Report of the Second Resolution 609 (WRC) Consultation Meeting to Director, Radiocommunication Bureau, ITU, from Kathryn O'Brien, Chief, Strategic Analysis and Negotiations Division, FCC (dated June 8, 2004) (800C2/SEB4209) (Report of the Second Resolution 609 Consultation Meeting). The Third Resolution 609 (WRC) Consultation Meeting is scheduled for June 2005.

⁷⁰ See Lockheed February 2004 Amendment, Appendix J at 1.

⁷¹ See Lockheed February 2004 Amendment at p. 11.

⁷² See *Big LEO Report and Order* 9 FCC Rcd 5936 (para. 26).

⁷³ See Report of the Second Resolution 609 Consultation Meeting at pp. 3-4.

(c) *Comments and Petition to Deny*

32. In response to Lockheed's original 1999 applications, Globalstar and Motorola filed comments.⁷⁴ Additionally, Boeing filed a petition to deny.⁷⁵ The concerns raised in these comments have been rendered moot or no longer valid by amendments to Lockheed's applications and/or subsequent events.⁷⁶

4. Telemetry, Tracking and Command (TT&C) Functions

33. In its February 2004 amendment, Lockheed indicated that it is not seeking authority to operate TT&C frequencies and stated that Panamsat will perform the TT&C functions for the tracking and maneuvering of the spacecraft under contract with Lockheed. Therefore, we are not granting Lockheed any TT&C spectrum or authority. All TT&C transmissions shall be conducted by Panamsat pursuant to its license.

5. Two-Degree Spacing

34. The Commission's licensing policy for GSO satellites is predicated upon two-degree orbital spacing between satellites.⁷⁷ This policy permits the maximum use of the geostationary-satellite orbit. On June 16, 2004, the Commission issued a Public Notice in which the Commission provided clarification of Section 25.140(b)(2) of the Commission's Rules, concerning space station application interference analysis requirements.⁷⁸ In the Public Notice, the Commission expressly stated that Section 25.140(b)(2) of the Commission's Rules applies to "[a]ny geostationary satellite orbit space station application for operation in any FSS frequency band." Since Lockheed requested FSS allocated spectrum for its feeder uplinks, we found that this requests rendered this rule applicable to Lockheed's LM-RPS1 application. On January 26, 2005, the Commission requested that Lockheed provide the Commission

⁷⁴ See Comments of Globalstar LP (filed June 28, 1999). See also Comments of Motorola, Inc. (filed June 28, 1999).

⁷⁵ See Boeing Petition to Deny (filed June 29, 1999). See also Boeing Reply Comments (filed July 30, 1999).

⁷⁶ In 1999, Globalstar filed comments expressing concern over Lockheed's possible use of the GLONASS (GN-L1 and GN-L2) frequency bands in order to provide augmentation to the Russian GLONASS system. See Comments of Globalstar LP at p. 2. Lockheed amended its application in February 2004 to remove these frequencies in spectrum request. See Lockheed February 2004 Amendment, Table 1.1-1 (Requested Frequency Bands for the 133° W.L. Orbital Location). Therefore, the issues raised by Globalstar are moot. In 1999, Motorola filed comments raising concerns regarding possible out-of-band interference from the Lockheed system. See Comments of Motorola, Inc. at p. 1. These concerns were addressed by subsequent amendments to Commission's rules. See Amendment of Part 2 and 25, *Second Report and Order*, 18 FCC Rcd 24423, 24520 (paras. 94-99) (2003). See also 47 C.F.R. § 25.216. Boeing's concern with the amount of spectrum Lockheed requested and possible interference issues have been rendered moot by a subsequent amendment to Lockheed's application (See Lockheed February 2004 Amendment, Revised Table 4.1-1) and by the dismissal of Boeing's application for authority to launch and operate non-geostationary-orbit satellites to provide Navigation Augmentation Service in the 1565.42-1585.42 MHz band (space-to-Earth). See Application of the Boeing Company for Modification of Authority For Use of the 1990-2025/2165-2200 MHz and Associated Frequency Bands for a Mobile-Satellite System and For Authority to Launch and Operate a Non-Geosynchronous Medium Earth Orbit Satellite System in the 2 GHz Band Mobile-Satellite Service and in the Aeronautical Radionavigation-Satellite Service, *Order and Authorization*, 18 FCC Rcd 12317, 12332 (at para 39) (Int'l Bureau and OET, 2003).

⁷⁷ See Licensing Space Stations in the Domestic Fixed-Satellite Service, *Report and Order*, 48 F.R. 40233 (1983).

⁷⁸ See June 16th 2004 Public Notice.

with the interference analysis pursuant to the Public Notice.⁷⁹

35. On February 10, 2005, Lockheed amended its application to provide the Commission with the interference analysis as required by the Commission's rules and pursuant to our Public Notice.⁸⁰ We find that this analysis conforms to the interference analysis rule and that the Lockheed LM-RPS1 space station at 133 W.L. complies with our two-degree spacing requirements. We also conclude that granting the Lockheed LM-RPS1 application will not result in harmful interference to any previously licensed satellite.

6. Milestones

36. In the *First Space Station Reform Order*, the Commission noting that milestones are intended to ensure that licensees provide service to the public in a timely manner, to prevent warehousing of scarce orbit and spectrum resources, codified its generic milestone policy in Section 25.164 of its Rules.⁸¹ Consistent with this, we require that Lockheed execute a binding contract for construction of its LM-RPS1 space station within one year of this grant, complete the Critical Design Review within two years, commence physical construction within three years, and launch and begin operations within five years.

D. Bond Requirement

37. In its *First Space Station Licensing Reform Order*, the Commission eliminated the financial requirements then in place and replaced them with a bond requirement.⁸² Under this financial requirement, any entity awarded a license for a GSO satellite must execute a payment bond, payable to the U.S. Treasury, within 30 days of the date of the license grant. The bond is payable upon failure to meet any implementation milestone in the license, where adequate justification for extending that milestone is not provided.⁸³ Licensees may reduce the amount of the bond upon meeting each milestone.⁸⁴

38. In its February 2004 Amendment, Lockheed requested a waiver of the bond requirement. In its amendment Lockheed asserted that this requirement is intended to deter the filing of speculative applications by establishing significant financial consequences for licensees that fail to proceed with their applicants in a timely manner.⁸⁵ Lockheed further claimed that its RPS applications were filed more than four years before this new requirement became effective and it is not clear whether it is appropriate for the Commission to enforce this cost upon applicants that submitted applications without notice that such additional financial requirements might be imposed.⁸⁶

⁷⁹ See letter to Ms. Jennifer Warren, Counsel to Lockheed Martin, from Thomas Tycz, Chief, Satellite Division, FCC, dated January 26, 2005. (*Lockheed January 26, 2005 Letter*)

⁸⁰ See also *Lockheed Martin Corp., Amendment to Application for Authority to Launch and Operate a Global System of Geostationary Orbit Satellites in the Radionavigation Satellite Service*, File No. SAT-AMD-20050210-00035, filed February 10, 2005 (Lockheed February 2005 Amendment).

⁸¹ See *First Space Station Reform Order*, 18 FCC Rcd at 10828 (para. 173).

⁸² *Id.* at 10826 (para. 170).

⁸³ *Id.*

⁸⁴ *Id.* at 10826-27 (para. 172).

⁸⁵ See Lockheed February 2004 Amendment at p. 17.

⁸⁶ *Id.*

39. We disagree with Lockheed's argument. In the *First Space Station Reform Order*, the Commission clearly stated our intention to apply the new rules to pending applications.⁸⁷ The Commission noted that "applying new procedures to pending satellite applications would not impair the rights that any applicant possessed when it filed its application, nor impose any new duty with respect to a transaction already completed."⁸⁸ Additionally, in the *Fifth Space Station Reform Order*, the Commission reaffirmed that the "bond requirement applies to all licenses granted after the requirement took effect, regardless of when the application for each of those licenses was filed."⁸⁹

40. Lockheed also requested a waiver of the bond requirement based on its intention to provide "public safety services." Lockheed argued that its RPS space station will provide critical air navigation information through augmentation of the U.S. GPS system, enhancing the safety of the U.S. air traffic control system.⁹⁰

41. In its *First Space Station Licensing Reform Order*, the Commission stated that it would entertain requests for complete or partial waivers of this bond requirement, but limited its discussion to waivers "for satellite operators proposing satellite designed to provide public safety services."⁹¹ The Commission noted that it would consider things "such as public safety intent in deciding whether a waiver is warranted."⁹² In assessing "public safety intent," we determine whether the proposed satellite is wholly or partially designed for the specific purpose of providing public safety services.⁹³

42. In making a public interest benefit assessment, we look to see if Lockheed in its application expressed the requisite "public safety intent" for its proposed service. In a statement explaining its RNSS service, Lockheed stated that its proposed LM-RPS system will be used to ensure the transmission of more precise information for aircraft navigation, automated farming, mining operations and other applications that rely on navigation and positional precision.⁹⁴ Though we find that these commercial services would further the public interest, we do not however conclude that they fall under the limited category of "public safety services," that the Commission intended for a waiver.

43. Therefore, we deny Lockheed's waiver request and require Lockheed to post a \$3 million bond within 30 days of the release of this Order. If Lockheed does not submit this bond by the required date, this authorization shall be null and void.

⁸⁷ See *First Space Station Reform Order*, 18 FCC Rcd at 10820 (para. 275).

⁸⁸ *Id.* at 10821 (para. 277-78).

⁸⁹ See Amendment of the Commission's Space Station Licensing Rules and Policies, *First Order on Reconsideration and Fifth Report and Order*, IB Docket No. 02-34, 19 FCC Rcd 12637, 12663-64 (paras. 71-72) (2003) (*Fifth Space Station Reform Order*). In this *Report and Order*, the Commission also addressed arguments similar to the ones Lockheed raised in its February 2004 Amendment. Specifically, the Commission rejected Northrop Grumman's argument that some parties that have prosecuted their application for years, would now be "penalized" by a bond requirement.

⁹⁰ See Lockheed February 2004 Amendment at p. 18.

⁹¹ See *First Space Station Reform Order*, 18 FCC Rcd at 10825 (para. 169). See also Mobile Satellite Ventures Subsidiary, LLC, Application for Authority Launch and Operate an L-band Mobile Satellite Service Satellite at 63.5° W.L., *Order and Authorization*, 20 FCC Rcd 479 (Int'l Bur., 2005) (*MSV Order*).

⁹² *Id.*

⁹³ See *MSV Order*, 20 FCC Rcd at 491-92 (paras. 34-25).

⁹⁴ See Lockheed February 2004 Amendment at p. 12.

IV. CONCLUSION AND ORDERING CLAUSES

44. We have reviewed Lockheed Martin Corporation's application and all associated amendments, comments, pleadings, and other documents of record. Based on that review, we conclude that Lockheed is legally, technically, and otherwise qualified to operate its LM-RPS1 satellite space station at the 133° W.L. orbital location and that grant of the application, subject to the limitations and conditions specified herein, will serve the public interest, convenience, and necessity.

45. Accordingly, IT IS ORDERED that Lockheed Martin Corporation's Application File No. SAT-LOA-19990427-00047, as amended by SAT-AMD-20030730-00151, SAT-AMD-20040130-00009, SAT-AMD-20040203-00011, SAT-AMD-20040706-00129, and SAT-AMD-20050210-00035, Call Sign S2372, ARE GRANTED and Lockheed Martin Corporation is authorized to construct, launch and operate its LM-RPS1 space station aboard PanAmSat Corporation's Galaxy XV satellite at the 133 W.L. orbital location in the 6629.02-6649.52 MHz (Earth-to-space) and 6680.17-6700.67 MHz (Earth-to-space) frequency bands for feeder uplinks and in the 1166.20-1186.70 MHz (GPS-L5) (space-to-Earth) and the 1565.17-1585.67 MHz (GPS-L1) (space-to-Earth) frequency bands for RNSS service downlinks, in accordance with the terms, conditions, and technical specifications set forth in its application, as amended, and this *Order* and *Authorization*.

46. IT IS FURTHER ORDERED that Lockheed Martin Corporation's request to waive Section 25.116(b)(1) of the Commission's rules IS DENIED.

447. IT IS FURTHER ORDERED that Lockheed Martin Corporation's request to waive Section 25.149 of the Commission's rules IS DENIED.

48. IT IS FURTHER ORDERED that the Boeing Company's 1999 Petition to Deny and PanAmSat Satellite Corporation's 1999 Petition to Deny in Part are DISMISSED AS MOOT.

49. IT IS FURTHER ORDERED that the LM-RPS1 space station must be constructed, launched, and placed into operation in accordance with the technical parameters set forth in its application and amendments and terms and conditions of this authorization by these specified time periods following the date of authorization:

- a. Execute a binding contract for construction by 6/23/2006;
- b. Complete the Critical Design Review by 6/23/2007;
- c. Commence construction by 6/23/2008;
- d. Launch and begin operations by 6/23/2010;
- e. Lockheed Martin Corporation must post a \$3 million bond with the Commission, pursuant to the procedures set forth in Public Notice, DA 03-2603, 18 FCC Rcd 16283 (2003), by 07/25/05. Failure to meet any of these dates shall render this authorization null and void without any further action by the Commission. *See* 47 C.F.R. §§ 25.161 and 25.164.

50. IT IS FURTHER ORDERED that Lockheed Martin Corporation shall prepare the necessary information, as may be required, for submission to the ITU to initiate and complete the advance publication, international coordination, due diligence, and notification process of this space station, in accordance with the ITU Radio Regulations. Lockheed Martin Corporation shall be held responsible for all cost recovery fees associated with these ITU filings. We also note that no protection from interference caused by radio stations authorized by other administrations is guaranteed unless coordination and notification procedures are timely completed or, with respect to individual administrations, by successfully completing coordination agreements. Any radio station authorization for which coordination has not been completed may be subject to additional terms and conditions as required to effect coordination of the frequency assignments of other administrations. *See* 47 C.F.R. § 25.111(b).

51. IT IS FURTHER ORDERED that Lockheed Martin Corporation shall inform the Commission in writing of any disruption in service(s) lasting more than thirty minutes. See 47 C.F.R. § 25.210(k)(1)(2).

52. IT IS FURTHER ORDERED that Lockheed Martin Corporation shall not cause harmful interference to, nor claim protection from, stations of the aeronautical radionavigation service in the 1164-1215 MHz frequency band.

53. IT IS FURTHER ORDERED that Lockheed Martin Corporation shall comply with all requirements of ITU-R Resolution 609 (WRC-03) regarding its use of the 1164-1215 MHz frequency band. Specifically, Lockheed is required to continue participating in the ITU-R Resolution 609 consultation meetings and coordinate in good faith with other RNSS operators at the meetings. Additionally, Lockheed is required to report the results of these consultation meetings to the Commission within thirty days after the conclusion of the meetings.

54. IT IS FURTHER ORDERED that Lockheed Martin Corporation is required to coordinate with the operator(s) of the U.S. GPS system in order to ensure maximum compatibility and to avoid causing any harmful interference to the GPS systems from its operations. In the event of any interference, either from complaints received or its own observation, Lockheed Martin Corporation is required to cease all operations and remedy the interference. Lockheed Martin Corporation is also required to inform the Commission within three days of such occurrence(s) explaining measures taken to mitigate the interference.

55. IT IS FURTHER ORDERED that Lockheed Martin Corporation shall complete all coordination of its authorized uplink spectrum in the 6629.02-6649.52 MHz and 6680.17-6700.67 MHz frequency bands with terrestrial FS operators pursuant to §25.203 of the Commission's rules prior to filing its earth station application. Lockheed is also required to coordinate these frequency bands with all existing, authorized FSS system operators prior to commencing operations. Additionally, Lockheed Martin Corporation will not be entitled to protection from interference until it has completed coordination.

56. IT IS FURTHER ORDERED that the license term for the LM-RPS1 space station, Call Sign S2372, is fifteen years and will begin to run on the date that Lockheed Martin Corporation certifies to the Commission that the satellite has been successfully placed into orbit and its operation fully conforms to the terms and conditions of this authorization.

57. Lockheed Martin Corporation is afforded thirty days from the date of adoption of this grant and authorization to decline this authorization as conditioned. Failure to respond within this period will constitute formal acceptance of the authorization as conditioned.

58. This grant is issued pursuant to Section 0.261 of the Commission's rules on delegated authority, 47 C.F.R. § 0.261, and is effective upon release. Petitions for reconsideration under Section 1.106 or applications for review under Section 1.115 of the Commission's rules, 47 C.F.R. §§ 1.106, 1.115, may be filed within 30 days of the date of the public notice indicating that this action was taken.

FEDERAL COMMUNICATIONS COMMISSION

Donald Abelson
Chief
International Bureau