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

Applications 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	)	File No. SAT-MOD-20020726-0013
	)	
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	)	File Nos. 179-SAT-P/LA-97(16), 90-SAT-AMEND-98, SAT-LOA-19970926-00149, SAT-AMD-19980318-00021
	)	

ORDER AND AUTHORIZATION

Adopted: June 24, 2003 **Released:** June 24, 2003

By the Chief, International Bureau and the Chief, Office of Engineering and Technology:

I. INTRODUCTION

1. In this order, we grant Boeing's application for modification of its license for use of the 2 GHz MSS Band[1] for provision of Mobile-Satellite Service ("MSS") and find that Boeing met the first of the implementation "milestone" requirements on which the license is conditioned. We also grant Boeing's associated request for waiver of a rule provision that restricts use of frequencies in the 10.7-11.7 GHz and 12.75-13.25 GHz bands. We dismiss as incomplete, however, Boeing's pending request for authority to provide L-Band Navigation Augmentation Service and also dismiss, as moot, two petitions for reconsideration of our previous assignment of Ka-band frequencies for Boeing's feeder-link operation.

[1] The term "2 GHz MSS Band" refers to the 2000-2020 MHz uplink band and 2180-2200 MHz downlink band, which are allocated to the Mobile-Satellite Service (MSS) in the United States. *See Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems (Third Report and Order, Third Notice of Proposed Rulemaking and Second Memorandum Opinion and Order)*, FCC 03-16, 18 FCC Rcd 2223 (2003) ("*AWS Third Report and Order*"), *recon. pending*.

II. BACKGROUND

2. Boeing applied in 1997 for authority to launch and operate a constellation of non-geostationary-satellite-orbit ("NGSO") satellites to provide aeronautical communication, navigation, and surveillance ("CNS") services to the global aviation industry, using the 2 GHz MSS band for service links.[2] Boeing also requested authority for the satellites to transmit in the GPS L1 band[3] to provide Navigation Augmentation Service ("NAS") for aircraft using GPS satellite radio-navigation. On July 17, 2001, the International Bureau granted a license authorizing Boeing to construct, launch and operate sixteen NGSO satellites that would use segments of the 2 GHz MSS band for MSS service-link transmission and portions of the Ka Band[4] for feeder links.[5] The Bureau withheld action on Boeing's request for authority to operate in the GPS L1 Band, however, because of possible conflict with a pending license application filed by the Lockheed Martin Corporation that requested an overlapping frequency assignment for another NAS system.[6]

3. In a pending application filed in July 2002, Boeing has asked the Commission to modify its 2 GHz MSS license to authorize construction, launch, and operation of a single geostationary-satellite-orbit ("GSO") satellite at 120° W.L., rather than a constellation of NGSO satellites, and to specify feeder-link frequencies in the Ku Band rather than in the Ka Band.

4. Boeing states in the license-modification application that it still plans to develop a global CNS network but has concluded that the best way to proceed is through an incremental approach, initially deploying a regional GSO-based system providing service in U.S. airspace and adjacent areas. Boeing explains that it came to this conclusion in light of three developments that occurred after it filed its original service proposal. First, the terrorist attacks perpetrated on September 11, 2001 undermined the aviation industry's financial stability and caused it to be preoccupied with near-term security. Consequently, Boeing doubts that the industry and its governing organizations will be able, in the near term, to assist with development of standards and architecture for a global satellite-based CNS network. Second, the currently unfavorable climate for telecommunications investment has made it difficult for Boeing to recruit strategic partners in other regions of the world to facilitate foreign acceptance of a satellite-based global CNS network. Third, Boeing greatly increased its expertise pertaining to the design, construction, and operation of GSO-based networks by acquiring the former space and communication division of Hughes Electronics Corporation, which has been reconstituted as Boeing Satellite Systems ("BSS"), a wholly-owned subsidiary of The Boeing Company. Drawing on the

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[2] "Service links" are the radio links in both directions between end-users' mobile earth terminals and an MSS system's satellite(s).

[3] The GPS L1 band is 1565.42-1585.42 MHz.

[4] The Ka Band consists of Earth-to-space (uplink) frequencies at 27.5-30.0 GHz and space-to-Earth (downlink) frequencies at 17.7-20.2 GHz. The sub-bands 29.1-29.5 GHz and 19.3-19.7 GHz are allocated on a primary basis for MSS feeder links.

[5] *The Boeing Company* (Order and Authorization), DA 01-1631, 16 FCC Rcd 13691 (Int'l Bur. 2001) ("*Boeing NGSO License Order*"), *app. for review denied*, FCC 03-12, 18 FCC Rcd 1405 (2003), *appeal pending*, AT&T Wireless Services, Inc. v. FCC, No. 03-1042 (D.C. Cir. filed Feb. 26, 2003). "Feeder links" are the radio links that transmit users' messages in both directions between an MSS system's satellite(s) and gateway earth station(s) connecting the MSS network with the public switched telephone network.

[6] *Id.* at ¶24.

expertise of BSS, Boeing determined that initial establishment of a regional GSO network is the most feasible and expeditious way to advance toward the long-range goal of establishing a global, satellite-based CNS network. Boeing says that it will request FCC authority for additional elements of the contemplated global network when the environment is more favorable.[7]

5. The Bureau announced in a public notice released on August 1, 2002 that it had accepted Boeing's license-modification application for filing.[8] The Lockheed Martin Corporation subsequently filed comments on the application.[9] While it does not oppose Boeing's request to convert its 2 GHz MSS license from an NGSO authorization to a single-satellite GSO authorization, Lockheed Martin contends that such a change in the MSS authorization would effectively supercede Boeing's pending request for authority to provide NAS in the GPS L1 band via NGSO satellites. Lockheed Martin therefore contends that if the Commission grants the 2 GHz MSS license modification it must dismiss Boeing's pending request for the NAS authorization. No one has filed in opposition to Boeing's request for modification of its 2 GHz MSS license, however.

6. Like all other 2 GHz MSS licenses issued to date, Boeing's license is contingent upon compliance with a "milestone" implementation schedule that, among other things, required the licensee to "enter [into a] non-contingent satellite manufacturing contract" by July 17, 2002.[10] Within ten days of the July 17 deadline, as required by Section 25.143(e)(2) of the Commission's rules, Boeing filed a signed statement from a corporate official certifying compliance with the milestone requirement, with a copy of a signed construction agreement.[11] Boeing supplemented its milestone showing with additional relevant information filed on October 15 and December 16, 2002 in response to inquiries from International Bureau staff.[12]

III. DISCUSSION

A. General Policy Regarding License Modification

7. Because of the long lead time needed to construct satellites and implement service, the Commission often receives requests from licensees for modification of the authorized technical design of un-launched satellite systems. In recognition of the length of time it takes to construct a satellite system, the rapid pace of technological change, and the goal of promoting more efficient use of the radio spectrum, the Bureau has granted such requests in cases where the proposed modification presents no significant interference problem and is otherwise consistent with Commission policies.[13]

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7 Boeing will be required to file a new application for authority to launch any additional satellites.

8 Report No. SAT-00115, Satellite Space Stations Accepted for Processing. 47 C.F.R. § 25.151 requires an application for major modification of a satellite license to be placed on public notice at least thirty days prior to grant.

9 *See* Comments filed by Lockheed Martin on Sept. 3, 2002. *See also* Response filed by Boeing on Sept. 18, 2002 and Reply Comments filed by Lockheed Martin on Sept. 30, 2002.

10 *Boeing NGSO License Order* at ¶48.

11 *See* Letter dated July 25, 2002 to Marlene H. Dortch, FCC Secretary, from David A. Nall, Counsel for The Boeing Company, with attachments.

12 *See* Letters dated Oct. 15 and Dec. 16, 2002 to Marlene H. Dortch, FCC Secretary, from David A. Nall, Counsel for The Boeing Company.

13 *See Sirius Satellite Radio Inc.*, DA 01-639, 16 FCC Rcd 5419 (Int'l Bur. 2001) at ¶4, quoting *GTE*

B. Timeliness

8. The Commission said in the *2 GHz MSS Order* that 2 GHz MSS licensees should identify system modifications needing prior FCC approval "well in advance" of the milestone deadline for completing Critical Design Review ("CDR").[14] Boeing's deadline for completing CDR is July 17, 2003. Boeing filed the license-modification application a full year before then, which was well in advance of that deadline.

C. Change of Orbital Architecture

9. The modification that Boeing is requesting involves a basic change of authorized orbital architecture. The International Bureau has previously approved other changes in satellite-system architecture pursuant to the general license-modification policy outlined above.[15] Under the Commission's licensing rules for 2 GHz MSS, applicants were free to specify either GSO or NGSO orbital architecture, and the Commission did not adopt a spectrum sharing arrangement that would be disrupted by the change that Boeing is proposing in this regard.[16] Thus, Boeing's request for license modification is not problematic merely because it is proposing a change from NGSO to GSO design and operation.[17]

D. Service Links

10. Boeing is not requesting any change in its service-link authorization, and its license-modification application presents no interference issue pertaining to service-link operation. We are modifying Boeing's service-link authorization, however, pursuant to an instruction from the Commission in the *AWS Third Report and Order*.[18]

11. Each 2 GHz MSS licensee, including Boeing, received authority to use a pair of 3.5 megahertz "Selected Assignments" in the 1990-2025 MHz service-uplink band and the 2165-2200 MHz service-downlink band. The selection is to be on a first-come, first-served basis; each licensee is to choose its Selected Assignments from previously-unassigned portions of the service-link bands after having launched the first of its satellites and placed it into its intended orbit.[19] In the *AWS Third Report*

Spacenet Corp., DA 90-928, 5 FCC Rcd 4112 (Com. Car. Bur. 1990) at ¶4 ("[i]f the proposed modification does not present any significant interference problems and is otherwise consistent with Commission policies, it is generally granted"). *See also Teledesic LLC*, DA 99-267, 14 FCC Rcd 2261 (Int'l Bur. 1999) at ¶5 (quoting the same statement).

14 *Establishment of Policies and Service Rules for the Mobile Satellite Service in the 2 GHz Band* (Report and Order), FCC 00-302, 15 FCC Rcd 16127 (2000) ("*2 GHz MSS Order*") at ¶108.

15 *See, e.g.*, *Teledesic LLC*, *supra* (granting requested modification reducing the number of authorized satellites from 840 to 288), and *Sirius Satellite Radio*, *supra* (granting request to convert satellite license from a GSO to an NGSO authorization).

16 *2 GHz MSS Order* at ¶13.

17 Boeing paid the full fee for a new GSO application when it filed the application for license modification, in accordance with the holding in *Sirius*, *supra*, at ¶24.

18 18 FCC Rcd 2223 at ¶33.

19 *See Boeing NGSO License Order* at ¶44.

and Order the Commission reallocated the 1990-2000 MHz, 2020-2025 MHz, and 2165-2180 MHz bands from MSS to terrestrial wireless services, reducing the 2 GHz MSS service-link allocations to 2000-2020 MHz (Earth-to-space) and 2180-2200 MHz (space-to-Earth).[20] The Commission decided that the remaining 2 GHz MSS service-link spectrum, 20 megahertz in each direction, should be divided equally among the licensees found in compliance with the first milestone requirement and delegated authority to the International Bureau to modify their licenses accordingly.[21] We have determined that four 2 GHz MSS licensees, including Boeing, met the first milestone requirement.[22] We therefore modify Boeing's license to indicate that it may choose Selected Assignments of 5 megahertz bandwidth within the 2000-2020 MHz and 2180-2200 MHz MSS uplink and downlink bands once it has launched its satellite into orbit.[23]

E. Feeder Links

12. Boeing's license for an NGSO MSS system included authority for feeder-link operation in portions of the 19.3-19.7 GHz and 29.1-29.5 GHz bands.[24] Boeing contends that these assigned Ka-band frequencies are technically unsuitable for feeder-link operation for the GSO system that it is now proposing, however. More specifically, Boeing explains that operation of a GSO MSS system with Ka-band feeder links would necessitate an increase in on-board power to keep rain-fade interruption to a commercially tolerable level. Such an increase in on-board power would require undesirable compromises in other aspects of payload design.[25] Boeing also maintains that it is unclear whether a GSO system could share the 19.3-19.7 GHz and 29.1-29.25 GHz MSS feeder-link bands with NGSO systems and that studies would have to be conducted before that issue could be resolved. The Commission indicated in the *2 GHz MSS Order*, moreover, that those bands could not be used for GSO-system feeder links.[26] Boeing therefore included a request for a change of assigned feeder-link frequencies in its

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20 *AWS Third Report and Order* at ¶28.

21 *Id.* at ¶33.

22 *See* Public Notice Report No. SAT-00135, DA 03-386, 18 FCC Rcd 1732 (Sat.Div., Int'l Bur. 2003) (announcing that Celsat America, Inc., Iridium LLC, and ICO Services Limited met the first milestone requirement); *Globalstar, L.P.* (Memorandum Opinion and Order), DA 03-328, 18 FCC Rcd 1249 (Int'l Bur. 2003), *request for stay and emergency app. for review pending* (holding that Globalstar's 2 GHz MSS authorization is null and void for failure to meet the first milestone requirement); *Mobile Communications Holdings, Inc. and ICO Global Communications (Holdings) Limited* (Memorandum Opinion and Order), DA 03-285, 18 FCC Rcd 1094 (Int'l Bur. 2003), *joint app. for review pending* (holding that the 2 GHz MSS authorizations issued to Mobile Communications Holdings, Inc. and Constellation Communications Holdings, Inc. are null and void for failure to meet the first milestone requirement); and *TMI Communications and Company, Limited Partnership* (Memorandum Opinion and Order), DA 03-385, 18 FCC Rcd 1725 (Int'l Bur. 2003), *request for stay and app. for review pending* (holding that the reservation of 2 GHz MSS spectrum for TMI is null and void for failure to meet the first milestone requirement). Our findings with respect to Boeing's milestone compliance are set forth in ¶¶ 29-33, *infra*.

23 This assignment of additional service-link spectrum may be subject to adjustment necessitated by future action by the Commission or a reviewing court in response to petitions for reconsideration, applications for review, or judicial appeals filed in connection with the *AWS Third Report and Order* or the orders cited in the preceding footnote.

24 *Boeing NGSO License Order*, *supra*, at ¶46.

25 Letter dated May 16, 2003 to Marlene H. Dortch, FCC Secretary, from Bruce Olcott, Counsel for The Boeing Company.

26 *2 GHz MSS Order* at ¶¶ 82 and 83.

application for license modification to authorize GSO operation. Boeing now proposes to use 10.825-10.95 GHz for feeder downlinks and 13.125-13.250 GHz for feeder uplinks.[27]

1. Mutual Exclusivity

13. A license-modification application requesting changed or additional frequencies is ineligible for concurrent consideration with mutually exclusive applications already under consideration in a proceeding with a prior cut-off date.[28] This is not a problem for Boeing, however, because there are no mutually-exclusive applications on file for the new feeder-link frequencies that it is requesting. Nor is its feeder-link proposal mutually-exclusive with respect to any current satellite license.

2. Waiver of NG104

14. The proposed modification of Boeing's feeder-link authorization presents an issue of potential interference with terrestrial radio services, but we believe that the problem can be satisfactorily resolved. Boeing's proposed feeder downlink band lies within a wider spectrum band, 10.7-11.7 GHz, that is allocated domestically on a co-primary basis to the terrestrial Fixed Service and the Fixed-Satellite Service ("FSS"). The proposed feeder uplink band lies within a wider band, 12.75-13.25 GHz, that is allocated domestically to the terrestrial Fixed Service, FSS (Earth to space), and terrestrial mobile services. The FSS allocations permit MSS feeder-link operation,[29] but are subject to a footnote, NG104, which stipulates that only "international" GSO systems may use the 10.7-11.7 GHz and 12.75-13.25 GHz bands for FSS.[30] Boeing requests a waiver of this restriction.

15. The Commission adopted the NG104 restriction for the purpose of limiting the number of earth stations with which terrestrial Fixed Service applicants would have to coordinate in order to obtain licenses for operation in the 10.7-11.7 GHz and 12.75-13.25 GHz bands.[31] The Commission believed that restricting FSS use of these bands to international systems would suffice for that purpose because such systems would deploy relatively few earth stations.[32] The Commission subsequently declined to amend Footnote NG104 to exempt NGSO FSS user terminals because that would permit a "ubiquitous deployment" of earth stations that would hamper development of terrestrial services.[33] On the

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[27] In the license-modification application as originally filed, Boeing proposed to use 250 Megahertz within the 12.75-13.25 GHz band for feeder uplinks and either 10.7-10.95 GHz or 11.2-11.45 GHz for feeder downlinks. In response to inquiries from Bureau staff, Boeing amended the application on February 11, 2003 to propose 125 Megahertz feeder-link bands at 11.2-11.45 GHz (downlink) and 13.125-13.25 GHz (uplink). On May 27, 2003 Boeing filed another amendment to change the proposed feeder downlink band to 10.825-10.95 GHz. Because the amendments did not propose frequencies outside of the bands listed in the public notice of September 1, 2002, these filings did not necessitate issuance of a further public notice.

[28] 47 C.F.R. § 25.155.

[29] *2 GHz MSS Order* at ¶72 and n.212.

[30] 47 C.F.R. § 2.106.

[31] *See Satellite Services*, 26 RR 2d 1257, 1263-65 (1973), and *GWARC Inquiry*, 70 FCC 2d 1193, 1252 (1978).

[32] *Id.*

[33] *Amendment of Parts 2 and 25 of the Commission's Rules to Permit Operation of NGSO FSS Systems Co-Frequency with GSO and Terrestrial Systems in the Ku-Band Frequency Range* (First Report and Order and Further

other hand, the Commission concluded that it would not disserve the policy objective of NG104 to allow NGSO FSS gateway stations to operate in the bands in question, because the total number of such gateway stations would be relatively small.[34] By the same logic, the Commission remarked in the *2 GHz MSS* rulemaking that it might be appropriate to generally permit use of 10.7-11.7 GHz and 12.75-13.25 GHz for GSO MSS feeder links, because "[t]ypically, the number of GSO MSS feederlink earth stations is small and may [therefore] present fewer constraints for terrestrial systems …."[35] The Commission has previously waived NG104, moreover, to allow another GSO MSS licensee to use segments of the bands in question for feeder-link transmission, having concluded that the waiver would not undermine the purpose of the restriction because it merely applied to feeder links for one satellite.[36]

16. For similar reasons, we think that a waiver of NG104 is appropriate in this instance. Boeing's waiver request pertains to feeder links for a single satellite, and Boeing indicates in the modification application that it will only need two feeder-link earth stations in the United States to support its proposed GSO MSS system.[37] The incremental impact of Boeing's proposed use of the frequency bands in question for feeder links should not increase the frequency coordination burden on terrestrial wireless services significantly more than the existing permitted use of those bands by an international system or by gateway stations for an NGSO FSS system. No current or prospective terrestrial licensee has raised any objection to Boeing's proposal to use Ku-band spectrum, moreover, since we put its modification application on public notice.[38] Nevertheless, we recognize that the effects of such uses are cumulative and that future additional systems may compromise the terrestrial wireless services' ability to coordinate use.

17. We note that the Commission imposed relevant restrictions in the *Ku-Band NGSO FSS* proceeding. It concluded that in order to preserve freedom of operation for BAS and CARS mobile pickup operations in areas where their use is most prevalent NGSO FSS licensees should be barred from transmitting in the 13.15-13.2125 GHz uplink band from earth stations located within 50 kilometers of a top 100 television market.[39] Further, the Commission concluded that no authorization should be issued for operation of an NGSO FSS gateway station in the 12.75-13.25 GHz uplink band pending completion of a rulemaking establishing rules for coordination between earth stations and BAS and CARS mobile pickup operations in that band. We see no justification for granting Boeing more leeway in either of these

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NPRM), FCC 00-418, 16 FCC Rcd 4096 (2000) ("*Ku-band NGSO FSS Order"*), at ¶¶ 29 and 31.

[34] Specifically, the Commission noted that most of the parties applying for NGSO FSS authorizations in the Ku Band were proposing to deploy fewer than five such gateway stations in the United States *Id.* at ¶31 and n.65.

[35] *Establishment of Policies and Service Rules for the Mobile Satellite Service in the 2 GHz Band* (NPRM), 14 FCC Rcd 4843 (1999), at ¶53.

[36] *Amendment of Parts 2, 22, and 25 of the Commission's Rules to Allocate Spectrum for and to Establish Other Rules and Policies Pertaining to the Use of Radio Frequencies in a Land Mobile Satellite Service for the Provision of Various Common Carrier Services* (Memorandum Opinion, Order, and Authorization), FCC 89-183, 4 FCC Rcd 6041 (1989), at ¶70.

[37] Application filed July 25, 2002 at p.22.

[38] *See* n.7*, supra.*

[39] *Amendment of Parts 2 and 25 of the Commission's Rules to Permit Operation of NGSO FSS Systems Co-Frequency with GSO and Terrestrial Systems in the Ku Band* (Second Mem. Opinion and Order), FCC 03-25, 18 FCC Rcd 2324 (2003) (*Ku-band NGSO FSS Second Recon Order*), at ¶¶ 11-12 and Appendix A ¶¶ 7 and 9.

respects than the Commission has afforded to NGSO FSS licensees. Nor do we see any justification for granting Boeing priority over incumbent Fixed Service licensees that will be compelled to change operating frequencies in the future in order to clear the 18.3-19.3 GHz band for FSS operation.

18. We therefore grant the requested waiver of NG104 subject to the following conditions. First, Boeing may not transmit in the 13.15-13.2125 GHz band from a site within 50 kilometers of a top 100 television market identified in Section 76.51 of the Commission's rules. Second, authority for uplink transmission in any portion of the 12.75-13.25 GHz band from any specified site will be withheld pending adoption of rules for coordination of such operation with BAS and CARS mobile pickup operations.[40] Third, to ensure that Boeing's feeder-link operation will not impede implementation of the Commission's spectrum-relocation policy for Fixed Service licensees currently operating in the 18.3-19.3 GHz band, Boeing must demonstrate when applying for feeder-link earth station licenses that the proposed uplink operation would not interfere with, or require protection from, operation of any existing FS station at its current site in the event that the FS station's assigned frequencies were to be shifted pursuant to Section 101.85, Section 101.89, Section 101.91, or Section 101.95 of the Commission's rules. (Boeing will also have to coordinate its proposed feeder-link stations with terrestrial stations pursuant to Section 25.203.) The showing should employ the standard techniques cross-referenced in relevant rule provisions for determining the extent of geographic separation necessary for interference avoidance.[41] Fourth, because Boeing has not indicated a definite need for more than two feeder-link earth stations this waiver pertains only to feeder-link and tracking, telemetry, and control transmission between a single GSO satellite at 120° W.L. and a maximum of two fixed earth stations within the continental United States. We conclude that a waiver can be granted on these terms consistently with the policy of preserving the potential for expanded terrestrial services and that such action will promote the public interest by facilitating institution of new communication services. In order to afford flexibility for coordination of Boeing's feeder-link earth stations, we are not precisely specifying feeder uplink frequencies in this order. Subject to the foregoing conditions, Boeing may request assignment of any specific contiguous 125 Megahertz segment within the 12.75-13.25 GHz uplink band when applying for feeder-link earth station licenses. When it applies for a feeder-link earth station license Boeing should simultaneously request a corresponding modification of its space-station license to specify the requested uplink band.

3. International Coordination

19. Appendix 30B of the Radio Regulations of the International Telecommunication Union ("ITU") prescribes an international plan for use of spectrum in the 10.7-10.95 GHz and 12.75-13.25 GHz bands for FSS operation with GSO satellites.[42] The plan does not currently provide for operation of a

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[40] The Commission announced in the *Ku-band NGSO FSS Order* that it intends to conduct a rulemaking pertaining to coordination of FSS operations with BAS/CARS mobile pickup operation in the 12.75-13.25 GHz band and reconfirmed that intention in a decision released earlier this year.. *See Ku-band NGSO FSS Order* at ¶128 and *Ku-band NGSO FSS Second Recon Order* at ¶17. In the unlikely event that the rulemaking is not completed before Boeing needs TT&C uplink authority in connection with the launch of its satellite we would, of course, entertain on its merits any request for modification of this condition or other appropriate relief. As modified herein, Boeing's license specifies a milestone deadline of July 17, 2006 for satellite launch.

[41] *See* 47 C.F.R. §§ 25.203 and 25.251.

[42] ITU Radio Regulations, Appendix S30B, Provisions and associated Plan for the fixed-satellite service in the frequency bands 4500-4800 MHz, 6725-7025 MHz, 10.70-10.95 GHz, 11.20-11.45 GHz and 12.75-13.25 GHz. The Appendix 30B requirements are incorporated by reference in the Commission's rules. *See* 47 C.F.R. § 2.106, Footnote S5.441.

U.S.-licensed satellite at 120° W.L. Appendix 30B specifies a procedure for amending the plan to permit additional FSS uses, however, based on a showing of compatibility with FSS allotments and assignments pursuant to the plan. Boeing has submitted the results of an analysis based on published ITU data which indicate that its proposed feeder-link operation would have only minor impact on FSS Appendix 30B allotments and assignments or FSS systems implemented under the authority of other national governments pursuant to Appendix 30B.[43] Boeing believes that such interference issues can be satisfactorily resolved through coordination agreements with affected administrations prescribing mitigation techniques, and we agree that such coordination seems feasible. The operating authority we grant here for Boeing's feeder-link operation is contingent, however, upon issuance of a favorable ITU finding pursuant to Appendix 30B, Article 6, Section III of the ITU's Radio Regulations.

4. Polarization

20. Subsections 25.210(e) and (f) of the Commission's rules require FSS licensees providing domestic service to achieve "state-of-the-art full frequency reuse" through linear polarization in both the horizontal and vertical planes. In the license-modification application as originally filed, Boeing proposed to operate with linear polarization in only one direction and therefore requested waiver of 25.210(e) and (f).[44] Boeing later amended the application to propose dual polarization of its feeder links, however, and withdrew the waiver request.[45] Because use of dual polarization would double the channel capacity of assigned spectrum, Boeing also re-specified the proposed feeder-link assignments to reduce their bandwidth from 250 Megahertz in each direction to 125 Megahertz in each direction. Use of dual polarization with reduced bandwidth will improve the spectral efficiency of Boeing's feeder-link operation and may facilitate international satellite coordination and domestic earth-station coordination. We grant the amended feeder-link proposal, with the stipulation that Boeing shall use horizontal and vertical polarization, specifically, as required by Sections 25.210(e) and (f).

5. Power Flux Density Limits

21. There are no power-flux-density ("PFD") limits in the Commission's rules for emissions from a GSO satellite in the band that Boeing proposes to use for feeder downlinks, but the ITU has established pertinent PFD restrictions. To prevent interference with terrestrial wireless services, Section V of Article 21 of the ITU's Radio Regulations prescribes the following limits on PFD, at the Earth's surface, of space-to-Earth FSS transmission from GSO satellites in a band that includes 10.825-10.95 GHz:

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[43] Modification Application, Appendix B, Table B1.

[44] Boeing submitted the waiver request in the alternative, arguing that Subsections 25.210(e) and (f) were inapplicable because its license authorizes provision of MSS. As defined for allocational purposes, however, FSS can refer to MSS feeder-link operation, and the spectrum that Boeing proposes to use for feeder-link operation is allocated for FSS rather than MSS feeder links specifically. *See* 47 C.F.R. §§ 2.1(c) and 2.106.

[45] Minor Amendment to Application For Modification of Authority for Use of the 1990-2025/2165-2200 MHz and Associated Frequency Bands for a Mobile-Satellite System FCC File No. SAT-MOD-20020726-00113, filed on March 18, 2003 ("*March 18 Amendment*").

Frequency band	Service*	Limit in dB(W/m²) for angle of arrival (δ) above the horizontal plane			Reference bandwidth
		0°-5°	5°-25°	25°-90°	
10.7-11.7 GHz	Fixed-satellite (space-to-Earth) (geostationary-satellite orbit)	–150	–150 + 0.5(δ – 5)	–140	4 kHz

Boeing's PFD specifications are consistent with these requirements.[46]

6. Protection of Radio Astronomy

22. Boeing must take "all practicable steps" to ensure that its feeder downlink transmission will not interfere with Radio Astronomy observation in adjacent bands, as required by Footnote US211 to the domestic Allocation Table.[47]

F. Multiple Access Technique

23. Boeing formerly proposed to use Code Division Multiple Access ("CDMA") but now proposes to use Time Division Multiple Access ("TDMA") instead. The Commission has not prescribed any specific multiple access technique for 2 GHz MSS systems. Boeing may therefore operate in the TDMA mode, as requested.

G. Coverage Requirement

24. Section 25.143(b)(2) of the Commission's rules requires 2 GHz MSS GSO systems to be capable of providing continuous coverage throughout all 50 states, Puerto Rico and the U.S. Virgin Islands, if technically feasible.[48] Boeing's proposal to provide service via a GSO satellite at 120º W.L. comports with this requirement.

H. Orbital Debris Mitigation

25. The FCC addresses issues regarding orbital debris and satellite systems on a case-by-case basis, under the general "public interest, convenience and necessity" standard in the Communications Act.[49] Section 25.143(b)(1) of the Commission's rules requires 2 GHz MSS license applicants to describe the design and operational strategies that they will use, if any, to mitigate orbital debris.[50] This rule also

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[46] Application at 29. The Commission has established identical PFD limits for downlinks in the adjacent 10.95-11.2 GHz band. *See* 47 C.F.R. § 25.208(b). The ITU limits are obligatory for Boeing because it proposes a single feeder downlink beam with a footprint that would extend across international borders.

[47] 47 C.F.R. § 2.106.

[48] 47 C.F.R. § 25.143(b)(2)(iv).

[49] 47 U.S.C. § 303.

[50] 47 C.F.R. § 25.143(b)(1), as amended by the *2 GHz MSS Order*, 15 FCC Rcd at 16205. The Commission also stated that it intends to commence a rulemaking proceeding proposing to explore orbital debris mitigation issues. *2 GHz MSS Order*, 15 FCC Rcd at 16188 ¶138.

requires 2 GHz MSS applicants to submit a casualty risk assessment if planned post-mission disposal would involve atmospheric re-entry of the spacecraft.[51] In adopting this requirement, the Commission indicated that applicants may wish to consult the National Aeronautics & Space Administration (NASA)/Department of Defense (DoD) Guidelines on Debris Mitigation, as well as the ITU Recommendation on disposal of geostationary satellites.[52] The NASA/DoD Guidelines identify four main objectives: 1) controlling debris released during normal operations; 2) minimizing debris generated by accidental explosions; 3) selecting safe flight profiles and operational configurations; and 4) providing for post-mission disposal of space structures.

26. Boeing states in its license-modification application that its satellite and launch vehicle will be designed to minimize release of debris during normal operations. It also states that it will conduct an analysis to ensure that no realistic failure mode could lead to an accidental explosion during normal operation or before completion of post-operation disposal. In addition to this analysis, we expect Boeing and other 2 GHz MSS licensees to develop appropriate operational plans and procedures to minimize the possibility of collision with large, known objects.[53] In this regard, we note that Boeing amended its application, which originally requested an orbital location within the range from 117-122° W.L., with a nominal preference for 121° W.L., to specify a location at 120° W.L. Noting that, unlike 121°, 120° is not currently assigned for use by other FCC-licensed space stations, Boeing explained that it was amending the location "to avoid the need to coordinate station keeping operations with existing FCC licensees in the near term."[54] The absence of FCC-licensed satellites at 120° W.L. does not entirely obviate such coordination, however; Boeing should take appropriate steps to minimize risk of collision with *any* satellites, including satellites operated by the U.S. government. Boeing states that at the end of the operational life of its GSO satellite it will maneuver the satellite to a disposal orbit with a perigree no less than 300 kilometers above the normal GSO operational orbit, as called for by ITU-R Recommendation S.1003 (1993). Finally, Boeing says that once its satellite reaches its final disposal orbit all on-board sources of stored energy will be depleted or safely secured. These proposed arrangements are satisfactory.

27. Boeing may use its assigned tracking, telemetry, and control frequencies for the purpose of removing its satellite from the geostationary orbit at the end of its useful life, subject to the conditions specified in Paragraph 41 herein.

I. Milestone Requirements

1. Adjustment of Interim Milestone Deadlines

28. The implementation milestone schedule that the Commission prescribed for 2 GHz MSS licensees with GSO authorizations is different in some respects from the milestone schedule for 2 GHz

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[51] 47 C.F.R. § 25.143(b)(1), as amended by the *2 GHz MSS Order*, 15 FCC Rcd at 16205.

[52] *See 2 GHz MSS Order*, 15 FCC Rcd at 16118 ¶138.

[53] *See, e.g.*, Amendment to Pending Application of Iridium LLC, SAT-AMD-20001103-00156 (Nov. 3, 2000) at Exhibit 1, p.2.

[54] *March 18 Amendment* at 2.

MSS licensees with NGSO authorizations.[55] Boeing's license currently incorporates the NGSO milestone schedule. In connection with its request for modification of its NGSO license to a GSO authorization, Boeing requests a corresponding adjustment of its milestone schedule to conform to the schedule prescribed for GSO licensees. This request is granted herein.[56] This adjustment does not affect the deadline for completing critical design review or the ultimate deadline for certifying that the system is operational.[57]

2. Compliance with First Milestone Requirement

29. Boeing was required by the terms of its license to enter into a "non-contingent satellite manufacturing contract" within one year of the license grant, *i.e.*, by July 17, 2002. To be considered non-contingent, a satellite construction contract must not condition the parties' obligations on an unresolved contingency within the licensee's control[58] and should comport with the following general description:

> The [contract] identifies specific satellites and their design characteristics and specifies the dates for the start and completion of construction. The payment terms and schedule demonstrate the applicant's investment and commitment to completion of the system. The payments are spread throughout the [term of the] contract, the initial payments are significant, and the majority of payments will be made well before the end of the construction period.[59]

30. To demonstrate compliance with the requirement to enter into a non-contingent satellite

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[55] *Establishment of Policies and Service Rules for the Mobile Satellite Service in the 2 GHz Band* (Report and Order), FCC 00-302, 15 FCC Rcd 16127 (2000) at ¶106 ("*2 GHz MSS Order*").

[56] That Boeing arranged for construction of the GSO satellite proposed in its license-modification application, rather than the NGSO satellites for which it had license authority as of the milestone deadline date, is not a material deficiency, given our favorable disposition of the application for modification. *See Teledesic LLC*, DA 02-1430, 17 FCC Rcd 11263 (Int'l Bur. 2002). Had we denied the request for license modification, on the other hand, we could not have found that Boeing's arrangements for construction of a GSO system satisfied the first milestone requirement.

[57] Both GSO and NGSO 2 GHz MSS licensees must enter into non-contingent satellite-construction contracts within one year of licensing, complete critical design review within two years, and commence full-system operation within six years. *2 GHz MSS Order* at ¶106. The deadlines for commencing physical satellite construction and for launch are somewhat different for GSO and NGSO licensees, however. NGSO licensees must commence physical construction of all satellites within two and a half years of licensing and must launch at least two satellites within three and a half years. GSO licensees must commence physical construction of all satellites within three years of licensing and must launch at least one satellite into its assigned orbital location within five years. *Id.*

[58] *Norris Satellite Communications, Inc.* (Mem. Opinión and Order), FCC 97-377, 12 FCC Rcd 22299 (1997), at ¶14; *CBS, Inc. et al.* (Mem. Opinion and Order), FCC 84-477, 99 FCC 2d 564 (1984), at ¶8; *Panamsat Licensee Corp.* (Mem. Opinion and Order), DA 00-1266, 15 FCC Rcd 18720 (Int'l Bur. 2000), aff'd, 16 FCC Rcd 11334 (2001).

[59] *Tempo Satellite, Inc.* (Mem. Opinion and Order), FCC 92-458, 7 FCC Rcd 6597 (1992), at ¶13; *TMI Communications and Co., L.P.* (Mem. Opinion and Order), DA 03-385 (Int'l Bur. Feb. 10, 2003), at ¶. Also, the contract performance deadlines must be consistent with the licensee's milestone schedule. *Mobile Communications Holdings, Inc.* (Mem. Opinion and Order), DA 02-1468, 17 FCC Rcd 11898 (Int'l Bur. 2002), at ¶11.

manufacturing contract by July 17, 2002, Boeing submitted a copy of an "Inter-organizational Work Authorization" ("IWA") dated July 16, 2002.[60] The IWA is signed by an executive official of Boeing IDS, a division of The Boeing Company, and by an executive official of Boeing Satellite Systems ("BSS"), a wholly-owned corporate subsidiary of The Boeing Company. Under the terms of the IWA, BSS agreed to construct an MSS satellite with specifications consistent with the specifications for a GSO satellite in Boeing's pending license-modification application and to deliver it to Boeing IDS pursuant to a work schedule that is consistent with the Commission's milestone implementation schedule for 2 GHz MSS systems with GSO architecture. In return, Boeing IDS is to pay all expenses that BSS incurs in performing the work. The IWA authorized initial expenditure of three million dollars on the project in the remainder of calendar year 2002. Counsel for Boeing states that BSS is in the business of manufacturing satellites for other parties under contract and has "the complete range of facilities and staff on hand to perform the management, design engineering, manufacture, integration and testing of any commercial communications satellite project."[61]

31. We do not construe the requirement to enter into a "non-contingent satellite manufacturing contract" as requiring execution of an arm's-length agreement with an independent satellite-maker. Such a requirement would bar licensees from relying on an "in-house" satellite-manufacturing capability, precluding realization of efficiencies achievable through vertical integration of satellite construction and operation. A licensee proposing to rely on inter-organizational work authorizations of the type Boeing has submitted must establish that it is sufficiently committed to implementation. The showing may be based on the following evidence:

- Evidence that the licensee either owns, or has a right to use, manufacturing facilities required for final assembly of the spacecraft;
- Evidence that the licensee has secured the services of a staff with relevant design and manufacturing expertise;
- An attested copy of a document signed by a person or persons with appropriate responsibility authorizing use of the licensee's resources to construct the satellite(s);
- A copy of an appropriately-authorized work schedule indicating that the satellites will be built within a time-period consistent with the milestone schedule prescribed in the license;
- Evidence that adequate funds have been appropriated for near-term expenses; and
- A copy of detailed technical specifications for the satellites.

32. Boeing submitted evidence addressing each of these factors.[62] Based on review of the record, we find that a firm internal agreement to construct the proposed Boeing satellite, pursuant to detailed technical specifications and a work schedule dovetailing with all of the milestone requirements in Boeing's license,[63] was signed and approved by corporate officials with proper sanctioning authority; that

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60 *See* Attachment to Letter dated July 25, 2002 to Marlene H. Dortch, FCC Secretary, from David A. Nall, Counsel for Boeing.

61 Letter dated Dec. 16, 2002 to Marlene H. Dortch, FCC Secretary, from David A. Nall, Counsel for The Boeing Company. These assertions are objectively corroborated by the fact that Iridium LLC, a 2 GHz MSS licensee that does *not* have an ownership interest in BSS, is relying on BSS to construct its satellites. Letter dated July 17, 2002 to Marlene H. Dortch, FCC Secretary, from Jeffrey H. Olson, Attorney for Iridium Satellite LLC, in File No. SAT-ASG-20010914-00084.

62 *See* Letters to Marlene H. Dortch, FCC Secretary, from Counsel for Boeing dated July 25, Oct. 15, and Dec. 16, 2002, with attachments.

63 *Cf. Mobile Communications Holdings, Inc.*, *supra*.

the subsidiary charged with performing the work is fully capable of doing so; that work has since progressed in accordance with the formal work schedule; and that approval was granted prior to the milestone deadline for initial expenditure on the project in an amount that was sufficient to cover anticipated near-term cost and is commensurate with pre-CDR expenditures pursuant to arm's-length satellite-construction contracts filed by other licensees. Based on these findings, we conclude that Boeing's showing of commitment is sufficient to demonstrate compliance with the first milestone requirement.

J. L-Band Navigation Augmentation Service

33. We agree with Lockheed Martin that granting the requested modification of Boeing's 2 GHz MSS license necessitates dismissal of Boeing's request for authority to provide L-band Navigation Augmentation Service. Boeing previously proposed to provide L-band NAS via a constellation of hybrid NGSO satellites that would also provide 2 GHz MSS. In requesting modification of its MSS license to a single-satellite GSO authorization while reiterating its request for authority to provide NAS via an NGSO system, Boeing effectively altered the NAS application from a request for authorization of one component of a hybrid MSS/NAS system to a request for authorization of a separate, stand-alone NGSO NAS system. Boeing has not specified either a feeder uplink band or telemetry, command, and control frequencies for separate, NAS-only NGSO satellites, however, as required by Section 25.114(c)(11). Nor has Boeing specified the weight, mass and dimensions of the proposed NAS-only satellites or specified a power budget for such satellites, as required by Section 25.114(c)(12). Hence the NAS application does not "constitute a concrete proposal" and is not "complete in all pertinent [technical] details," as required by Section 25.114(b). We therefore dismiss Boeing's NAS application pursuant to Section 25.112, which states that an application that is incomplete or does not substantially comply with the Commission's rules will be deemed unacceptable and will be returned to the applicant with a brief statement identifying the omissions.

K. Petitions for Reconsideration of Ka-band Assignments

34. PanAmSat Corporation and Hughes Electronics Corporation filed petitions for reconsideration of the *Boeing NGSO License Order* pertaining solely to the assignment of Ka-band frequencies for Boeing's feeder links.[64] In this *Order*, we have modified Boeing's license to assign feeder-link frequencies in the Ku-band instead, thereby eliminating the previous Ka-band assignments. We are therefore dismissing the petitions for reconsideration as moot.

L. Ancillary Terrestrial Component

35. It should be emphasized that our decision today in no way prejudges a determination by the Bureau or Commission regarding any future request by Boeing for authority to integrate an ancillary terrestrial component (ATC) into its 2 GHz MSS system. While we have determined that the Boeing

[64] Petition for Reconsideration of PanAmSat Corporation, File Nos. 179-SAT-P/LA-97(16); 90-SAT-AMEND-98(20); IBFS Nos. SAT-LOA-19970926-00149; SAT-AMD-19980318-00021; SAT-AMD-20001103-00159 (Aug. 16, 2001); Petition for Partial Reconsideration and Clarification of Hughes Electronics Corporation, File Nos. 179-SAT-P/LA-97(16); 90-SAT-AMEND-98(20); IBFS Nos. SAT-LOA-19970926-00149; SAT-AMD-19980318-00021; SAT-AMD-20001103-00159 (Aug. 16, 2001). *Also see* Opposition of The Boeing Company (Aug. 29, 2001); Reply to Opposition of PanAmSat Corporation (Sept. 10, 2001); and Notice of Written *Ex Parte* Presentation of ASTROLINK International LLC (Aug. 29, 2001).

application for modification of its MSS license satisfies our rules and that Boeing has met its first implementation "milestone" requirement, neither of these decisions will have any bearing on the review of any future request by Boeing for ATC authority.[65]

IV. ORDERING CLAUSES

36. Accordingly, IT IS ORDERED that Application SAT-MOD-20020726-0013 IS GRANTED, and the 2 GHz MSS license of The Boeing Company IS MODIFIED to authorize launch and operation of a single geostationary-orbit satellite at 120° W.L., using 125 Megahertz of continuous spectrum within the 12.75-13.25 GHz band for Earth-to-space feeder links and receiving space-to-Earth feeder link transmissions in the 10.825-10.95 GHz band, in accordance with the technical specifications set forth in its application, except as modified herein, and consistent with our rules unless specifically waived herein – provided, however, that authority to operate in the 10.825-10.95 GHz band and a portion of the 12.75-13.25 GHz band is contingent upon issuance of an ITU finding permitting such additional use pursuant to Appendix 30B of the ITU's Radio Regulations and is subject to the following additional conditions:

- Boeing may not transmit in the 13.15-13.2125 GHz band from a site within 50 kilometers of a top 100 television market identified in Section 76.51 of the Commission's rules.
- Authority for uplink transmission in any portion of the 12.75-13.25 GHz band from any specified site will be withheld pending adoption of rules for coordination of such operation with BAS and CARS mobile pickup operations.
- Boeing must demonstrate when applying for feeder-link earth station licenses that the proposed uplink operation would not interfere with, or require protection from, operation of any existing FS station at its current site in the event that the FS station's assigned frequencies were to be shifted from the 18.3-19.3 GHz band pursuant to Section 101.85, Section 101.89, Section 101.91, or Section 101.95 of the Commission's rules.
- Authorization for feeder-link operation conditionally granted herein pertains only to feeder-link and tracking, telemetry, and control transmission between a single GSO satellite at 120° W.L. and a maximum of two fixed earth stations within the continental United States.

37. IT IS FURTHER ORDERED that Boeing shall prepare any necessary submissions to the ITU and pursue any necessary service coordination agreements with other national administrations in

[65] Indeed, with the modification of its license granted today, we think it worthwhile to remind Boeing and other MSS licensees that the Commission only will authorize 2 GHz MSS, L-band, and Big LEO licensees to implement ATCs, provided that the MSS licensee: (1) has launched and operates its own satellite facilities; (2) provides substantial satellite service to the public; (3) provides integrated ATC; (4) observes existing satellite geographic coverage requirements; and (5) limits ATC operations only to the authorized satellite footprint. In particular, the Commission's requirement that MSS licensees provide substantial satellite service to the public requires certain band- and network-specific demonstrations concerning the MSS space-segment's geographic coverage area, coverage continuity and commercial availability. Finally, as the Commission has repeatedly indicated, it intends to authorize ATC only as an ancillary service to the provision of the principal service, MSS. While it is impossible to anticipate or imagine every possible way in which it might be possible to "game" the Commission's rules by providing ATC without also simultaneously providing MSS and while we do not expect our licensees to make such attempts, the Commission does not intend to allow such "gaming." *See Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L-Band, and the 1.6/2.4 GHz Bands* (Report and Order and Notice of Proposed Rulemaking), FCC 03-15, 18 FCC Rcd 1962 (2003), at n.5.

order to obtain a favorable ITU finding for operation in the 10.825-10.95 GHz band and a portion of the 12.75-13.25 GHz band in accordance with Appendix 30B of the ITU Radio Regulations.

38. IT IS FURTHER ORDERED that:

- upon launch of its satellite into its authorized orbit Boeing shall choose Selected Assignments in the 2000-2020 MHz and 2180-2200 MHz frequency bands that will give Boeing access to 5 megahertz in each direction of transmission on a primary basis;
- each Selected Assignment shall be chosen so that its band edge is an integer multiple of 5 megahertz from the edge of the encompassing 2 GHz MSS band;
- operation in 2 GHz MSS frequencies outside of the Selected Assignments shall be on a secondary basis to operation of other 2 GHz MSS systems.

39. IT IS FURTHER ORDERED that 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) IS DISMISSED as incomplete, pursuant to 47 C.F.R. § 25.112(a).

40. IT IS FURTHER ORDERED, pursuant to 47 C.F.R. § 25.111(b), that Boeing shall prepare any necessary submissions to the ITU to initiate and complete the advance publication, international coordination, and notification process for the space stations authorized by this *Order*, in accordance with the ITU Radio Regulations. No protection from interference caused by radio stations authorized by other Administrations is guaranteed unless coordination procedures are timely completed or, with respect to individual Administrations, coordination agreements are successfully negotiated. Any radio station authorization for which coordination has not been completed may be the subject of additional terms and conditions as required to effect coordination of the frequency assignments of other Administrations.

41. IT IS FURTHER ORDERED that Boeing may use its assigned tracking, telemetry, and control frequencies to remove its satellite from the geostationary orbit at the end of its useful life pursuant to the specific disposal plan proposed in its application, provided that tracking, telemetry, and control transmissions during removal to the disposal orbit are planned so as to avoid causing electrical interference to other satellites and are coordinated with the licensees of any potentially affected satellite networks.

42. This authorization shall become NULL AND VOID in the event the space station authorized herein is not constructed, launched, and placed into operation in accordance with the technical parameters and terms and conditions of the authorization by the following dates:

Milestone	**Deadline**
complete Critical Design Review	July 17, 2003
begin physical construction of satellite	July 17, 2004
complete construction of satellite and launch it into assigned orbit location	July 17, 2006
certify that entire system is operational	July 17, 2007

43. IT IS FURTHER ORDERED that the Petition for Reconsideration of PanAmSat Corporation and the Petition for Partial Reconsideration and Clarification of Hughes Electronics Corporation, File Nos. 179-SAT-P/LA-97(16); 90-SAT-AMEND-98(20); IBFS Nos. SAT-LOA-19970926-00149; SAT-AMD-19980318-00021; and SAT-AMD-20001103-00159, ARE DISMISSED AS MOOT.

44. Boeing may decline this authorization as conditioned within 30 days of the date of the release of this *Order and Authorization*. Failure to respond within that period will constitute formal acceptance of the authorization as conditioned.

45. This authorization shall not vest in the licensee any right to use the frequencies designated herein beyond the term of the license or in any other manner than authorized therein and is subject to the right of use or control conferred by Section 706 of the Communications Act. Neither the license nor the rights granted thereunder shall be assigned or otherwise transferred in violation of the Communications Act.

46. This *Order and Authorization* is issued pursuant to Section 0.261 of the Commission's rules on delegations of authority, 47 C.F.R. § 0.261, and is effective upon release.

FEDERAL COMMUNICATIONS COMMISSION

Donald Abelson
Chief, International Bureau

Ed Thomas
Chief, Office of Engineering and Technology