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

In the Matter of the Applications of AMERICAN MOBILE SATELLITE CORPORATION For Blanket License for 30,000 Mobile Earth Stations	File No. 420-DSE-P/L-90
ROCKWELL INTERNATIONAL CORPORATION For Blanket License for 15,000 Mobile Earth Stations	File No. 933-DSE-P/L-90
GEOSTAR MESSAGING CORPORATION For Blanket License for 10,000 Mobile Earth Stations In the 1530-1544 MHz (downlink) and 1626.5-1645.5 MHz (uplink) Bands	File No. 2306-DSE-P/L-89
COMMUNICATIONS SATELLITE CORPORATION WORLD SYSTEMS DIVISION For authority pursuant to Section 214 of the Communications Act of 1934 to establish and operate communications channels via the INMARSAT system using a MARISAT satellite and an earth station at Southbury, CT (WB-36) for interim use by the authorized domestic mobile satellite service (MSS) carrier in its provision of domestic MSS services	File No. I-T-C-90-038
In the Matter of Aeronautical Radio, Inc., and the Air Transport Association of America Provision of Aeronautical Services via the INMARSAT System	File No. I-S-P-90-002
Communications Satellite Corporation	File No. I-T-C-90-085

Application for Authority to Provide Limited Aeronautical Services Within the U.S. via the INMARSAT System	))))

CONSOLIDATED COMMENTS OF ARINC AND ATA ON PETITIONS FOR PARTIAL RECONSIDERATION

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Application for Authority to Provide Limited Aeronautical Services Within the U.S. via the INMARSAT System)

CONSOLIDATED COMMENTS OF ARINC AND ATA ON PETITIONS FOR PARTIAL RECONSIDERATION

Aeronautical Radio, Inc. ("ARINC") and the Air Transport Association of America ("ATA") hereby submit their comments on two petitions, filed by AMSC Subsidiary Corporation ("AMSC"), seeking partial reconsideration of the Commission's Order and Authorization[1] and Memorandum, Opinion and Order[2] in the above-captioned proceedings.[3]

I. SUMMARY

In the proceedings leading up to these decisions, ARINC and ATA urged the Commission to ensure that all mobiles operating in the MSS service would protect aviation safety services by conditioning all license authorizations in the same manner as the agency had conditioned aeronautical mobile

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[1] American Mobile Satellite Corporation, FCC 92-26 (released Feb. 4, 1992) (Order and Authorization) [hereinafter "AMSC Order").

[2] Aeronautical Radio, Inc. and the Air Transport Association of America, FCC 92-25 (released Feb. 6, 1992) [hereinafter "ARINC/ATA Order"].

[3] By Order, DA 92-336 (released Mar. 23, 1992), the Commission staff authorized ARINC to file a consolidated response to both petitions by March 24, 1992, the date comments on the latter-filed petition are due.

licenses.[4] AMSC opposed ARINC and ATA's request,[5] and the Commission found the suggested conditions to be unnecessary for the present. The agency concluded that the International Maritime Satellite Organization ("INMARSAT") would ensure non-interference on its satellites operating in the lower L-band and deferred the licensing of the land mobile terminals for use with AMSC's domestic system to a later date.[6] Now, however, AMSC has apparently changed its position and asks the Commission to require that even interim service mobiles meet the technical specifications necessary to ensure lawful operation on its own system.

Specifically, AMSC asks the Commission to establish technical guidelines that will ensure that mobile terminals used for interim Mobile Satellite Service ("MSS") can transition to the dedicated U.S. system. AMSC would also require any interim service customers using INMARSAT space segment for domestic service to shift to the dedicated U.S. system within 60 days of the time that AMSC begins operations.

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[4] See Supplemental Comments of Aeronautical Radio, Inc. and the Air Transport Association of America in AMSC Order proceeding (filed June 8, 1990).

[5] Reply of American Mobile Satellite Corporation in AMSC Order Proceeding (filed June 18, 1990).

[6] See AMSC Order, ¶ 19. See Letter from Chairman Alfred Sikes, Federal Communications Commission, to Honorable James Busey, Administrator, Federal Aviation Administration, dated August 28, 1991 ("In future proceedings, the Commission will . . . solicit suggestions regarding technical standards for land mobile earth terminals, including methods of providing for their control.").

As detailed below, ARINC and ATA agree with AMSC that the Commission should adopt technical standards for, and impose reasonable conditions on, interim MSS service at this time. The conditions that should be imposed on all land mobile earth terminals are those originally requested by ARINC and ATA, i.e., those necessary to protect aviation safety services on the domestic system. Moreover, the Commission should seek clarification of AMSC's proposed requirements and take steps now to ensure that they will be consistent with aviation standards and needs, including providing for review and approval by the Federal Aviation Administration ("FAA") and international aeronautical standards bodies.

ARINC and ATA, however, oppose any reduction in the transition period for moving interim MSS customers to the domestic system. Indeed, given the paucity of information available about the technical parameters and operation of the domestic system, it is impossible at this time to predict how long such a transition will require.

II. BACKGROUND

In the AMSC Order, the Commission granted AMSC and Rockwell International Corporation authority to operate land mobile earth stations using INMARSAT space segment in the maritime mobile satellite spectrum on an interim basis until AMSC's domestic mobile satellite system is functional. In

the ARINC/ATA Order, the Commission granted ARINC and COMSAT interim authority to provide domestic service to aeronautical mobile earth stations using INMARSAT space segment until AMSC's system is operational. In both orders, the Commission established a requirement that, within 90 days after the launch of AMSC's first satellite, all interim service providers using the INMARSAT system must file with the Commission, and serve on AMSC, their plans for a transition of domestic service to the AMSC system.[7] AMSC is seeking partial reconsideration of both Orders on identical grounds.

AMSC requests that the Commission adopt the following conditions for interim service:

- Mobile terminals should be capable of operating throughout the bands 1530-1559 MHz and 1626.5-1660.5 MHz.
- Mobile terminals should be capable of operating at an EIRP of at least 10 dB less than their "nominal EIRP" operating in the INMARSAT global beam.
- Mobile terminals should be capable of working through a spot beam satellite.
- Mobile terminals, feeder link earth stations and network control facilities must be designed to provide real-time priority and preemptive access for AMS(R)S and provide protection against interference from other systems.[8]

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[7] AMSC Order, ¶ 6; ARINC/ATA Order, ¶ 14.

[8] AMSC Petition for Partial Reconsideration of AMSC Order at 4-5; AMSC Petition for Partial Reconsideration of ARINC/ATA Order at 2-3. Of course, to ARINC and ATA's knowledge, the capability to provide priority and preemptive access in a shared frequency environment has not yet even been explained in theory, much less demonstrated in practice.

(continued...)

In addition, AMSC requests that the Commission reconsider its 90-day period for submitting a transition plan and instead require that service providers work with AMSC from the start and complete the transition to the new system within 60 days of AMSC's self-certification to the Commission that its system is operating as authorized. AMSC's stated goal is to obtain greater assurance that its monopoly on domestic MSS service will be protected.

III. THE COMMISSION SHOULD ADOPT TECHNICAL STANDARDS FOR AND CONDITIONS ON THE USE OF THE INMARSAT SPACE SEGMENT FOR INTERIM MSS SERVICE TO FACILITATE AND PROTECT AVIATION SAFETY SERVICES

ARINC and ATA agree with AMSC that the Commission should establish technical standards for, or at least conditions on, interim use of the INMARSAT space segment to provide MSS service. Such requirements are critical to ensure that aviation safety services are protected from interference (1) by interim MSS operations, (2) during the transition to the domestic MSS system, and (3) after that transition is completed.

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[8](...continued)
It is for this reason that aviation interests, including the FAA, have consistently called for validation of any frequency sharing scheme through operational tests during a reasonable time period prior to implementation, and assurance that all mobile terminals "capable of operating in the mobile satellite service, both aviation and non-aviation, must be continuously and absolutely controlled by the ground system." Letter from Honorable James Busey, Administrator, Federal Aviation Administration, to Chairman Alfred Sikes, Federal Communications Commission, dated July 22, 1991, at 1-2.

However, the conditions proposed by AMSC are inadequate to achieve this domestic and international imperative. Given the large number of interim land mobile units that might be deployed under the AMSC and Rockwell authorizations, it is essential that the parameters of any interim operations be restricted to ensure protection of aeronautical safety communications. At the same time, any criteria adopted by the Commission must be consistent with established and developing aviation standards and not unduly constrain avionics design and manufacturing or obsolete already deployed aviation terminals.[9]

A. Interim MSS Operations Should Be Conditioned To Protect Aviation Services

During earlier phases of the AMSC Order proceeding, ARINC and ATA urged the Commission to establish type acceptance criteria for terrestrial MSS terminals in order to protect aviation safety services operating in the same band. Given the important safety role of aviation services, it is critical that interim MSS service not interfere with aeronautical equipment used during the interim period. Accordingly, ARINC and ATA again ask the Commission to require interim MSS service providers to demonstrate in detail that

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[9] Obviously, retrofitting FAA-certificated equipment in a Boeing 747-400 poses a more time consuming and expensive problem than replacing a handheld or vehicle-mounted terminal unit.

the design for all components of the interim system will satisfy technical criteria designed to protect aeronautical safety services. At a minimum, the interim system should ensure:

- Conformance with ARINC Characteristic 741;
- Compliance with the performance criteria of RTCA SC-165;
- Full compatibility and interoperability with all INMARSAT aeronautical services;
- Protection of INMARSAT use of the spectrum;
- Capability for restoration of AMSC service using INMARSAT;
- Capability of the central control facility to shut down terminals remotely in the event of malfunction or to prevent interference; and
- Accommodation of the FCC-mandated priority and real-time preemptive access to the AMSS spectrum for AMS(R)S communications established in Docket 84-1234.[10]

Conforming to these standards would not be unduly burdensome, but would ensure the successful coexistence of land and aeronautical MSS services in both the interim service and the transition to AMSC-provided service.

In addition to requiring conformance with such technical criteria, the Commission should condition interim authority for all MSS users in the same manner as it conditioned the

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[10] See AMSC Order, ¶ 17 and n.31. ARINC and ATA, however, strongly disagree with the Commission's intimation that aviation safety services are not entitled to absolute priority over non-safety land mobile services in the lower L-band.

waiver granted to ARINC and two airlines for the avionics to be used with the INMARSAT space segment.[11] In that proceeding, although it was deemed significant that the aeronautical mobile units would be subject to an INMARSAT approval process, that alone was not considered adequate to assure maintenance of air safety and to minimize co- and adjacent-channel interference. For the same reasons, the safe operation of non-aeronautical equipment should not be left to the INMARSAT approval process alone. Given that aeronautical and land MSS terminals could be operating on the same or adjacent frequencies, the interim service conditions imposed on aeronautical users by the ARINC Waiver Order should also apply to terrestrial users. Indeed, AMSC itself has now recognized that land and aeronautical terminals must be treated the same to ensure a "smooth transition" to the domestic system.[12]

First and most importantly, type acceptance of the land mobile units is critical to protect safety services; therefore, adherence to future type acceptance standards should be mandated for all interim users. In particular, any grant of blanket mobile earth terminal licenses should specifically be conditioned on the licensee's future responsibility to

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[11] Aeronautical Radio, Inc., Northwest Airlines, Inc., and United Air Lines, Inc. Petition for Waiver of Sections 87.147 and 87.187 of the Commission's Rules, 5 FCC Rcd 3038 (Pri. Rad. Bur. 1990) (Memorandum, Opinion and Order) [hereinafter "ARINC Waiver Order"].

[12] AMSC Petition for Partial Reconsideration of the ARINC/ATA Order at 3.

retrofit customer units to comply with forthcoming type acceptance policies and other technical requirements.

Second, all interim users should be subject to strict reporting requirements. In granting ARINC's licensing waiver, the Commission mandated that operators of the equipment notify the Private Radio Bureau Licensing Facility in Gettysburg, Pennsylvania, regarding each equipped aircraft. This type of reporting requirement permits prompt identification of stations that begin to degrade system performance. Accordingly, the same conditions should be imposed on terrestrial mobile stations for identical reasons.

Third, the Commission should adopt a reasonable limit to the number of mobile terminals licensed, similar to that imposed in the ARINC Waiver Order. Without some limit to these operations, the likelihood of satisfactory technical compliance would be lost as soon as non-conforming equipment is distributed to customers in quantities beyond recall. Indeed, if large market penetration is achieved, the Commission would not only have a difficult time requiring the retrofitting of non-conforming equipment, but could be placed under enormous pressure by mobile terminal customers to grandfather their noncompliance. The Commission carefully limited the number of aeronautical units in its ARINC Waiver Order to preclude this very problem. For the same reasons, non-aeronautical units should be so conditioned as well.

Clearly, imposing such technical standards and conditions on all interim operations will not only facilitate a smooth transition to the domestic MSS system, but also ensure safe and efficient interim operations for all users of the INMARSAT space segment. Without these safeguards, however, both interim and permanent operations in the L-band could pose a serious threat to aeronautical safety services and the traveling public and aviation community which they protect.

B. The Commission Should Ensure That Any Technical Specifications It Adopts Are Consistent With Aviation Requirements

AMSC in its Petition for Partial Reconsideration urged the Commission to establish technical guidelines on mobile terminals used for interim mobile satellite service. AMSC recommends that the Commission require that mobile terminals seeking authority to provide interim MSS be constructed to be capable of operating (1) throughout the bands 1530 - 1559 MHz and 1626.5 - 1660.5 MHz; (2) at an EIRP 10 dB less than their nominal EIRP operating on the INMARSAT global beam; and (3) through a spot beam satellite system.

Aircraft Earth Stations ("AESs") built to ARINC Characteristic 741 and operating in accordance with the INMARSAT System Definition Manual ("SDM") meet the requirements of items 1 and 3. However, with regard to (2), it is not clear what AMSC means by "nominal EIRP operating on the INMARSAT

Global beam."[13] Aircraft Earth Stations employ either low gain or high gain antennas. The EIRP for an AES using a low gain antenna for the random access (R) channel and the reservation time division multiple access (T) channel is adjustable over the range of at least 15 dB in steps of 1 dB under command of the Ground Earth Station ("GES"). The minimum value of EIRP at the maximum setting is 13.5 dBW (nominal range 13.5 to -1.5 dBW). The maximum setting (13.5 dBW) is used for initial transmissions at log-on.

For AESs using the high gain antenna, the EIRP for R, T and circuit mode voice and data (C) channel also is adjustable over the range of at least 15 dB in steps of 1 dB on command from the GES. The minimum value of EIRP at the maximum setting is 25.5 dBW (nominal range 25.5 to 10.5 dBW). A setting corresponding to 13.5 dBW is normally used for initial transmissions at log-on. If AMSC is attempting to define the nominal EIRP as the log-on EIRP (13.5 dBW), then only the low gain AESs can meet AMSC's proposed requirement, and high gain systems could not be employed.

Aviation uses the spectrum-efficient higher gain directive antennas to provide voice and high speed data services via INMARSAT.[14] Aviation's use of these system

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[13] AMSC Petition for Partial Reconsideration of the ARINC/ATA Order at 2.

[14] Low gain antennas are used to provide data-only services.

parameters has been a matter of public record for a number of years. In contrast, to ARINC and ATA's knowledge, AMSC has not secured international review of its proposed technical criteria, much less its complete system design, by the relevant standards bodies such as the Airlines Electronic Engineering Committee ("AEEC"), which developed ARINC Characteristic 741. To the extent that AMSC is seeking a change in, or addition to, the applicable international standards, perhaps out of concern for the operation of its low gain land terminals, it should have presented its requirements to the AEEC. This Commission requires the domestic MSS system to be interoperable with AMS(R)S systems or to operate on a secondary basis.[15] That holding should not be reconsidered here.

Accordingly, AMSC should be required to clarify its request and, if it would not permit operation of AESs that comply with ARINC 741 and the INMARSAT SDM, the request should be rejected. Such a design of AMSC's system would not be inteoperable with the AMS(R)S. In no event should the Commission prescribe technical requirements for domestic AESs that would render them incompatible with the international AMS(R)S as reflected in the SDM and ARINC 741. Rather, as explained above, the FCC in consultation with the FAA should ensure that the domestic MSS system is fully compatible with

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[15] 47 C.F.R. § 2.106 Footnote US308.

all aeronautical mobiles operating in conformance with INMARSAT and relevant aviation specifications.

IV. THE COMMISSION SHOULD NOT MODIFY ITS CURRENT REQUIREMENTS FOR TRANSITION TO THE DOMESTIC MSS SYSTEM

AMSC also requests that the Commission modify its current requirement mandating that interim users notify the Commission and AMSC of their transition plans within 90 days of the launch of AMSC's first satellite. Specifically, it urges the Commission to require interim users to complete the entire transition within 60 days after AMSC self-certifies to the Commission that it is operating in compliance with its authorization. ARINC and ATA oppose this proposal as impractical and unnecessary.

AMSC's proposed 60-day period is likely to be too short a time within which to ensure a smooth transition to the permanent system. Although ARINC personnel have been meeting with AMSC for several years, AMSC's technical design remains a mystery. The technical specifications of the AMSC system and its operating parameters made publicly available to date would support at most a wild guess as to just how long the transition might take, particularly for aviation safety services.[16]

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[16] Any such transfer would, if course, be contingent upon the FCC's ultimate ruling on the deferred waiver request to permit use of INMARSAT for the domestic legs of inter-

(continued...)

Given that a number of technical and service problems may arise during the transition, a service provider must have sufficient time to address and resolve any and all such problems. The public will not be served by requiring an AMS(R)S provider to switch to the AMSC system in anything but the most safe and efficient fashion. The Commission's requirement of 90 days to file a plan for transferring interim domestic operations is an appropriate response to these uncertainties and should be retained.

Accordingly, ARINC and ATA believe that no further refinement of the Commission's transition requirement is warranted. By mandating the timely filing of an interim service provider's transition plans, the Commission will have ample opportunity to review the proposed transition schedule. If for some reason the schedule is determined to be deficient, the Commission can then take steps to expedite it. Thus, any efforts to impose strict timing requirements on the transition to the permanent system would at this time appear both unnecessary and ill-advised.

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[16](...continued)
national flights, see ARINC/ATA Order, ¶ 1, as well as the adequacy of AMSC's proof of performance regarding the mandated priority and instantaneous preemptive access for aviation safety services.

V. CONCLUSION

For the foregoing reasons, if the Commission is now to adopt technical standards for and conditions on interim MSS service, it must ensure that the domestic system will be consistent with all aviation requirements and condition all mobiles to protect aeronautical safety services as originally requested by ARINC and ATA. Moreover, the terminal specifications proposed by AMSC must be clarified and should be adopted only to the extent they are consistent with aviation standards and needs. Further, given the lack of available information regarding the AMSC system, the public interest would not be served by shortening the period for effecting a safe and efficient transition to that system.

Respectfully submitted,

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March 24, 1992

CERTIFICATE OF SERVICE

I hereby certify that on this 24th day of March, 1992, I caused copies of the foregoing "Consolidated Comments of ARINC and ATA on Petitions for Partial Reconsideration" to be mailed via first-class postage prepaid mail to the following:

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