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

In the Matters of

Provision of Aeronautical)
Services via the Inmarsat System)
)
Provision of Aeronautical)
Services via the Inmarsat System)
Order on Reconsideration and) CC Docket No. 87-75
Further Notice of Proposed Rulemaking)
)
Provision of Aeronautical Services via)
the Inmarsat System)
Notice of Proposed Rulemaking)

REPORT AND ORDER AND AUTHORIZAT ION

Adopted: October 5, 1998; Released: October 23,
1998

I. INTRODUCTION:

1. By this Order the Commission authorizes the continued use of Inmarsat space segment capacity in United States airspace by Comsat on an ancillary and supportive basis for the provision of Aeronautical Mobile-Satellite (Route) Service (AMS(R)S) and Aeronautical Mobile-Satellite Service (AMSS), in portions of the L-band on aircraft in international flight. This authorization will allow Comsat, through Inmarsat, to continue to provide an aeronautical safety service in the United States in a manner that best addresses our concerns about transfer, or hand-off, of communications between satellites and aircraft in international flight. Further, because the spectrum being used by Inmarsat has been coordinated internationally, our decision to permit the continued use of Inmarsat space segment capacity to provide AMS(R)S and/or AMSS will not cause interference to the U.S. system licensed in this band.

2. Under the policy adopted in this Order, Comsat will be allowed to provide aeronautical service on an ancillary and supportive basis to aircraft in international flight.

International flight is defined here as an aircraft travelling between the United States and a foreign point or an aircraft whose flight originates or terminates at a foreign point and lands at one or more points in the United States. Based on this definition, we modify Comsat's existing authorization for international service to reflect the geographic scope of an international flight as defined here.

II. BACKG

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3. On April 6, 1987, the Commission initiated a rulemaking to determine how aeronautical services via Inmarsat would be provided in the United States. Aeronautical services includes both Aeronautical Mobile-Satellite (Route) Service (AMS(R)S) and Aeronautical Mobile-Satellite Service (AMSS). AMS(R)S is a mobile satellite service using mobile terminals on board aircraft (referred to as aircraft earth stations or AES). This service can be used to provide communications to support domestic and international air traffic, including air traffic control. The (R) indicates that the spectrum is used for aeronautical communications related to the safety and regularity of flights primarily along national and international civil air routes. AMSS is a mobile-satellite service which, in general, includes communications such as passenger communications and airline administrative communications which are not related to safety or regularity of flight. Because AMS(R)S can be considered a subset of AMSS, in this order we will refer to both services, collectively, as AMSS.

4. The Commission initially denied Comsat's application to provide aeronautical services. The Commission found, on the record then before it, that because of Comsat's monopoly status, the Maritime Satellite Act limits Comsat to international maritime services. This decision, Aeronautical Services Order I, was appealed and subsequently remanded back to the Commission for further review at the Commission's request. On August 4, 1989, the Commission issued a Report and Order, Aeronautical Services Order II, that reaffirmed the Commission's prior conclusion that Comsat's only express authorization under the Maritime Satellite Act is limited to maritime services, but found aeronautical services to be "ancillary to and supportive of its provision of maritime services" and thus not expressly prohibited by

the Act. Under this standard the Commission subsequently authorized Comsat to provide aeronautical services and international land mobile services on an ancillary and supportive basis via Inmarsat.

5. Aeronautical Services Order II allowed only limited aeronautical mobile-satellite service in the United States through Inmarsat. The Commission authorized Comsat to provide Inmarsat aeronautical services on an ancillary and supportive basis to aeronautical earth stations for aircraft in flight: 1) from the United States to a foreign point; 2) from a foreign point into the United States; and 3) between any two foreign points. The Commission also held that aircraft in flight between two U.S. domestic points, even if part of an international flight, may use only a U.S. licensed MSS satellite. On the same day, the Commission authorized American Mobile Satellite Corporation (AMSC) to construct, launch, and operate a mobile-satellite system to provide a variety of domestic mobile-satellite communications services, including land, maritime, and aeronautical MSS in the L-band.

6. In September 1989, British Telecommunications, PLC (BT), a provider of aeronautical communications services and the United Kingdom signatory to Inmarsat, filed a petition for reconsideration of Aeronautical Services Order II, asserting that the geographic restrictions specified in our decision were invalid under the Administrative Procedure Act (APA) because proper notice and comment were not provided.

7. In response to BT's petition, on May 9, 1996, the Commission issued an Order on Reconsideration and Further Notice that resolved the notice and comment issue and tentatively concluded that, due to spectrum constraints, it should place geographic limits on the use of Inmarsat aeronautical services within the United States. The Commission presented several options as to the scope of those geographic limits.

8. In addition, the Commission gave Comsat interim, but renewable, authority to provide Inmarsat aeronautical services domestically for a period of 180 days. Comsat has sought and obtained renewals of this STA, the latest of which expires on November 9, 1998.

9. In the North American coverage area, five operators, including AMSC and

Inmarsat, provide or intend to provide, service in the L-band. In accordance with the provisions of the Radio Regulations of the International Telecommunication Union (ITU), parties operating satellite systems must coordinate their spectrum use to prevent interference. After seven years of negotiations, on June 18, 1996, representatives from Canada, Mexico, Russia, Inmarsat, and the United States agreed to an initial operating agreement for the coordination of MSS systems in the L-band (the "Mexico City Agreement"), for a period ending December 31, 1997. The parties also established an ongoing multilateral process whereby modification to the Mexico City Agreement can be made on an annual basis. The Mexico City Agreement divides the L-band into segments which are then assigned to each party for its use.

10. Although the L-band spectrum has been coordinated with the other North American operators, certain licensing aspects of this spectrum in the United States remain subject to the outcome of an ongoing rulemaking. In June of 1996, the Commission released a Notice of Proposed Rulemaking to establish rules and policies for the use of spectrum for MSS in the L-band. In the L-band Proceeding, the Commission proposed to authorize a modification of AMSC's license, allowing it to operate in portions of the L-band not previously authorized to it. The Commission proposed allowing AMSC to operate on up to 28 MHz (14 MHz for Earth-to-space transmissions and 14 MHz for space-to-Earth transmissions) of internationally coordinated L-band spectrum, as its initial license in 1989 had assigned to it. The Commission also proposed that if the U.S. were able to coordinate more than 28 MHz of spectrum in the L-band, it would allow other MSS applicants to apply for assignment of these frequencies.

11. In the DISCO II Order, the Commission adopted a framework to govern provision of satellite services, including AMSS, in the United States by non-U.S. licensed entities, including Intergovernmental Satellite Organization (IGOs). In the DISCO II Order we stated that we will continue to consider Comsat applications to provide international service in the United States via INTELSAT and Inmarsat on a case-by-case basis. We also decided that Comsat must make an appropriate waiver of its privileges and immunity from

suit as part of any application to provide domestic services via INTELSAT or Inmarsat.

Also, as part of its application, Comsat must show that entry into the United States domestic market would promote competition and is otherwise in the public interest.

12. Nine companies submitted comments and/or reply comments in this proceeding. Most cited the difficulty of mid-air hand-off, AMSC's non-compliance with international safety standards, and the incompatibility of AMSC's system with the Inmarsat system as reasons why Comsat should be allowed to provide aeronautical service within U.S. airspace and for all segments of international flights. Several commenters also argue that the relatively small market for aeronautical services and the spectrum coordination agreement signed in Mexico City demonstrate that the rationale for geographic restrictions, namely spectrum constraints, no longer exists. In addition, most assert that Comsat should be allowed to provide AMS(R)S service in the U.S. because the sole U.S. licensee, AMSC, is not currently providing the service. AMSC, on the other hand, contends that the use of Inmarsat space segment should not be allowed in U.S. airspace because of the shortage of L-band spectrum, and it asserts that a mid-air hand-off of service between itself and Inmarsat is feasible.

III. DISCUSSION

A. Report and Order

13. We find that the public interest is served by the continued use of the Inmarsat space segment in U.S. airspace for international aeronautical mobile-satellite service. This includes use of the Inmarsat system for the entire trip on outbound and inbound international flights, including flight segments between two U.S. domestic points, provided the flight has no change of aircraft. We here revise our policy regarding aircraft en route between two U.S. domestic points as part of an international flight because we find that requiring aircraft to hand-off international communications, especially safety communications, to a U.S. licensed AMSS provider or to a terrestrial (that is, direct air-ground communications) service provider when it enters U.S. airspace could potentially cause severe disruption of service and affect aircraft safety. We also find that the alternative of equipping all aircraft used for

international flight with a second satellite communications system would not be practical or safe because of the additional space, weight, and cost requirements.

14. The Aeronautical Services Reconsideration and Further Notice proposed three options for the provision of AMSS via Inmarsat in the U.S. pending successful coordination of spectrum in the L-band. The first option proposed would prohibit use of Inmarsat in U.S. airspace, which begins 12 nautical miles from the U.S. shoreline. This option would require aircraft to stop using Inmarsat and switch to the domestic AMSS system upon entry into U.S. airspace and before landing. The Commission stated in the Aeronautical Services Reconsideration and Further Notice that it would not adopt this approach if the record indicated that AMSC had not incorporated International Civil Aviation Organization (ICAO) requirements in its system design to eliminate interruptions in AMS(R)S service during such a mid-air hand-off. AMSC admits that the design of its system "is not based on ICAO standards." Even if AMSC were to demonstrate that it had incorporated ICAO standards, AMSC has not demonstrated that mid-air hand-off is practicable or safe. Thus, we do not adopt this option.

15. Under the second proposed option, we would permit the use of Inmarsat only until an aircraft's first landing point in the U.S. or upon an aircraft's last departure point from the United States. Although under this option, hand-off would occur on the ground, after the aircraft has landed, the Commission remained concerned about the reliability of transferring communications from one system to another and sought analysis and technical information on the degree to which hand-off procedures could be automated. Commenters argue that AMSC cannot provide assurances of safety and reliability, even for on-the-ground hand-off, because its system does not include the software protocols that would allow it to work with Inmarsat without installing additional equipment aboard aircraft. AMSC admits that "to offer a service that permits users of Inmarsat space segment to use AMSC space segment without any change in equipment, AMSC would also need to license certain protocols that are proprietary to Inmarsat." Nevertheless, AMSC contends that hand-off is "feasible" through installation of additional equipment aboard aircraft. Despite AMSC's

claims, its submission to the record did not include analysis and technical information to demonstrate the reliability of hand-offs between the AMSC and Inmarsat systems, nor the degree of any potential interruptions. In addition, we are persuaded by commenters who assert that retrofitting aircraft with a second communications system in order to achieve interoperability raises safety and cost considerations because of the additional space and weight requirements. For these reasons, we decline to adopt a policy based on option two.

16. In order to best address our concerns about preserving the safety and reliability of aeronautical communications, we adopt the third option proposed in the Aeronautical Services Reconsideration and Further Notice. We will allow aircraft in international flight to use Inmarsat space segment in the L-band in U.S. airspace for AMS(R)S and AMSS. For the purposes of this Order, international flight is defined as: (1) an aircraft travelling between the United States and a foreign point or (2) an aircraft whose flight originates or terminates at a foreign point and lands at one or more points in the United States. As with provision of all service in the United States, use of Inmarsat space segment in the L-band must comply with priority and preemptive access requirements for aviation safety as established by the Commission and the ITU.

17. The primary purpose of the policy we adopt here is to ensure that aircraft do not experience any discontinuity of AMSS that might arise if such aircraft is not able to hand-off communications seamlessly from Inmarsat to a domestic provider of AMS(R)S or AMSS in the United States. This policy only applies to aircraft in international flight and does not apply to passengers who change planes in the United States and complete their international flight on a different aircraft.

18. In addition, the use of Inmarsat space segment capacity is permitted only on those frequencies coordinated in the Mexico City Agreement and pursuant to subsequent international coordination agreements. AMSC maintains that the frequency coordination process "remains unresolved" and that authorizing use of Inmarsat space segment in U.S. airspace "will have an impact on the amount of spectrum that is available for the U.S. MSS system." Commenters contend that spectrum allocation issues have been resolved and that

the current and the future impact of allowing the use of Inmarsat on spectrum use is minimal.

19. In the Aeronautical Services Reconsideration and Further Notice, the Commission expressed concern that permitting Inmarsat to provide AMS(R)S and AMSS in the United States would result in claims for additional spectrum and possible interference to the AMSC system. Consequently, the Commission stated that it would limit the scope of Inmarsat service in the U.S. pending the outcome of the coordination process. We believe that the arrangements agreed to in the Mexico City Agreement have sufficiently coordinated use of the spectrum and that the Mexico City Agreement's annual usage review provisions will allow us to monitor closely the efficacy of the arrangements and the impact on L-band spectrum usage in the U.S. Further, the amount of spectrum that would be required for Inmarsat to provide AMS(R)S or AMSS in connection with international flights in the United States should be minimal given the limited number of aircraft in international flight operating within U.S. airspace. Consequently, our action here should have minimal impact on future year-to-year L-band coordination agreements. Nevertheless, our action in this Report and Order does not prejudge future international negotiations, nor how the Commission will assign L-band spectrum domestically in the pending L-band Proceeding.

20. Finally, several commenters expressed confusion over our use of the term "U.S. earth station" in the Aeronautical Services Reconsideration and Further Notice. We clarify for the record that the mobile earth stations at issue here are aircraft earth stations licensed by the U.S.

B. Modified Authorization

21. Because the Inmarsat space segment at issue here will be used for international communications service, we will not require Comsat to waive its privileges and immunities in order to provide AMS(R)S and AMSS via Inmarsat to international flights as defined in this Report and Order. Indeed, because of overriding safety concerns regarding on the ground or mid-air hand-off, we find that even if our definition of international service were challenged and it were ruled that the provision of AMS(R)S and AMSS on the "domestic leg"

of an international flight (i.e., the flight segment between two domestic points that makes up part of an international flight) constituted "domestic service," we would nevertheless allow Comsat to provide AMS(R)S and AMSS on these flight segments. If Comsat wishes, however, to obtain permanent authorization to provide purely domestic AMS(R)S and/or AMSS on an ancillary and supportive basis using Inmarsat space segment capacity, it will be bound by the framework established in the DISCO II Order for the provision of domestic service and be required to waive its privileges and immunities.

22. We also reiterate the Commission policy, established in Section 87.187 and footnote 2.106 of our rules, that any use, international or domestic, of Inmarsat space segment in the U.S. is subject to priority and preemptive access requirements for aviation safety.

23. Accordingly, on the basis of the findings and conclusions in this proceeding, we modify Comsat's authority to provide AMS(R)S and AMSS via the Inmarsat system on an ancillary and supportive basis to aircraft during international flights in the U.S. as defined herein.

IV. CONCLUSION

24. The actions we take in this Order will provide continuity of service and uninterrupted access to the aeronautical mobile safety service and other communications services for aircraft equipped to access Inmarsat during international flights. Uninterrupted access to AMS(R)S and AMSS provides a vital public service for aircraft in international flight. In addition, since the L-band spectrum has been coordinated, there will be no negative impact on AMSC, the U.S. licensee.

V. ORDERING CLAUSES

25. Accordingly, IT IS ORDERED that Aeronautical Mobile-Satellite (Route) Service and Aeronautical Mobile-Satellite Service via the International Mobile Satellite Organization to aircraft in international flight in the United States shall be provided pursuant to the policy set out in this Report and Order. This policy applies to aircraft in international flight and does not apply to passengers who change planes in the United States and complete

their international flight on a different aircraft. For purposes of this Report and Order,
International flight shall be defined as: (1) an aircraft travelling between the United States and a foreign point; or (2) an aircraft whose flight originates or terminates at a foreign point and lands at one or more points in the United States.

26. IT IS FURTHER ORDERED that Comsat Corporation's authorization to provide AMS(R)S and AMSS via the Inmarsat system on an ancillary and supportive basis to aircraft during international flights in the U.S is modified to the extent described herein.

27. IT IS FURTHER ORDERED that service provided pursuant to this Order MUST COMPLY with Commission rules for priority and preemptive access set forth in Section 2.106 Footnote US308 of the Commission's rules, 47 C.F.R. □2.106 Footnote US308.

FEDERAL COMMUNICATIONS COMMISSION

Margalie Roman Salas
Secretary