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

In the matter of	)	
	)	
Sirius Satellite Radio, Inc.	)	File No. SAT-STA-20010724-00064
	)	
Application for Special Temporary Authority to Operate Satellite Digital Audio Radio Service Complementary Terrestrial Repeaters	)	

ORDER AND AUTHORIZATION

Adopted: September 17, 2001 **Released: September 17, 2001**

By the Chief, International Bureau:

I. INTRODUCTION

1. By this Order, we grant Sirius Satellite Radio, Inc. (Sirius) special temporary authority (STA) to operate Satellite Digital Audio Radio Service (SDARS) complementary terrestrial repeaters in its exclusively licensed satellite frequency band, 2320-2332.5 MHz. This authority, subject to the conditions as specified herein, will allow Sirius to begin commercial SDARS on a nationwide basis consisting of both satellite and terrestrial transmissions to provide a high quality signal to its customers. The terrestrial component at issue in this STA request will be especially useful where the satellite signal is blocked or will be subject to multipath interference.[1]

II. BACKGROUND

2. The use of complementary terrestrial repeaters to overcome the effects of satellite signal blockage and multipath interference was recognized by the Commission when it adopted service rules for SDARS and in its Further Notice of Proposed Rulemaking (*Further Notice*) for SDARS repeaters.[2] In that *Further Notice*, the Commission anticipated the need for repeaters

[1] Multipath interference occurs when radio waves bounce off buildings, hills, or other obstacles and the radiowaves reach the receiver at different times, causing interference.

[2] *Establishment of Rules and Policies for the Digital Audio Radio Service in the 2310-2360 MHz Band,* Report and Order, Memorandum Opinion and Order, and Further Notice of Proposed Rulemaking, 12 FCC Rcd 5754 (1997) ("*DARS Order and FNPRM*")

and sought comment "on a regulatory structure for satellite DARS repeaters similar to the blanket authorizations used for mobile earth stations of other services."[3] The Commission is preparing to conclude that proceeding.

3. In October 1997, the Commission authorized Sirius (formerly Satellite CD Radio, Inc.) to launch and operate three non-geostationary satellites to provide SDARS.[4] Sirius launched its satellites earlier this year. With its complementary repeater network, Sirius is ready to begin offering DARS to the public. Recognizing that such a network is essential to achieving high quality, nationwide service and that the rulemaking proceeding to establish the operating parameters of the repeater stations had not been concluded, Sirius filed an STA request on July 24, 2001, to begin commercial service using its complementary terrestrial repeater network. The STA request was placed on public notice on July 31, 2001, comments were filed by August 21, 2001, and reply comments were filed by August 31, 2001.

4. Twelve parties filed comments in response to Sirius's STA request. Several parties assert that Sirius has failed to meet the required legal showing to justify an STA. Also, the National Association of Broadcasters and other broadcasters are concerned about the DARS licensees using their repeater networks to operate local radio services. Moreover, all of the WCS licensees that commented are concerned about the potential for blanketing interference from DARS repeaters.[5] Finally, most commenters urge that, if the Commission were to grant the STA, it should be rigorously conditioned. Reply comments were filed by XM Radio and Sirius.

III. DISCUSSION

STA Justification

5. The Communications Act of 1934, as amended, (the Communications Act) gives the Commission authority to grant temporary authority in extraordinary circumstances where such temporary operations are in the public interest and where delay in operation would prejudice the public interest.[6] Similarly, the Commission's rules governing satellite facilities, specifically Section 25.120,[7] permit special temporary authorization under extraordinary circumstances stating that "[C]onvenience to the applicant, such as marketing considerations of meeting scheduled customer in-service dates, will not be deemed sufficient for this purpose."[8]

6. Commenters argue that Sirius has not made the showing required by the Communications Act or the Commission's rules and assert that Sirius's only justification for its STA request is its desire to begin service to customers on a self imposed schedule, a clearly

[3] *Id* at 5812, ¶ 142.

[4] *American Mobile Radio Corporation,* Order and Authorization, 13 FCC Rcd 8829 (1997).

[5] Blanketing interference occurs when a receiver is near a relatively high-powered transmitter and the high power overloads the components of the receiver and prevents reception of the desired signal by the receiver.

[6] 47 U.S.C. Section 309(f).

[7] 47 C.F.R. § 25.120.

[8] 47 C.F.R. § 25.120(b).

insufficient reason.[9] Commenters also state that Sirius has not provided "the full particulars of the proposed operation" as required by the rules.[10] In reply, Sirius states that its STA request "included an Exhibit providing, for each currently planned terrestrial repeater with an EIRP greater than 2 kW: (1) geographic coordinates; (2) antenna type; (3) antenna orientation; (4) antenna radiation pattern and any applicable vertical downtilt; (5) total Equivalent Isotropically Radiated Power (EIRP); and (6) height Above Ground Level (AGL). Sirius did not provide such data for any low-power repeaters (*i.e.*, EIRP of 2 kW or less) because all parties have long disclaimed any desire to restrict or regulate such repeaters."[11]

7. We find that grant of an STA in these circumstances is appropriate and violates neither the Communications Act nor the Commission's rules. In 1997 when the Commission adopted service rules for SDARS and requested further comment on complementary terrestrial repeaters, it was clearly contemplated that the repeaters were to be part of the proposed satellite systems.[12] In the service rules and in Sirius's individual SDARS license, Sirius was given specific milestone requirements including dates by which its system must be constructed and put into operation.[13] Sirius has proceeded with satellite construction, has in fact launched both of its satellites, and needs to employ terrestrial repeaters to provide adequate service. While Sirius was building its system, the Commission has been working to resolve the complex technical issues involved in adopting final rules to authorize SDARS repeaters but the Commission has not yet completed this rulemaking. We find that this situation has created the extraordinary circumstances required by the statute and our rules to justify grant of an STA. It would be unfair to penalize Sirius for complying with our required milestone schedule on the one hand but on the other hand force it to seriously delay initiation of service because there are no final repeater rules. Although Sirius has met its interim milestones and is not facing an immediate deadline, it has expended significant time and money to pursue the license.

8. In addition, although Section 25.120 states that marketing considerations and customer service dates are not a sufficient justification for STA requests, we find that this portion of the rule does not apply in these circumstances. That language was included in the rule to address routine applications that could be normally granted within sixty days.[14] The rule

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[9] Comments of AT&T Wireless Services, Inc., filed August 21, 2001, in response to *XM Radio Inc. Application for Special Temporary Authority to Operate Digital Audio Radio Service Terrestrial Repeaters*, File No. SAT-STA-20010712-00063 (filed July 12, 2001) *(XM Radio STA request)* and *Sirius Satellite Radio Inc. Application for Special Temporary Authority to Operate Satellite DARS Terrestrial Repeaters* File No. SAT-STA-20010724-00064 (filed July 24, 2001) *(Sirius STA request)* (Comments of AWS) at 3 and Comments of BellSouth Corporation, filed August 21, 2001 in response to the *XM Radio STA request* and the *Sirius STA request* (Comments of BellSouth) at 12.

[10] 47 C.F.R. § 25.120(a).

[11] Reply comments of Sirius Satellite Radio, filed August 31, 2001, *XM Radio STA request* and *Sirius STA request* at 5-6.

[12] *SDARS Order and FNPRM* at 5810, ¶ 138.

[13] 47 C.F.R. § 25.144(b) and *In the Matter of American Mobile Radio Corporation*, 13 FCC Rcd. 8829 (1997).

[14] *In the Matter of Amendment of Part 25 of the Commission's Rules and Regulations to Reduce Alien Carrier Interference Between Fixed-Satellites at Reduced Orbital Spacings and to Revise Application Processing Procedures for Satellite Communications Services,* Report and Order, 6 FCC Rcd. 2806 at 2810 (1991).

codified an STA policy established for routine domestic satellite earth station applications.[15] The Commission stated the policy "…has allowed our routine applications to be processed more efficiently because resources are devoted to processing underlying applications instead of STAs. When an application cannot be routinely granted within sixty days, the staff will, in most cases, consider a request for STA."[16]

9. We find it is in the public interest to grant this STA to permit Sirius to operate its complementary repeater network on a commercial basis subject to certain conditions. The Commission has identified many public interest benefits that satellite DARS can provide. DARS will offer high quality radio signals to listeners in areas that have limited radio service. With nationwide satellite coverage, motorists will have continuous radio coverage on long-distance trips. Diverse program formats, including educational, ethnic and religious programming are possible with the many channels that DARS will provide.[17] We also find that Sirius provided sufficient facts in its request to meet the standard required by the statute and our rules. We agree with Sirius that because the focus of the party's technical interference objections has been on repeaters operating above 2 kW EIRP and because the particulars of those stations have been disclosed, Section 25.120's requirements for specificity have been satisfied. While grant of this STA will allow Sirius to begin to offer services to subscribers we recognize the concerns expressed by parties commenting on the STA request and have conditioned this STA to address them.

Local Origination of Programming

10. The National Association of Broadcasters (NAB) and other broadcasters comment that the DARS licensees could use their terrestrial repeater network to compete on a local basis with terrestrial broadcasters.[18] They also question why the DARS operators have increased their number of repeaters during the pendency of the rulemaking proceeding.[19] They also assert that the rules proposed by the DARS licensees in their comments in the rulemaking proceeding do not adequately prohibit local origination of programming. Specifically, NAB requests that SDARS repeaters be limited to retransmitting the complete signal of the DARS satellites at the same time that signal is transmitted to consumer satellite receivers.[20] They request the Commission to set a cap on the number of repeaters and either require individual licenses for each repeater or require strict record keeping on installation in order to ensure that the DARS licensees do not provide local service.

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15 *Id.* at 2810, ¶ 26.

16 *Id.* at 2810, ¶ 27.

17 *DARS Order and FNPRM* at 5759-5761, ¶¶10-14.

18 Comments of the National Association of Broadcasters, filed August 21, 2001 in response to the *XM Radio STA request* and the *Sirius STA request* (Comments of NAB), Comments of Mt. Wilson FM Broadcasters, Inc., filed August 21, 2001, in response to the *XM Radio STA request* and the *Sirius STA request*, Comments of Entercom Communications Corp., filed August 21, 2001, in response to the *XM Radio STA request* and the *Sirius STA request*.

19 NAB argues that since January 2001, the SDARS licensees have significantly increased their estimates from a few hundred to 1150 for Sirius and 778 for XM. Comments of NAB at 6-7.

20 *Id.* at 14.

11. Under this STA, the use of repeaters is restricted to the simultaneous retransmission of programming, in its entirety, transmitted by the satellite directly to SDARS subscriber's receivers. The authority will be so conditioned. Given the above, we believe that broadcasters' other requests for repeater number caps and individual licensing do not appear necessary and would not accomplish their stated objectives.

Technical Considerations

12. The comments from WCS licensees express concern about blanketing interference from DARS repeaters that operate with an EIRP above 2 kW. AT&T Wireless (AWS) states "AWS and other WCS licensees have advocated that SDARS terrestrial repeaters be limited to no more than 2 kW EIRP."[21] AWS accepts SDARS repeater operation at 2 kW and below and states "AWS continues to believe that a 2kW maximum is the appropriate level for all services in the band, including SDARS."[22] Metricom explains "there is no technically feasible means by which Metricom can equip its stations to accommodate SDARS operations at power levels ranging from over 2 kW to 40 kW EIRP, as proposed by Sirius in its STA request."[23] Two commenters provided technical analyses that quantify the potential blanketing interference to their existing operational and soon to be operational facilities.[24] Other commenters prepared studies illustrating the effect of DARS blanketing interference on planned WCS operations and services.[25] Wireless Communications Association International, Inc. (WCA), states that blanketing interference will affect MMDS and ITFS operations as well.[26]

13. The issue of blanketing interference to WCS and MDS/ITFS systems will be further and more fully addressed in the final rules adopted by the Commission in its docketed terrestrial repeater rulemaking proceeding. Indeed, there are areas around terrestrial repeaters where this equipment may be susceptible to blanketing interference.[27] In the interim, before final rules are adopted, all existing authorized radiocommunication facilities that are in operation during the period that the STA is in effect must be protected from interference caused by SDARS repeaters. We particularly note that in their comments, AWS and WorldCom identified certain repeaters that they believe will cause blanketing interference to their facilities.[28]

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[21] Comments of AWS at 7.

[22] *Id.*

[23] Comments of Metricom, Inc., filed August 21, 2001, in response to the *XM Radio STA request* and the *Sirius STA request* (Comments of Metricom) at 8.

[24] *Id.* at Attachments A and B; Opposition to STA Request, filed by WorldCom, Inc. on August 21, 2001, in response to the *XM Radio STA request* and the *Sirius STA request* (WorldCom Opposition) at Exhibit 1.

[25] Comments of BellSouth at Attachment B; Comments of Metricom at Exhibit A.

[26] Comments in Opposition to Grant of STA Requests filed by Wireless Communications Association International, Inc (WCA) on August 21, 2001 in response to the *XM Radio STA request* and the *Sirius STA request* at 3. MDS includes single channel Multipoint Distribution Service (MDS) and multi-channel MDS (MMDS) authorizations in the 2150-2162 MHz and 2500-2690 MHz bands.

[27] Reply Comments of Verizon Wireless, filed August 31, 2001, *XM Radio STA request* and the *Sirius STA request* at 6.

[28] Comments of AWS at Attachment A, Erratum to Comments of AT&T Wireless Services, Inc. filed on August 29, 2001, to the Comments of AWS at Attachment A (revised), WorldCom Opposition at Attachments 1 and 2.

14. Based on the comments filed in response to the STA request, Sirius is not permitted to commence commercial operations on any repeater identified in the comments as affecting an operational WCS base station until Sirius has pre-coordinated the operation of that repeater with the affected WCS licensee(s). Sirius is permitted to commence commercial operations on all other repeaters subject to the conditions of this STA. One such condition on Sirius is that it immediately reduce the power level or, if necessary, cease operation of any repeater that causes interference to a WCS, MDS or ITFS authorized station upon the receipt of a written, descriptive notification from a WCS, MDS or ITFS licensee identifying the specific source of interference.[29] For those repeaters identified as affecting WCS stations that are to be placed in operation in the near future, we require that Sirius reduce its power level or, if necessary, cease operation of the identified repeater if coordination has not been completed with the affected WCS licensees prior to those WCS stations becoming operational. To facilitate this coordination, we expect WCS licensees to provide a schedule or as much advance notice as possible of when their stations are to be placed in operation. We expect the licensees to fully cooperate in the exchange of information during the coordination process to mitigate the potential for interference to WCS facilities not yet in operation and to immediately eliminate interference that is caused to an operational WCS, MDS, or ITFS facility. To facilitate the coordination process, Sirius must take two actions: it shall (1) make available to the WCS licensees and to the Commission, immediately upon request, the locations and technical parameters of all repeaters operating pursuant to this STA, including those operating at or below 2 kW EIRP,[30] and (2) provide the name and telephone number of a point of contact to all WCS licensees and to WCA prior to commencing operation, that will be available on a continuous basis (*i.e.*, 24 hours a day, 7 days a week) to receive reports of actual interference and to take immediate action to correct it.

15. Two WCS equipment manufacturers expressed concerns regarding out-of-band emissions.[31] The DARS licensees have designed high-powered transmitters with out-of-band emissions requirements that are far more restrictive than the requirement specified in the Commission's rules.[32] Sirius has indicated that it can meet this much more stringent out-of-band

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[29] Sirius is permitted to resume repeater operations after adequate filtering has been installed at the affected WCS, MDS, ITFS station, or other remedial steps have been taken by Sirius that eliminates the interference problem at no cost to the complainant and after Sirius certifies to the Commission that the interference complaint has been resolved. Additionally, Sirius will be responsible for addressing any complaints from its customers that may arise if they should have to reduce power or cease operations of a particular repeater. Comments of BellSouth at 38.

[30] We anticipate that in providing such information, it would be reasonable for Sirius to enter into a commercially reasonable non-disclosure agreement with WCS licensees seeking access to the information on repeater locations. We also expect that the WCS licensee requesting such information from Sirius would give a similarly prompt and reasonable response to a request from Sirius for relevant information regarding the location and technical parameters of the licensee's WCS stations.

[31] Written Ex Parte Comments of BeamReach, filed August 21, 2001, in response to the *XM Radio STA request* and the *Sirius STA request* at 10; Written Ex Parte Comments of Navini Networks, filed on August23, 2001, in response to the *XM Radio STA request* and the *Sirius STA request* at 6.

[32] The out-of-band emissions requirement proposed by the DARS licensees is to attenuate the transmitter EIRP by 75+10log(EIRP) dB, which is far more restrictive than the "emissions mask" defined in § 25.202(f) of the Commission's rules that applies to all Part 25 licensees. The Commission had proposed in the *DARS Order and FNPRM* to apply the § 25.202(f) emission mask to terrestrial repeaters in order to prevent out-of-band interference to adjacent radiocommunication services.

emission level. Therefore, we will adopt the DARS licensees' proposed out-of-band attenuation requirement of 75+10log (EIRP) dB below the transmitter EIRP as a condition of this STA. The out-of-band emission level is subject to the final adoption by the Commission in its proceeding.

16. There are existing Commission rules that already apply to the implementation and operation of the SDARS terrestrial network. Specifically, compliance with the environmental rules of C.F.R. 47, Part 1, and the antenna marking and lighting rules of Part 17 is required. The operation of SDARS repeaters must also conform to the requirements of the international agreements with Canada and Mexico concerning the use of the 2310-2360 MHz band.[33] Sirius has indicated in its STA request that it will comply with these rules and international agreements.

17. For the above reasons, we grant Sirius STA to operate complementary terrestrial repeaters with an ERIP at or below 2 kW nationwide and repeaters with an EIRP above 2 kW as specified in Exhibit A of the STA request[34] for a period not to exceed 180 days or on the date on which permanent rules become effective, whichever occurs first. In order to limit the scope of the STA, we will require Sirius to make available to the Commission, immediately upon request a list of the locations and technical specifications of terrestrial repeaters with an EIRP of 2 kW or less as of the grant date of the STA. Sirius's authority with respect to these lower power repeaters extends only to those repeaters on this list.

IV. ORDERING CLAUSES

18. Sirius Satellite Radio IS GRANTED authority to operate its SDARS terrestrial repeater network to provide commercial SDARS to consumers subject to the following conditions:

(a) Any actions taken as a result of this STA are solely at Sirius's own risk. This STA shall not prejudice the outcome of the final rules adopted by the Commission in GEN Docket 95-91;

(b) Operation of all SDARS repeaters authorized pursuant to this STA is on a non-interference basis with respect to all permanently authorized radiocommunication facilities. Sirius shall provide the information and follow the process in accordance with paragraphs 14 and 17 above;

(c) SDARS repeaters are restricted to the simultaneous retransmission of the complete programming, and only that programming, transmitted by the satellite directly to SDARS subscriber's receivers;

(d) Coordination of SDARS repeater operations shall be completed with all affected Administrations prior to operation, in accordance with all applicable international

[33] *Agreement Concerning the Coordination Between U.S. Satellite Digital Audio Radio Service and Canadian Fixed Service and Mobile Aeronautical Telemetry Service in the Band 2320-2345 MHz* implemented on September 1, 1998 and *Agreement Between the Government of the United States of America and the Government of the United Mexican States Concerning the Use of the 2310-2360 MHz Band* signed in Mexico City, July 24, 2000.

[34] *Sirius STA request*.

agreements including those with Canada and Mexico;

(e) SDARS repeaters shall comply with Part 17 of the Commission's rules - Construction, Marking, and Lighting of Antenna Structures;

(f) SDARS repeaters shall comply with Part 1 of the Commission's rules, Subpart I - Procedures Implementing the National Environmental Policy Act of 1969, including the guidelines for human exposure to radio frequency electromagnetic fields as defined in Sections 1.1307(b) and 1.1310 of the Commission's rules;

(g) SDARS repeater out-of-band emissions shall be limited to 75+log(EIRP) dB less than the transmitter EIRP;

(h) This STA will expire on March 18, 2002 or on the date on which permanent rules governing repeater operations become effective, whichever occurs first.

19. Sirius is afforded fifteen days from the date of release of this STA to decline this authorization as conditioned. Failure to respond within that period will constitute formal acceptance of the authorization as conditioned.

20. This Order is effective upon release.

FEDERAL COMMUNICATIONS COMMISSION

Donald Abelson
Chief, International Bureau