

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

In the Matter of)	
)	
Amendment of the Commission's Policies and)	
Rules for Processing Applications in the)	IB Docket No. 06-160
Direct Broadcast Satellite Service)	
)	
Feasibility of Reduced Orbital Spacing for)	Report No. SPB-196
Provision of Direct Broadcast Satellite Service in the)	
United States)	
To: The Commission		

COMMENTS OF SES AMERICOM, INC.

Nancy J. Eskenazi
Vice President &
Assoc. General Counsel
SES Americom, Inc.
Four Research Way
Princeton, NJ 08540

Peter A. Rohrbach
Karis A. Hastings
Hogan & Hartson L.L.P.
555 Thirteenth Street, N.W.
Washington, D.C. 20004
(202) 637-5600

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SUMMARY

Prompt Commission action is essential here to pave the way for introduction of new competitive DBS services. Previous proceedings have provided the Commission with ample evidence that the introduction of DBS service from orbital locations at reduced orbital spacing will increase spectrum efficiency and expand the options available to U.S. consumers. In particular, reduced orbital spacing can provide spectrum to support entry of new, nationwide DBS competition, as well as provide additional capacity to satisfy unmet demand for more targeted offerings such as foreign language, sports, and arts programming. Furthermore, the record demonstrates that these benefits can be achieved without any material impact on existing DBS subscribers.

Pending resolution of this rulemaking, the Commission has clear authority to act on requests for U.S. market access from foreign-licensed orbital locations. However, completion of the rulemaking is nevertheless critical to establish a regulatory framework for coordination of new proposed systems and to provide clear standards for the Commission staff to act if coordination is unsuccessful.

In particular, the Commission should make clear that if ITU standards trigger a coordination requirement, coordination must proceed within a limited time frame. Specifically, the Commission should set a deadline of six months following grant of authority for completion of coordination discussions between operators. Any open issues at the end of that period should be referred to the Commission and resolved within two months.

SES Americom recommends that certain technical assumptions be adopted to provide a framework for coordination. Antenna mispointing should be assumed to be zero, reflecting the negligible net interference effect of mispointing from neighboring satellites on

either side. In addition, specific licensed orbital locations should be used to calculate interference from incumbent clustered DBS satellites. The Commission should also adopt minimum antenna size and performance standards for receive terminals to facilitate coordination.

If a coordination agreement cannot be reached, the Commission should nevertheless permit a new system to proceed if the proponent demonstrates that certain criteria designed to ensure protection of incumbent systems are not exceeded. SES Americom proposes a flexible, tiered approach that takes into account not only an objective C/I value, but also alternate criteria relating to service availability in order to reasonably protect existing services.

This tiered approach includes the following proposed steps:

1. The affected network's C/I will be not less than a minimum value, proposed to be 19 dB for CONUS/CONUS coordination; or, if this criteria is not met in a portion of the service area:
2. Unavailability of the affected network will not be increased by more than 10%; or if this criteria is not met in a portion of the service area:
3. The affected network's availability will not be decreased below 99.90%.

These criteria appropriately balance the interests of incumbents and new applicants and are supported by precedent.

Finally, the Commission should adopt its proposal to apply FSS licensing rules and associated performance bond, milestone, application limit, and reporting requirements to DBS license applications and market access requests. In particular, the Commission should rely on the first come, first served framework for processing applications and should not attempt to reintroduce spectrum auctions, which are barred by the ORBIT Act.

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SES Americom, Inc. ("SES Americom"), by its attorneys and pursuant to Section 1.415 of the Commission's Rules, 47 C.F.R. § 1.415, hereby submits its comments in response to the Notice of Proposed Rulemaking in the above-captioned proceeding, FCC 06-120, rel. Aug. 18, 2006 ("*Notice*"). SES Americom urges the Commission to act expeditiously to adopt a regulatory framework that will facilitate entry of new providers of Direct Broadcast Satellite ("DBS") service.

INTRODUCTION AND BACKGROUND

SES Americom strongly supports the Commission's long-overdue actions to address matters relating to introduction of U.S. services from DBS spacecraft at reduced orbital spacing. SES Americom submitted a request for authorization to serve the U.S. from a foreign-licensed DBS location at 105.5° W.L. more than four and a half years ago.¹ More than four

¹ In the matter of SES Americom, Inc., Petition for Declaratory Ruling to Serve the U.S. Market Using BSS Spectrum from the 105.5° W.L. Orbital Location, FCC File No. SAT-PDR-

years before that, the Commission itself had expressly foreseen that proposals for U.S. service involving orbital locations at less than nine degree spacing were likely.² Thus, the Commission has long been aware that the nine-degree spacing reflected in the U.S. assignments in the ITU Region 2 Plan for Broadcasting Satellite Service (the “Plan”) would become obsolete.

The issuance of the *Notice* and the recent International Bureau grants of proposals for DBS operations at reduced orbital spacing³ are welcome steps toward establishing a framework for future DBS operations and realizing the pro-competitive benefits that can be achieved by new DBS entry. As the *Notice* observes, implementation of rules for DBS operations at reduced orbital spacing will both permit existing DBS licensees to expand their service offerings and facilitate development of new competition. *Notice* at ¶ 31.⁴

Now, though, the Commission must quickly finish the job. SES Americom strongly supports the Commission’s position that pending completion of the rulemaking it has

200220425-00071. That petition was recently dismissed without prejudice to refile. See Letter of Robert G. Nelson to Nancy J. Eskenazi, DA 06-2438, dated Nov. 29, 2006. SES Americom will soon be resubmitting its request to correct the minor technical error identified by the Commission.

² *Policies and Rules for the Direct Broadcast Satellite Service*, Notice of Proposed Rulemaking, 13 FCC Rcd 6907, 6934 (1998) (“*Part 100 Rulemaking*”) (recognizing that requests to serve the U.S. from foreign licensees “could result in smaller satellite spacing than the current nine degree spacing between U.S. DBS orbital slots.”).

³ See *EchoStar Satellite L.L.C., Application to Construct, Launch, and Operate a Direct Broadcast Satellite at the 86.5° W.L. Orbital Location*, Order and Authorization, DA 06-2440, File No. SAT-LOA-20030609-00113 (IB rel. Nov. 29, 2006) (“*EchoStar 86.5 Order*”); *Spectrum Five, LLC, Petition for Declaratory Ruling to Serve the U.S. Market Using Broadcast Satellite Service (BSS) Spectrum from the 114.5° W.L. Orbital Location*, Order and Authorization, DA 06-2439, File Nos. SAT-LOI-20050312-00062/00063 (IB rel. Nov. 29, 2006) (“*Spectrum Five Order*”).

⁴ See also *EchoStar 86.5 Order* at ¶ 1 (authorized satellite “should allow EchoStar to offer its customers more local-into-local channels, expand its programming options, and more efficiently use the orbital resources and spectrum allocated for DBS service”); *Spectrum Five Order* at ¶ 1 (granting U.S. market access for new DBS satellites at 114.5° W.L. “will offer an opportunity for increased competition in the U.S. DBS market” that could give consumers “more satellite programming choices, more alternatives in subscription video providers and services at reduced prices for those services, and further technological innovation.”).

authority to act on applications for new U.S. service from DBS orbital locations at reduced spacing, subject to coordination with affected adjacent systems. However, the Commission must also develop technical standards for resolving impasses in coordination to ensure that new services can be introduced on reasonable terms. SES Americom proposes below a set of standards that can readily be applied where coordination attempts have stalled. These standards appropriately balance the incumbents' legitimate interests in protection of existing service offerings against the significant spectrum efficiency and consumer benefits that will result from expanded use of DBS spectrum.

SES Americom also supports the Commission's proposals to use the framework developed in the *Space Station Licensing Reform* proceeding,⁵ including first-come, first-served processing, for DBS applications. This regulatory regime has substantially decreased processing time for fixed-satellite service applications, and avoids the legal issues raised by auctioning of DBS licenses in light of the ORBIT Act.⁶

By swiftly finalizing rules for future DBS applications and adopting measures to resolve coordination stalemates, the Commission will create an environment in which both new and existing DBS operators can access spectrum that will allow delivery of more choices to U.S. consumers.

⁵ *Amendment of the Commission's Space Station Licensing Rules and Policies*, First Report and Order and Further Notice of Proposed Rulemaking, 18 FCC Rcd 10760 (2003).

⁶ *Open-Market Reorganization for the Betterment of International Telecommunications Act*, Pub. L. No. 106-180, 114 Stat. 48 (2000), *as amended*, Pub. L. No. 107-233, 116 Stat. 1480 (2002), *as amended* Pub. L. No. 108-228, 118 Stat. 644 (2004), *as amended*, Pub. L. No. 108-371, 118 Stat. 1752 (2004).

I. AUTHORIZING U.S. SERVICE BY DBS SATELLITES OPERATING AT REDUCED ORBITAL SPACING WILL SERVE THE PUBLIC INTEREST

Facilitating U.S. DBS service at reduced orbital spacing will result in substantial public interest benefits. It will promote efficient use of spectrum and significantly expand available capacity for video services for residential, enterprise, and mobile customers. Furthermore, the technical record before the Commission demonstrates that these consumer benefits can be achieved without impairing existing services. As a result, introduction of U.S. services from DBS locations at reduced orbital spacing will promote consumer welfare.

A. Use of DBS Spectrum at Reduced Orbital Spacing Will Enhance Video Services Competition

As SES Americom has explained in its recent comments in the 17/24 GHz BSS rulemaking proceeding, availability of additional spectrum for U.S. video services is critical to the expansion of competition.⁷ In particular, we identified three service areas where new 17/24 GHz BSS capacity would play an important role: video delivery to residential users, video delivery to mobile users, and video delivery for enterprise, educational and governmental applications. *Id.* However, new Ka-band BSS spectrum alone cannot meet the requirements for these services. As discussed in more detail below, availability of additional Ku-band DBS spectrum is also necessary to enhance competition.

Video Delivery to Residential Users: The Commission has found that introduction of new competitors in the residential video market segment would serve the public interest by giving consumers additional choices, especially in areas where terrestrial multi-

⁷ Comments of SES Americom, Inc., IB Docket N. 06-123 (filed Oct. 16, 2006) (“SES Americom 17/24 GHz Comments”) at 3-4.

channel video services are limited.⁸ SES Americom envisions two potential competitive alternatives for use of DBS spectrum at reduced orbital spacing to provide video content to residential customers. The first entails a third (or more) entrant(s) into the Direct-to-Home (“DTH”) satellite video market with a full-service offering comparable to the existing services of DirecTV and EchoStar. The second contemplates provision of a platform that can be used to satisfy demand for the increasing amount of user-generated and niche or targeted audience video.

SES Americom believes both approaches are viable, albeit with differing service requirements. These are discussed below.

As explained in our 17/24 GHz comments, SES Americom has estimated the amount of capacity required to provide sufficient national and local programming channels to offer packages that would be comparable to those offered today by DBS operators. SES Americom 17/24 GHz Comments at 8. We calculated that total bandwidth of approximately 9-10 Gbps would be needed to allow a new entrant to offer enough national and local channels (a significant portion of which would be in high definition format) to compete with existing service providers. This requirement represents approximately three BSS slots or two BSS slots combined with an FSS slot within a portion of the full-CONUS orbital arc no greater than 20 degrees from end to end. *Id.*

There are several reasons why a new entrant will need to use Ku-band DBS spectrum rather than relying solely on 17/24 GHz BSS capacity. First, rain fade is a more significant problem in Ka-band BSS than in DBS spectrum. Thus, particularly in areas with high precipitation, a new entrant will require access to DBS capacity in order to provide service

⁸ See, e.g., *Application of EchoStar Communications Corporation, General Motors Corporation, and Hughes Electronics Corporation, Transferors, and EchoStar Communications Corporation, Transferee*, Hearing Designation Order, FCC 02-284 (2002) at ¶ 89.

availability that allows it to compete with incumbent DBS operators. Second, Ku-band DBS equipment is readily available and will be less expensive than Ka-band BSS equipment, at least until the latter is being produced in sufficient quantities to provide economies of scale. As a result, use of Ku-band DBS spectrum will be necessary to allow a new entrant to provide consumers with an offering that is cost-effective and competitively priced.

The capacity requirements for supplying niche, targeted or user-generated video programming are more modest and can be met through a single satellite operating in a central arc position capable of providing service to the whole country. For the same reasons discussed above, however, Ku-band DBS capacity will offer significant advantages over Ka-band BSS spectrum for providing these services.

SES Americom plans to deploy spacecraft capable of serving the U.S. that will allow introduction of new fixed video services under either competitive model. These spacecraft will enable SES Americom to offer capacity that, in combination with additional FSS, Ka-band BSS and/or DBS capacity, can be used to offer programming packages in competition with incumbent providers.

Furthermore, SES Americom is uniquely positioned to support the delivery of targeted programming, including foreign language, sports, and arts programming, to residential users. Quite often, these services are unable to obtain carriage on existing video service platforms and have had to rely on the Internet or (in some limited cases) Ku-band FSS services to reach their audience. SES Americom's full-service broadcast center hosting the SES Americom IP-PRIME platform allows service providers to affordably offer hundreds of high-quality video channels to consumers through a "virtual headend." The network uses MPEG-4

technology to enable programming that is packaged at SES Americom's IPTV broadcast center in Vernon Valley, New Jersey, to be distributed to video hubs anywhere in the country.

This same network and proven technology will facilitate the delivery of niche programming using DBS spectrum from locations at reduced orbital spacing. The platform will allow owners of content to offer a la carte programming services much more cost effectively than can be realized today using Ku-band FSS spectrum. As a result, customers will have additional service options and content providers will have an additional outlet for programming distribution.

Video Delivery to Mobile Users: Availability of DBS spectrum at additional orbital locations also offers important benefits for multi-channel video service providers and mobile service operators offering mobile video services, including video delivery to vehicles. As we explained in the 17/24 GHz proceeding, today these services employ antennas that are large, heavy and expensive, limiting the attractiveness of the service and the scope of the customer base. SES Americom 17/24 GHz Comments at 4. Technologies are available that would permit use of smaller, lighter, less costly terminals, but these technologies require access to spectrum, and Ku-band DBS spectrum at existing orbital locations is fully occupied by services to fixed users. The availability of DBS spectrum from additional orbital locations will therefore provide a foundation for deployment of new mobile video services on a significant scale.

Video Delivery for Enterprise, Government, and Educational Applications: Finally, availability of additional spectrum will allow improvements for private network video delivery applications that have traditionally relied upon Ku-band FSS capacity. Specific applications include telemedicine, corporate training, and distance learning. The economies of scale achieved in Ku-band DBS will permit use of lower-cost terminals for these services.

Thus, as the Commission has recognized, allowing use of DBS spectrum for U.S. service from additional orbital locations will allow significant competitive gains by facilitating new entry, promoting the expansion of service options for consumers, and stimulating technological innovation.⁹ These benefits cannot be fully achieved through the use of alternative spectrum such as 17/24 GHz BSS or Ku- or Ka-band FSS capacity. DirecTV's suggestion that authorizing DBS spectrum use at reduced orbital spacing is not urgent given the availability of other capacity options¹⁰ is simply inconsistent with the market realities and the significant advantages of using Ku-band DBS spectrum to meet additional video service demand. Furthermore, as the *Notice* makes clear, even if there were no reasons to prefer Ku-band DBS spectrum over the alternatives, making DBS capacity available at reduced orbital locations is justified because it will "provide existing and potential DBS operators with another valuable option with which they can expand their service offerings." *Notice* at ¶ 31.

B. Reduced Orbital Spacing Will Promote Efficient Use of DBS Spectrum

In addition to increasing competition, allowing U.S. service from DBS satellites at reduced orbital spacing will serve the public interest by permitting more efficient use of spectrum. As the Commission acknowledges in the *Notice*, the ITU Region 2 Plan for DBS spectrum adopted in 1983 assumed that spacecraft would provide one analog television signal per channel, *Notice* at ¶ 5, and has not been updated in the intervening twenty-three years. Thus, the nine-degree spacing between U.S. orbital assignments in the Region 2 Plan is based on interference protection requirements for an analog service environment.

⁹ *EchoStar 86.5 Order* at ¶ 1; *Spectrum Five Order* at ¶ 1.

¹⁰ See *Notice* at ¶ 31, citing DIRECTV Comments in response to Report No. SPB-196, International Bureau Seeks Comments on Proposals to Permit Reduced Orbital Spacings Between U.S. Direct Broadcast Satellites ("*SPB-196 Notice*"), at 3.

As the record regarding DBS spacing demonstrates, introduction of new services at reduced spacing is technically feasible in light of the reduced protection requirements for digital services using current technology.¹¹ Specifically, digital services are more efficient, and existing modulation and coding techniques do not require protection margins (C/N+I) as high as those established for analog services.

As a result, operations from reduced orbital spacing can be accommodated without causing harmful interference to incumbent operations. The legitimate interests of existing DBS operators can be protected, while permitting greatly increased use of the available DBS spectrum.

However, in SES Americom's view it is unreasonable for incumbent DBS operators to insist that they are entitled to have no constraints placed on unlimited flexibility to modify their services in the future.¹² Such a demand flies in the face of the Commission's policies in favor of spectrum efficiency by suggesting that incumbents must have complete freedom in perpetuity to use spectrum as they wish, regardless of the efficiency gains that could otherwise be achieved. Commission precedent clearly rejects such an approach. For example, in moving to two-degree spacing of FSS spacecraft, the Commission recognized that costs would be imposed on incumbent operators and users.¹³ Nevertheless, the Commission determined that

¹¹ See, e.g., SES Americom Comments dated Jan. 23, 2004 in response to *SPB-196 Notice* at 27-33; SES Americom Reply Comments dated Feb. 13, 2004 in response to *SPB-196 Notice* at 10-16.

¹² See *Notice* at ¶ 30 (discussing statements of DirecTV and Pegasus regarding preservation of the flexibility of nine-degree-spaced DBS systems).

¹³ See *Licensing of Space Stations in the Domestic Fixed-Satellite Service and Related Revisions of Part 25 of the Rules and Regulations*, Report and Order, 54 RR 2d 577, 582 (1983) (Commission "recognized that the costs of reduced orbital spacings to meet growing traffic requirements and still maintain opportunities for new market entry might be quite high for some carriers and users").

the long-term efficiency gains resulting from reduced FSS spectrum amply justified the related costs.¹⁴

Furthermore, the suggestion that incumbents have reasonably relied on a permanent nine-degree DBS spacing environment rings hollow in light of Commission statements dating back to 1998 that recognize the likelihood of reduced orbital spacing.¹⁵ Thus, existing DBS licensees have long been on notice that they might need to adjust to operation with smaller orbital separation. They may have chosen to ignore that possibility in hopes that it would never come to pass, but they cannot claim to have been unaware of the issue.

As discussed below, SES Americom has developed a framework for the Commission to use in determining whether a proposed DBS spacecraft at reduced orbital spacing should be deemed to be coordinated with adjacent satellites. This framework is designed to ensure that deployment of satellites at reduced spacing can proceed, substantially increasing efficient use of DBS spectrum, provided that the impact on neighboring operations is minimal. In such cases, introduction of new capacity from additional DBS orbital locations is clearly consistent with the Commission's statutory obligation to "make available . . . a rapid, efficient, Nation-wide and world-wide wire and radio communication service." 47 U.S.C. § 151.

II. THE COMMISSION HAS AUTHORITY TO GRANT APPLICATIONS PENDING COMPLETION OF THIS RULEMAKING

SES Americom strongly supports the Commission's determination in the *Notice* that "current Commission rules can accommodate the filing of DBS applications that specify operations at locations other than the eight orbital slots assigned to the United States in the ITU

¹⁴ See *id.* at 590 (emphasizing that "the benefits to be derived from the timely availability of additional in-orbit transponder capacity out-weigh the costs of the reduced orbital separations we are adopting today").

¹⁵ See *supra* n.2.

Region 2 Plan.” *Notice* at ¶ 29. In fact, of course, the Commission has already acted on such applications in past years when it authorized DirecTV to provide U.S. service from an orbital location assigned to Canada in the Region 2 Plan and subsequently permitted the Canadian Nimiq satellites to serve the U.S.¹⁶ This precedent demonstrates that submission and grant of applications to use non-U.S. DBS locations is fully consistent with the Commission’s existing procedural and regulatory framework.

No persuasive arguments to the contrary have been made to the Commission in the years during which this issue has been pending. In particular, introduction of new service from additional DBS orbital locations does not conflict with any Commission rule requiring minimum spacing today,¹⁷ and ITU procedures explicitly provide for a coordination framework that accommodates modifications to the original Region 2 Plan assignments. *Notice* at ¶ 29.

Thus, no change to Commission regulations or international processes is needed to allow requests for U.S. service from locations not included in the original Plan to be filed, considered, and granted. As noted previously, in the *Part 100 Rulemaking* the Commission expressly contemplated as early as 1998 that requests for U.S. market access from foreign-licensed DBS orbital locations would result in reduced orbital separation. The rules adopted in that proceeding include a requirement that applicants make a technical showing with respect to compatibility of their proposed systems with assignments in the Region 2 Plan and pending

¹⁶ *Id.* at ¶ 15 (describing proceedings leading to authorization of DirecTV 5 to serve U.S. customers from 72.5° W.L. and grant of authority to Digital Broadband Applications Corp. and Pegasus to use Nimiq 1 and 2 for U.S. service).

¹⁷ *See, e.g., Spectrum Five Order* at n.130 (“we have no spacing rules with regard to the provision of DBS service”).

modifications.¹⁸ However, the Commission determined that no new technical standards were needed for DBS antennas.¹⁹

The recent grants of authority to EchoStar and Spectrum Five confirm that action on applications to serve the U.S from additional DBS orbital locations is consistent with current Commission rules and policies. In particular, the Commission specifically rejected in those proceedings arguments that successful coordination with other operators was a necessary prerequisite to action on the applications.²⁰

Accordingly, the Commission need not complete this rulemaking prior to acting on requests for U.S. market access from foreign-licensed orbital locations. Nevertheless, the Commission should expeditiously finalize rules here to establish principles for resolving coordination disputes and to permit the freeze on DBS applications to be lifted.

III. THE COMMISSION SHOULD ADOPT A REGULATORY FRAMEWORK TO ENSURE THAT NEW SERVICES CAN BE COORDINATED ON REASONABLE TERMS

The *Notice* requests input on whether the Commission should adopt measures to resolve coordination impasses between proposed new entrants and incumbent U.S. DBS providers. *Notice* at ¶ 43. SES Americom strongly urges the Commission to implement such rules to ensure that competitive entry is possible on reasonable terms. As it has done in the *EchoStar 86.5* and *Spectrum Five Orders*, the Commission should grant applications for U.S. service from new DBS orbital locations subject to coordination. However, the Commission must also use its regulatory authority to promote competition by establishing reasonable interference protection standards that will allow new entry even absent agreement from an incumbent.

¹⁸ 47 C.F.R. § 25.114(c)(22)(i).

¹⁹ See *Notice* at ¶ 16.

²⁰ See, e.g., *Spectrum Five Order* at ¶ 21 (Commission precedent does not “require coordination as a prerequisite to grant of market access.”).

The alternative approach mentioned in the *Notice*, denying authority to a proposed new entrant if coordination cannot be successfully concluded within a set period of time, *Notice* at ¶ 42, would not serve the public interest. Under that approach, an incumbent operator could impede new competition simply by refusing to agree to coordination, without regard to the technical merits.

In order to promote competition and efficient use of spectrum, the Commission should implement a regulatory framework that will facilitate coordination and allow the staff to objectively evaluate a proposed new system if coordination fails. SES Americom proposes that the policies and standards described below and in the attached Technical Appendix be adopted for consideration of proposals for new DBS service to the U.S.

A. The ITU OEPM Calculation Should Be Used Only to Determine if a Network Is “Affected”

As described in the *Notice*, the ITU rules provide for calculation of an overall equivalent protection margin (“OEPM”) as the “basic measure” of interference under the BSS Plans. *Notice* at ¶ 34. Under Annex 1 of Appendices 30 and 30A, a network is considered to be “affected” if a proposed network will reduce the OEPM of any channel and test point of the network below -0.25 dB, or by 0.25 dB or more if the OEPM is already negative. *Id.* at ¶ 35.

Thus, under current ITU rules, the OEPM calculation is the trigger to determine whether a given network is “affected” by proposed new entry. SES Americom agrees with the Commission, however, that the OEPM calculations are not well suited to facilitating coordination once it has been triggered. As the *Notice* observes, under the ITU’s approach, “the calculations are difficult and complex and the acceptable C/I levels depend on the reference situation such that, the higher the interference level initially, the higher the acceptable level of interference would be.” *Id.* at ¶ 45 (footnote omitted).

Instead, once coordination has been triggered and if the parties are unable to reach a resolution, the Commission should determine whether entry should be allowed using standard metrics that can easily be applied, including C/I (the ratio of the wanted power level to the interfering signal) and data regarding the impact of the new entry on the affected network's service availability. These matters are addressed in more detail below.

B. The Commission Should Establish Time Limits for Coordination and for Arbitration if Coordination Fails

In order to ensure that coordination delays do not effectively preclude new entry, the Commission should establish a time frame for coordination discussions following grant of a U.S. license or authority for U.S. market access. In particular, the milestones for DBS service require execution of a binding, non-contingent contract within one year following grant. 47 C.F.R. § 25.148(b). To permit grantees to meet this deadline, the Commission must ensure that coordination discussions are subject to an outside time limit.

Specifically, SES Americom proposes that the Commission allow six months following award of a license or market access rights for coordination discussions between the grantee and affected networks. If by the end of that period agreement has not been reached with any affected operator, the matter should be submitted to the Commission for decision. The proponent of the new system would trigger Commission consideration by submitting an analysis in accordance with the protection criteria described below. The operator of the affected network should be given an opportunity to respond to the data presented.

The Commission staff should then have two months to act. This should provide enough time for the Commission to evaluate the technical materials and make a determination whether the proposed operations are consistent with the specified protection criteria. Furthermore, if the Commission authorizes the grantee to proceed, there will still be sufficient

time (four months) for the grantee to finalize and execute a construction contract for the spacecraft in time to meet the one-year milestone.²¹

C. Antenna Mispointing Should Not Be Considered Because It Has No Material Effect on Total Interference

In the context of coordination discussions and for purposes of demonstrating that protection criteria are met, antenna mispointing should be assumed to be zero. SES Americom recognizes that mispointing, typically within the range of 0.5 degrees, is not uncommon with respect to existing DBS user terminals, especially those deployed prior to the advent of more accurate pointing technology. However, using a mispointing factor in analyzing interference from a proposed new DBS spacecraft would be misleading.

Most importantly, as described in Section 3.3 of the Technical Appendix, antenna mispointing is random. As a result, only in a very small percentage of cases will an antenna be mispointed in the direction of the geostationary arc at all. Furthermore, even for this small subset of cases involving mispointing toward an adjacent satellite, the net impact of the mispointing on the interference environment is negligible.

Specifically, if an antenna is mispointed toward an adjacent satellite to the east, it will receive relatively more interference from that adjacent satellite than it would if it were pointed accurately. However, that antenna will also receive relatively less interference from the adjacent satellite to the west than it would if it were pointed accurately. Thus, mispointing will have no significant net effect on the total strength of the interfering signals received at the antenna. As a result, user terminal pointing accuracy should not be used as a factor in analysis of proposals for new DBS spacecraft at reduced orbital spacing.

²¹ If the Commission is unable to resolve the matter within the specified two-month time period, the grantee should be automatically entitled to a corresponding extension of the construction milestone schedule.

D. To Facilitate Coordination, the Commission Should Adopt Performance Standards for DBS Receive Antennas

The *Notice* observes that the Commission declined to impose DBS receive antenna standards when it previously considered the prospect of reduced orbital spacing during the *Part 100 Rulemaking* proceeding.²² At that time, the Commission concluded that implementation of such standards was not needed to ensure protection of existing U.S. DBS operations. *Id.*

SES Americom believes that the time is ripe to revisit this issue. In particular, we support adoption of minimum antenna sizes and performance standards to simplify coordination and define eligibility for interference protection.

As discussed in the Technical Appendix at Section 3.1, we propose that the Commission afford interference protection to receive terminals as small as 52 cm for new networks providing U.S. service from DBS locations at reduced orbital spacing. However, SES Americom also recognizes the need to accommodate the significant deployed base of smaller antennas by incumbent U.S. DBS licensees. Accordingly, we propose that antennas as small as 45 cm be entitled to interference protection for networks operating at orbital locations assigned to the U.S. under the Region 2 Plan, until these antennas are phased out of service due to the increasing deployment of multibeam antennas of larger diameter (52 cm and larger).

In each case, the specified minimum size would not preclude an operator from deploying smaller terminals. Instead, the size simply defines the appropriate level of interference protection. Thus, an operator would be free to deploy smaller antennas, but would not be entitled to insist on protection of those antennas beyond the degree of protection applicable to the minimum dish size.

²² *Notice* at ¶ 16, citing *Policies and Rules for the Direct Broadcast Satellite Service*, Report and Order, 17 FCC Rcd 11331, 11391-92 ¶ 130 (2002).

The Commission should also adopt specifications for off-axis gain performance for both DBS systems using U.S. Plan assignments and new entrants. In each case, the gain levels should be derived based on the minimum antenna size noted above and applying the reference patterns set forth in ITU Recommendation BO.1213.

E. Licensed Orbital Locations Should Be Used for Coordination with Clustered DBS Satellites

Coordination with DBS satellites operating in a cluster within 0.2 degrees of the nominal orbital location under the Plan should generally be based on the licensed orbital location of each satellite in the cluster. *See* Technical Appendix at Section 3.2. This will ensure that the coordination analysis reflects the actual cluster deployment, not a theoretical worst case configuration. An exception should be made, however, in the case of a cluster satellite that is nearing its end of life and will not be in service when the proposed new entrant commences operation. In those circumstances, the coordination analysis should be based on the technical characteristics of the proposed replacement satellite as filed with the Commission.

F. The Commission Should Adopt Uniform Protection Criteria Based on C/I and Availability Calculations

Finally, if coordination efforts are ultimately unsuccessful, the Commission should apply a combination of the interference protection metrics identified in the *Notice* to determine whether to permit a proposed system to proceed. The framework should permit deployment of a new system if it meets a set of tiered criteria that take into account the affected network's C/I, the affected subscribers' unavailability increase, and an absolute minimum availability.

SES Americom has developed the tiered approach to simplify coordination while ensuring that service to existing subscribers of incumbent systems will not be materially affected.

The use of satellite clusters by U.S. DBS providers creates an extremely complex coordination environment because multiple satellites at different specific orbital locations and with different beam configurations, coverage areas, and power levels must be taken into account. As a result, a one size fits all approach with a single interference protection criterion will not be effective.

SES Americom's proposal includes a C/I value for evaluating the impact on an affected network from proposed new entry, but also allows a new entrant to demonstrate that in areas where the C/I criterion is not met, the proposed operations would not materially impair the affected network's availability. Thus, the proposal ensures protection of incumbents' services in all cases while accommodating the complexities of coordinating with clustered satellites.

Specifically, new operations should be permitted to proceed notwithstanding lack of a coordination agreement if the proponent can demonstrate that:

1. Taking into account interference from the proposed new satellite, the affected network's C/I will be not less than 19 dB for CONUS/CONUS coordination;²³ or if this criteria is not met in any of the affected coverage area:
2. The increase in the affected network's service unavailability resulting from operations of the proposed new satellite will not be greater than 10%; or if this criteria is not met in any of the affected coverage area:
3. The affected network's service unavailability will not be decreased below 99.90% due to operations of the proposed new satellite.

These protection criteria are supported by ITU and Commission precedent. As described in the Technical Appendix at Section 3.4, 19 dB exceeds the C/I value obtained from

²³ In cases involving coordination of spot beams, the tiered approach described herein should also be used, but appropriate C/I values would need to be agreed on by the operators in the course of the coordination.

using the methodology in Rec. ITU-R S.741-2, and experience from FSS service indicates that methodology is conservative. In previous proceedings, the Commission has recognized that “a 10% increase in unavailability is insubstantial and does not approach a level that could be considered harmful interference.”²⁴ Finally, allowing a DBS provider to maintain a service availability level of 99.90% is consistent with typical service objectives.²⁵

The standards SES Americom recommends would apply uniformly to any coordination dispute. The Commission observes in the *Notice* that DirecTV has proposed adoption of different C/I levels to define acceptable levels of interference, depending on whether the calculation is for interference from a proposed system into an incumbent system or from an incumbent system into a proposed system.²⁶ The Commission acknowledges that such an approach might be acceptable in the context of operator-to-operator negotiations, but rejects it as a basis for regulatory action. Specifically, the Commission states that it does “not believe that such asymmetries, which would lead to dictating two different classes of service in our rules, are appropriate for regulatory enforcement.” *Notice* at ¶ 44. SES Americom strongly agrees that

²⁴ *Notice* at ¶ 47, citing *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; Amendment of the Commission's Rules to Authorize Subsidiary Terrestrial Use of the 12.2-12.7 GHz Band by Direct Broadcast Satellite Licensees and Their Affiliates; and Applications of Broadwave USA, PDC Broadband Corporation, and Satellite Receivers, Ltd. to Provide A Fixed Service in the 12.2-12.7 GHz Band*, Memorandum Opinion and Order and Second Report and Order, 17 FCC Rcd 9614, 9643 (2002).

²⁵ *See Notice* at ¶ 46 (noting that although the ITU Region 2 BSS Plan was based on a target availability of 99.7%, domestic DBS operators “typically aim for at least 99.9% availability for their systems, except in the high-precipitation and fringe coverage areas”).

²⁶ *Notice* at ¶ 44, citing *Petition of DIRECTV Enterprises, LLC for a Rulemaking on the Feasibility of Reduced Orbital Spacing in the U.S. Direct Broadcast Satellite Service* (filed Sept. 13, 2003).

Commission protection criteria should not distinguish between incumbent systems and new entrants.²⁷

The protection criteria outlined above will permit the Commission staff to make a determination regarding the technical feasibility of introduction of a new proposed DBS system and its effect on incumbent operations. By adopting clear, objective standards for evaluation of new satellite proposals that balance the interests of incumbents and new entrants, the Commission will be able to resolve coordination impasses quickly and efficiently.

IV. THE COMMISSION SHOULD APPLY FSS LICENSING RULES TO U.S. DBS APPLICATIONS

SES Americom strongly supports the Commission's proposals in the *Notice* to extend the licensing regime applicable to FSS systems to DBS applications as well. In particular, we agree that the Commission should use first come, first served processing to consider both applications for U.S. DBS licenses and requests for U.S. market access from foreign-licensed systems. As the Commission observes, experience with that licensing method in the FSS context suggests that it would allow the FCC "to issue licenses for DBS satellites quickly, while still accommodating existing or new competitive systems in the same spectrum." *Notice* at ¶ 24.

In light of the *Northpoint* decision,²⁸ the Commission should not attempt to reinstate auctions for U.S. DBS licenses and certainly cannot extend the use of auctions to requests for U.S. market access from foreign orbital locations. SES Americom and other

²⁷ For the same reason, we agree with the Commission's proposal to require MVDDS and NGSO/FSS systems to protect future DBS systems as well as incumbent operations. *Notice* at ¶¶ 53-58. All DBS licensees should be entitled to the same regulatory treatment with respect to interference protection from other services.

²⁸ *Northpoint Technology, Ltd. and Compass Systems, Inc. v. Federal Communications Commission*, 412 F.3d 145 (D.C. Cir. 2005).

applicants seeking authority for new DBS systems propose international services, and therefore the ORBIT Act's prohibition on auctioning of "orbital locations or spectrum used for the provision of international or global satellite communications services" squarely applies. 47 U.S.C. § 765(f). The Commission has granted requests for use of foreign DBS locations to serve the U.S. without conducting auctions in the past, and there is no conceivable rationale for departing from that precedent now that the auction system for U.S. DBS licenses has been overturned in the *Northpoint* proceeding.

In addition to first come, first served processing, the Commission should apply the other basic elements of the FCC licensing scheme to new U.S. DBS operations. In particular, SES Americom supports the Commission's proposal to apply the FSS performance bond, milestone, application limit, and reporting requirements to DBS systems. *See Notice* at ¶¶ 26-27.

CONCLUSION

For the foregoing reasons, SES Americom respectfully requests that the Commission expeditiously complete this rulemaking and adopt a regulatory framework that will promote new competitive DBS entry.

Respectfully submitted,

SES AMERICOM, INC.

Nancy J. Eskenazi
Vice President &
Assoc. General Counsel
SES Americom, Inc.
Four Research Way
Princeton, NJ 08540

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By: /s/ Karis A. Hastings
Peter A. Rohrbach
Karis A. Hastings
Hogan & Hartson L.L.P.
555 Thirteenth Street, N.W.
Washington, D.C. 20004
(202) 637-5600

Technical Appendix: Proposed U.S. BSS Service Requirements and Coordination Framework

1 Background

The BSS Plans for Regions 1, 2, and 3 established at WRC-77 were based on the use of a single FM/TV analog carrier per channel. Since the development of these Plans close to 30 years ago, the Region 1 and 3 Plans have been subsequently modified taking into consideration advancements in modulation and transmission techniques, *i.e.*, lower required C/N and more spectrum-efficient equipment, which led to the use of the spectrum for digital services rather than analog services. These modifications have permitted more efficient use of DBS spectrum. The Region 2 Plan, however, has not been updated to reflect the exclusively digital BSS service environment.

Maintaining artificially restrictive requirements to protect analog FM/TV services that are not carried on BSS satellites would conflict with Commission policy goals and impair efficient use of the spectrum. Accordingly, in developing standards for delivery of BSS service in the U.S. from additional orbital locations, the Commission should not rely on the outdated assumptions underlying the Region 2 Plan.

The following sections discuss the modifications implemented in the Region 1 and 3 Plans at WRC-2000 and WRC-2003 and describe SES Americom's recommendations for requirements to be adopted by the FCC as a framework for authorizing use of BSS spectrum from orbital locations at reduced spacing.

2 ITU BSS Plans: Basic Technical Characteristics

2.1 Orbital spacing

The Plans for Regions 1 and 3 have been based generally on nominal orbital positions spaced uniformly at intervals of 6 degrees. The Plan for Region 2 has been based on a non-uniform spacing.¹ The Region 2 Plan resulted in a 9 degree separation for the U.S. assignments.

¹ ITU Appendix 30 Annex 5 Section 3.10.

2.2 Orbital separation limit for interference calculation

WRC-2000 adopted the use of an orbital separation limit for interference calculation in Regions 1 and 3. Beyond this limit no interference is taken into account. Initially, the values used for the orbital separation limit were 15° for co-polar and 9° for cross-polar emissions. Later a single orbital separation limit of 9° was adopted.²

The use of an orbital separation limit significantly simplifies and facilitates coordination between satellite networks compared to the ITU OEPM MSPACE program methodology. Therefore, use of the ITU OEPM methodology solely as a coordination trigger and relying on the single entry C/I calculation methodology as an interference protection measure is more appropriate as indicated in the recommendations in section 3.

2.3 Angular antenna discrimination (D)

The value for the angular antenna discrimination D is derived from the equations presented in Recommendation ITU-R BO.1213. For Region 2, $G_{max} = 33.3$ dBi corresponding to a 45 cm diameter antenna at 12.2 GHz and 65% efficiency.³

Numerous 45 cm antennas have been deployed in the U.S. for provision of BSS DTH services. In order to develop protection criteria as new BSS satellites are implemented, SES Americom recommends adoption of performance standards for 45 cm antennas as indicated in section 3.1.

2.4 Protection ratios between television signals⁴

WRC-2000 adopted, for the protection of digital assignments from digital emissions, a protection ratio value of – 21 dB for co-channel signals to be applied to calculation of downlink equivalent protection margins in the Region 1 and 3 Plans. The Region 1 and 3 Plans as established by WRC-2000 assume the use of digital modulation. Developing a C/I protection value based on actual digital carriers is the right approach. However, the ITU value of 21 dB is a conservative number. Accordingly, SES Americom

² ITU Appendix 30 Annex 5 Section 3.19.

³ ITU Appendix 30 Annex 3 Section 2.4.

⁴ ITU Appendix 30 Annex 5 Section 3.4.

recommends that the FCC adopt a C/I protection criteria which is more in line with the requirements for digital services as indicated in section 3.4.

3 Recommended Requirements for Coordination and Implementation of Additional BSS Service in the U.S.

The following sections provide a summary of SES Americom's recommendations for coordination and service requirements for the introduction of additional BSS services in the U.S. at reduced orbital spacing. The Commission should grant a license or authorize U.S. market access if these requirements are met. These recommendations have been developed taking into consideration some of the developments and advancements in the Region 1 and 3 Plans as discussed in the previous section. If the service provider proposes to use service parameters that fall outside the requirements outlined below, such operations must be coordinated with the affected party.

Once coordination is triggered pursuant to the ITU OEPM methodology, the coordination process will be initiated. For the coordination process, the calculation methods for interference into broadcasting satellite systems involving digital emissions shall be performed for a single entry C/I calculation in accordance with the requirements as outlined below.

3.1 Receive antenna standards

SES Americom recommends that the Commission adopt the following minimum performance standards for BSS receive antennas:

- For operations at existing U.S. assignments⁵ under the Region 2 Plan:
Minimum antenna size of 45 cm with an off-axis gain performance derived from the equations presented in Recommendation ITU-R BO.1213.
- For BSS systems serving the U.S. at reduced orbital spacing:

⁵ In accordance with the Region 2 BSS and feeder link Plans, the United States is assigned eight orbital locations for providing broadcasting-satellite service. The eight U.S. orbital positions, proceeding from east to west (all West Longitude), are 61.5°, 101°, 110°, 119°, 148°, 157°, 166°, and 175°.

Minimum antenna size of 52 cm with an off-axis gain performance derived from the equations presented in Recommendation ITU-R BO.1213.

Earth stations shall be protected from interference caused by other satellite networks only to the degree to which harmful interference would not be expected to be caused to an earth station employing an antenna conforming to the referenced patterns defined above. Furthermore, the operations of any earth station with an antenna not conforming to the referenced patterns shall impose no limitations upon the operation or design of any space station beyond the limitations that would be expected to be imposed by an earth station employing an antenna conforming to the reference patterns above.

3.2 *Nominal orbital location*

Coordination shall be based on current orbital locations within the cluster of the assigned BSS orbital location as defined by the ITU. To facilitate the coordination process, the actual satellite positions as licensed and authorized by the FCC shall be used during the coordination process for calculating the C/I. However, if a cluster satellite is scheduled to be replaced prior to the implementation of the satellite network seeking coordination, the characteristics of the replacement satellite shall be used for purposes of coordination.

3.3 *Antenna mispointing*

SES Americom understands that the vast majority of existing antennas, when installed, have mispointing typically within approximately 0.5 degrees. However, in calculating C/I, antenna mispointing should be assumed to be zero. Antenna mispointing, if in the plane of the geostationary orbital arc (worst case scenario), will result in the antenna receiving increased interference from a satellite on one side of the desired satellite, but proportionally reduced interference from the satellite on the other side. As a result, the increased interference from one side is cancelled out by the decreased interference from the other side, so that the effect of the mispointing on the overall C/I calculation is nullified. Furthermore, in the vast majority of cases, the receive terminals will not be mispointed towards an interfering satellite at all, but will be pointed away from the geostationary arc.

3.4 Protection criteria for U.S. BSS service

SES Americom proposes single entry protection ratio values in order to provide acceptable interference levels in line with the Eb/No and C/N requirements of the digital carriers presently being transmitted. In particular, SES Americom proposes that if coordination cannot be achieved, deployment of a satellite at reduced orbital spacing be permitted if the proponent demonstrates that:

- a) The resulting C/I value into the affected satellite network will be not less than 19 dB for CONUS/CONUS coordination;

This C/I value of 19 dB exceeds the C/I value derived by utilizing the methodology for C/I calculation as set forth in Rec. ITU-R S.741-2 for single entry interference (SEI) protection criteria : $C/I = C/N + 12.2$ (dB)

Required C/N for DTH services is better than 5.6 dB and therefore the resulting C/I will be 17.8 dB (= 5.6+12.2). In the equation $C/N + 12.2$ dB the 12.2 dB value is equivalent to a 6% or less impact to the service required C/N.

We note that experience in the FSS context suggests that the equation $C/I = C/N + 12.2$ dB is conservative. Specifically, FSS systems using digital services provide service levels with equivalent and in some cases higher availability levels than those provided by the BSS DTH. It has been demonstrated that these digital services can run with C/I values lower than what is being calculated with the ITU equation : $C/I = C/N + 12.2$.

or

- b) If the C/I criteria of (a) is not met in any portion of the service area, then the increase in unavailability from the proposed network into the affected network shall not be greater than 10%;

or

- c) If the criteria in (a) and (b) are not met in any portion of the service area, then the affected network's calculated availability, taking into account interference from the proposed network, shall not be less than 99.90 %.

3.5 Analog FM/TV transmissions

Transmission of analog carriers shall not be allowed under any circumstance.