

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

In the Matter of)
)
Proposals to Permit Reduced Orbital) Report No. SPB-196
Spacings Between U.S. Direct)
Broadcast Satellites)

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REPLY COMMENTS OF DIRECTV, INC.

DIRECTV, Inc. (“DIRECTV”) hereby offers the following reply comments in connection with the above-captioned *Public Notice*.

I. INTRODUCTION AND SUMMARY

The Commission’s wisdom in initiating a systematic exploration of the issues attending a possible reduction in DBS orbital spacing is already apparent. A wide cross-section of interested parties – including U.S. and foreign satellite operators, satellite manufacturers, and foreign administrations – have weighed in thoughtfully on the questions of whether and how the Commission should proceed in examining the possible co-existence of new short-spaced “tweener” satellites with existing and future nine-degree-spaced DBS spacecraft.

A number of parties have agreed with DIRECTV that the issues confronting the Commission with respect to a possible implementation of reduced orbital spacing are extremely serious, and should not be decided through an *ad hoc* series of piecemeal international negotiations – at least without further study and a conscious policy decision to do so.¹ Those

¹ See, e.g., Comments of Bell ExpressVu LP at 1-2 (underscoring that “the financial consequences of a change from 9 degree satellite spacing to 4.5 degree satellite spacing would undermine billions of dollars of satellite-based infrastructure” and urging that any contemplated changes occur through international process); Comments of The Boeing Company at 2 (noting the importance of “protect[ing] existing services and current

parties – primarily SES Americom, Inc. (“SES”) and the U.K. administration – that have urged the Commission not to analyze the feasibility of reduced DBS orbital spacing through a rulemaking proceeding due to an alleged inconsistency with ITU Radio Regulations have either missed DIRECTV’s point entirely or are simply incorrect.

Orbital spacing, as with other operating parameters of satellites authorized to serve the United States, implicates two parallel regulatory structures – one international, created by the International Telecommunications Union (“ITU”), and one domestic, created by the FCC. Historically, orbital spacing in Region 2 of the ITU BSS Plan has been based on satellites being located approximately nine degrees apart for co- or adjacent coverage, and this nine-degree spacing policy has been a cornerstone of U.S. DBS service deployment.

There is no question, and DIRECTV has never denied, that “[t]o give a measure of flexibility and to allow for future development, Appendices 30/30A to the ITU Radio Regulations detail a process for changing the BSS Plans to modify existing Plan assignments or

subscribers,” citing the “billions of dollars that have been invested in DBS transmission and reception equipment,” and recommending that the Commission “consider more broadly the optimal spacing to maximize the number of DBS orbital positions that can provide service to the entire continental United States”); Comments of Telesat Canada at 4 (observing that it and its U.S. counterparts now have “millions of customers tuned to their DBS spacecraft,” that “launch of these satellites and development of these networks have also cost each of these operators more than a billion dollars,” and that “[w]ith so much at stake, the full ramifications of any findings in this proceeding must be thoroughly analyzed and understood in terms of their impact on operational networks in the Region 2 Plan, the integrity of the Region 2 Plan, and the associated ITU compliance requirements”); Comments of the State of Hawaii at 4 (advising the Commission not to “delegate the process of coordinating the coverage areas of new DBS satellites to the unstructured, non-public, and unsupervised process of operator-to-operator negotiations,” and underscoring the need for the Commission “to ensure that interference from adjacent DBS satellites does not reduce the signal strengths of existing DBS services even further, making them potentially unavailable to current subscribers”).

to include new orbital assignments.”² But this observation is not in tension with, and indeed, leaves wholly intact, the Commission’s independent obligation to assess the implications of such proposed modifications on U.S. satellite operations, and the concomitant effects they may have on U.S. consumers.

In this regard, it has been a hallmark of United States domestic satellite communications policy that non-U.S. satellite operators seeking to serve the United States must comply with all Commission service rules, including technical and operating parameters, applicable to U.S. satellite operators.³ As set forth below, a revised DBS service rules regime could easily include blanket technical and operating licensing parameters, instituted through a rulemaking process, which are designed to set a default overall interference environment that will (i) protect the existing services and future growth of currently-deployed DBS systems, (ii) accommodate tweeker satellite operations (should these be deemed to serve the public interest), and (iii) greatly streamline the international ITU process for foreign satellite operators seeking to serve the United States. Furthermore, in advocating the Commission’s exploration of such an approach, DIRECTV is not arguing for the implementation of “one size fits all” technical solutions⁴ or the imposition of “rigid technical parameters on prospective new entrants.”⁵ In such a regime, a tweeker satellite would be granted presumptive entry if it meets pre-determined Commission operating conditions for U.S. service, but could vary these parameters by seeking agreement

² Comments of the United Kingdom Office of Communications (Jan. 21, 200[4]) (“Comments of Ofcom”).

³ See In the Matter of the Commission’s Regulatory Policies to Allow Non-U.S. Licensed Space Stations to Provide Domestic and International Satellite Service to the United States, *Report and Order*, 12 FCC Rcd 24094 (1997) (“DISCO II Order”), at ¶ 173.

⁴ Comments of Ofcom; see Comments of Gibraltar Regulatory Authority at 2; Comments of SES at 14.

⁵ Comments of New Skies Satellites N.V. at 8.

from the affected Region 2 administration and operators in accordance with the procedures contained in Appendices 30 and 30A of the ITU Radio Regulations. Given that *every* Region 2 tweener satellite filed to date exceeds the limits specified in Annex 1 to these Appendices (and indeed, the less conservative protection criteria proposed in DIRECTV's Petition for Rulemaking), a blanket licensing regime could eliminate or streamline the protracted and expensive processes of seeking agreement under ITU rules.

In terms of the parameters needed to protect operating DBS satellites, DIRECTV also addresses below technical proposals and analyses offered by EchoStar and Pegasus. In general, all of EchoStar's analysis in this proceeding is infected by a fundamental "flip-flop." EchoStar originally was of the view that the insertion of a lower-power SES tweener satellite 4.5 degrees away from operating EchoStar and DIRECTV satellites "would fundamentally change the interference and technical landscape for DBS operations in the United States."⁶ Subsequently, EchoStar apparently agreed to multiple satellite capacity deals with SES to purchase or lease all of the capacity on SES FSS and BSS satellites to be co-located at 105.5° W.L. Now, EchoStar submits technical analyses that would provide grossly inadequate protection for EchoStar's DBS service *but for* the fact that the BSS tweener satellite that is proposed by SES will essentially be designed and intended for EchoStar's use – meaning that EchoStar is willing to make an internal trade off of reduced service availability at an existing slot in exchange for a significant increase in aggregate BSS capacity gained through one or more tweener slots. In other words, EchoStar essentially is coordinating with itself.

EchoStar's technical claims arising from such "coordination" cannot reasonably serve as a basis for generally applicable spectrum policy. EchoStar's is hardly a case that can inform the

⁶ Comments of EchoStar Satellite Corporation, SAT-PDR-20020425-00071 (June 17, 2002), at 5.

Commission's judgment as to the proper orbital spacing of co-frequency, co-coverage tweener spacecraft relative to non-affiliated operating and planned DBS satellites that are spaced nine degrees apart.

For its part, Pegasus proposes a technical approach that simply does not provide the requisite level of interference protection that deployed DBS systems require to operate and expand, and its approach should be rejected outright by the Commission. At any rate, a rulemaking proceeding would provide the appropriate forum for collecting, analyzing and debating the technical and policy aspects of such issues in a coherent manner.

Finally, DIRECTV urges the Commission to reject the attempts of Pegasus and EchoStar to use this proceeding to advance opportunistic agendas that are unrelated to the subject matter at hand. There is no procedural or substantive reason for the Commission to implement a full-CONUS DBS spectrum cap, as Pegasus has proposed, or to address DIRECTV's pending arrangement with Telesat to utilize capacity at the 72.5° W.L. orbital position in this proceeding, which is the subject of separate pending applications before the Commission.

DIRECTV supports the Commission's exploration of the technical and policy issues attending the introduction of tweener satellites at 12 GHz. But the Commission must proceed systematically to protect currently-deployed DBS services and the plans that DBS operators have for expansion in terms of serving additional local markets with satellite-delivered local channels, deploying higher-power spot beam satellites for this purpose, and launching additional spacecraft to provide other advanced digital services. There is too much at stake for U.S. DBS subscribers to leave the question of reduced DBS orbital spacing to individual international negotiations with no coherent policy framework or examination of appropriate protection criteria.

II. A DRAMATIC CHANGE IN U.S. DBS ORBITAL SPACING POLICY WARRANTS A RULEMAKING PROCEEDING

A. Nine-Degree Orbital Spacing Has Been A Key Element of U.S. Regulatory Policy From The Inception Of The DBS Service

As a threshold matter, the assertion of some parties, led by SES, that there is and has been no Commission policy of nine-degree orbital spacing in the DBS service is simply incorrect.⁷

The Plan for BSS orbital position and frequency assignments to the countries of Region 2 was adopted at the Regional Administrative Radio Conference of 1983 (RARC-83), and incorporated in the Radio Regulations at the 1985 World Administrative Radio Conference. Throughout the Plan, orbital position assignments for satellites with co-polarized and co- or adjacent-channel frequency assignments and overlapping coverage areas are separated by at least nine degrees.

In the U.S. preparatory work for RARC-83, applicants for DBS licenses had argued that orbital separations considerably greater than nine degrees were required for such satellites. However, based on its own studies, and taking into account the large number of U.S. applications that were filed prior to RARC-83, the Commission concluded that the U.S. position at the Conference should be to base planning on the use of one-meter receive dishes and a minimum of nine-degree separation between co-frequency, co-polarized satellites serving adjacent or overlapping BSS coverage areas. Other Region 2 countries supported this position, and to this day, the entire Region 2 BSS Plan remains based upon this principle.

In the twenty years since the Region 2 Plan was adopted, the Commission has continued to support a policy of nine-degree minimum spacing between adjacent satellites serving overlapping BSS coverage areas in the U.S., Canada, and Mexico. The Commission has recognized that this minimum separation has enabled advances in technology such as digital

⁷ Comments of SES at i.

video compression and improvements in receiver and antenna design to vastly increase the number of channels available to subscribers while reducing the size, cost, and complexity of installation of DBS subscriber antennas. In revising its rules for the DBS service less than two years ago, for example, the Commission observed that “U.S. DBS orbit assignments are separated by at least nine degrees,”⁸ and observed that “the greater orbital spacing used in the DBS service allows the use of smaller earth station receiving antennas than those generally employed for C and Ku band services.”⁹

For all of SES’s prodigious rhetorical efforts to claim otherwise, the prominence of nine-degree spacing in the U.S. DBS service is highlighted by the fact that every deployed, operating DBS system in the United States and Region 2 has relied on this orbital spacing in designing and launching spacecraft worth billions of dollars in the aggregate.¹⁰ The operators of U.S. DBS satellites did not simply invent arbitrarily the locations at which these satellites would be placed – they did not choose deployments at 4.5 degree or 3 degree or 7.55 degree orbital spacings. Instead, they were authorized by the Commission at nine-degree-spaced locations because such spacing has always been and remains today a fundamental structural component of U.S. DBS service.

⁸ Policies and Rules for the Direct Broadcast Satellite Service, *Report and Order*, IB Docket No. 98-21 (rel. June 13, 2002) (“DBS Rules Order”), at ¶ 6.

⁹ *Id.* at ¶ 6, n.33.

¹⁰ This is the case with the U.S. DBS operators, as well as Telesat. *See, e.g.*, Comments of Telesat Canada, Report No. SPB-196 (Jan. 23, 2004), at 2 (noting that Telesat’s deployed Nimiq satellites “have been designed for optimal performance based on the orbital spacing and other technical criteria agreed to internationally as part of the Region 2 Plan”); Comments of EchoStar Satellite Corporation, SAT-PDR-20020425-00071 (June 17, 2002), at 4-5 (observing that “the existing DBS providers have designed and operated their digital networks based upon the fundamental assumption that there would be approximately 9 degree spacing between adjacent DBS satellites serving the United States”).

Whether a change to that structure through a move to reduced orbital spacing is technically feasible or desirable from a U.S. policy perspective is the question the Commission wisely has begun to explore – but historical revisionism is not helpful to examining these questions.

B. The Fact That the ITU Radio Regulations Allow for Modifications to the Region 2 Plan Is Not Inconsistent with Either the Systematic Implementation and Revision of U.S. Domestic Policy Through Rulemaking Proceedings or the Creation of U.S. Service Rules that Set Technical Parameters for Domestic or Foreign Spacecraft Serving the United States

Contrary to the suggestion of some parties, in proposing a rulemaking proceeding, DIRECTV has never denied (i) that Appendices 30 and 30A of the ITU Radio Regulations allow for modifications and additions to the Region 2 Plan, or (ii) that these Appendices contain a mechanism for seeking the agreement of affected administrations. Nor has DIRECTV denied that these BSS Plan modifications could ultimately lead to reduced orbital spacing for U.S. DBS satellites. Nonetheless, the fact that international BSS Plan modification procedures exist does not and should not mean that the Commission should abdicate its status as the regulator of U.S. domestic spectrum allocation, assignment and use.

To the contrary, in the *DBS Rules Order*, the Commission reiterated its *DISCO II* policy of imposing “the same service obligations on operators of non-U.S.-licensed satellites that provide DBS service in the United States as we impose on U.S.-licensed operators.”¹¹ And in

¹¹ *DBS Rules Order* at ¶ 91. In *DISCO II*, the Commission stated:

We will require non-U.S. satellite operators to comply with all Commission rules applicable to U.S. satellite operators. To do otherwise would place U.S. and foreign operators on uneven competitive footing when providing identical satellite service in the United States and would defeat our public policy objectives in adopting these service rules in the first place.

DISCO II Order at ¶ 173.

this regard, the Commission plainly is not precluded from initiating a rulemaking to develop additional service rules and operational constraints to facilitate both the licensing of tweener satellites and the protection of existing systems, which would re-set a baseline interference environment for DBS systems at the appropriate spacing, and streamline the seeking agreement process in instances where it is invoked under ITU auspices.

Such a regime is not unprecedented. One recent example involved the Ka band, in which the satellite industry worked with the Commission to develop operational parameters that would obviate the need to separately coordinate Ka band spacecraft in a two-degree spacing environment. As a result of this effort, the Commission adopted two key operating requirements for Ka band satellite licensees that would entitle them to routine blanket licensing: (i) a downlink power flux density (or pfd) coordination threshold, and (ii) an uplink off-axis emissions mask.¹² These operation parameters were pre-agreed coordination limits, at or below which satellite networks could successfully operate in a two-degree spacing environment. Essentially, the agreed-upon parameters established a baseline interference environment that all licensees should expect would exist in the Ka band, and resulted in a streamlined “coordination by rule” regime.

The Commission adopted these parameters in its *18 GHz Order*, and they are now contained in Section 25.138(a)(6) of the Commission’s Rules. And through the operation of the Commission’s *DISCO II* policy, non-U.S.-licensed systems will (absent a further non-

¹² See *Redesignation of the 17.7-19.7 GHz Frequency Band, Blanket Licensing of Satellite Earth Stations in the 17.7-20.2 GHz and 27.5-30.0 GHz Frequency Bands, and the Allocation of Additional Spectrum in the 17.3-17.8 GHz and 24.75-25.25 GHz Frequency Bands for Broadcast Satellite-Service Use*, 15 FCC Rcd 13430 (2000), at ¶ 92 (“18 GHz Order”).

interference showing) have to meet these same technical requirements in order to serve the U.S. market.¹³

The Commission thus established by regulation a “default” set of coordination parameters in the Ka band when it adopted the downlink pfd coordination threshold developed through a rulemaking process. In so doing, the Commission explained that it was adopting “specific technical conditions for uplink and downlink operations, *which obviate the need for coordination* between non-government GSO/FSS systems in the Ka band.”¹⁴ The Commission also left open the possibility for operations at higher power levels, subject to coordination with adjacent networks. But in the absence of agreement, “the non-compliant licensee shall reduce its earth station and space station power density levels to be compliant with those specified in [Section 25.138(a)].”¹⁵ As a consequence of these decisions, all Ka band licensees are expected to design their systems on the assumption that adjacent networks, spaced every two degrees in the geostationary orbit, will operate at the -118 dBW/m²/MHz level specified in Section 25.138(a)(6) at all times, or else they proceed at their own risk.

There is no reason that a similar model could not be worked out for the spacing of DBS spacecraft, in a fashion that would be mutually beneficial to both existing DBS/BSS operators spaced at nine degrees in Region 2 and existing operators or new entrants proposing “tweener” satellites. Given that *every* Region 2 tweener satellite filed to date exceeds the limits set forth in Annex 1 to Appendices 30 and 30A of the ITU Radio Regulations (and indeed, DIRECTV’s protection criteria proposed in its Petition for Rulemaking are less conservative than Annex 1), a blanket licensing regime could eliminate protracted and expensive processes of seeking

¹³ See *DISCO II Order* at ¶¶ 156, 159, 173.

¹⁴ *18 GHz Order* at ¶ 93 (emphasis supplied).

¹⁵ See 47 CFR § 25.138(c).

agreement under ITU rules. In such a regime, a tweener satellite would not be precluded from operating outside of the Commission pre-determined operating conditions in proposing U.S. service, but would instead need to seek agreement to these parameters from affected administrations and operators in accordance with the procedures contained in Appendices 30 and 30A of the ITU Radio Regulations.

Moreover, a Commission-sanctioned set of operating conditions for tweener satellites is far from a "one-size-fits-all" requirement. To the contrary, it is a streamlined approach to *de facto* agreement, quite possibly imposing *less* conservative criteria than those that now govern modifications to the Region 2 BSS Plan. Under such an approach, the proposed operators of tweener spacecraft will know exactly the conditions they must meet to avoid coordination with existing U.S. operators (and to obtain U.S. agreement), even when the Annex 1 limits are exceeded and the ITU deems necessary the need to seek agreement.¹⁶

DIRECTV could also support a regime where the Commission simply requires all tweener satellites to meet the criteria set forth in Annex 1. However, based on its attempt to sort through the many coordinations that will be required for satellites filed at all possible tweener locations in applying these criteria, DIRECTV believes that a better approach is to have a set of rules that clearly defines when coordination is not required, even in instances in which Annex 1 is exceeded. DIRECTV's further preliminary assessment of such criteria is set forth below.

¹⁶ Such an approach would also be consistent with the sharing criteria adopted at WRC-2000 in revising the BSS Plan for ITU Regions 1 and 3, in which the ITU modified the Annex 1 criteria for intra-regional interference such that no coordination is required outside of a pre-determined arc, *i.e.*, for a modification to the Regions 1 and 3 List that is more than nine degrees away from an assignment in the Regions 1 and 3 Plan, and meets the pfd limit of -103.6 dB(W/(m² · 27 MHz)). This greatly reduces the number of instances where seeking agreement is required.

C. A Rulemaking Proceeding Could Address the Adoption of Tweener Satellite Operating Parameters

DIRECTV's two primary concerns with inserting BSS satellites between existing nine-degree spaced satellites are i) interference into currently operating DBS systems, and ii) constraints on the expansion of DBS services (local channels, HDTV, etc.) that are not present in a nine-degree spaced environment. DIRECTV notes that it has been consistent in this position, making clear that it does not oppose new MVPD competition provided that such competition does not interfere unacceptably with DIRECTV's existing DBS service, or prevent DIRECTV's use of even more advanced satellites in the future.

To this end, if the Commission ultimately decides to proceed in allowing tweener satellites, it should consider adopting adequate protection criteria for U.S. assignments and modifications to the Region 2 BSS Plan, and allowing for the development of advanced satellites at these same locations. This could be accomplished easily by limiting the EIRP of the tweener satellites (based on a C/I criterion), and adopting protection of the tweener satellites based¹⁷ on larger receive antenna sizes (75-90 cm).

The larger receive antenna size is critical to the advancement of satellites at the nine-degree locations *and* to the protection of tweener satellites. Next generation BSS satellites, such as DIRECTV 7S, will have peak CONUS EIRPs near 62 dBW. This higher EIRP is consistent with the levels allowed for U.S. assignments in the Region 2 Plan and allows advanced coding and higher capacities that can be used to provide more DBS-delivered local broadcast channels and HDTV programming. The table below shows C/I ratios in the top 20 Nielsen-defined Designated Market Areas ("DMAs") for interference *into* tweener satellite service with various

¹⁷ Operators are of course free to recommend any size antenna to their customers, but the protection criterion should be based on the use of 75 or 90 cm antennas.

receive antenna sizes. The C/Is are based on a DIRECTV satellite at 101.2° W with a peak CONUS EIRP of 61.6 dBW, and a tweener satellite at 105.5° W with EIRPs that meet a 24 dB C/I protection of existing nine-degree satellites, as proposed by DIRECTV in its petition for rulemaking. Calculations are based on the following parameter values:

Mis-pointing: 0.50 deg.
 Station-keeping: 0.10 deg. total
 Tweener peak EIRP: 50.3 dBW
 DIRECTV peak EIRP: 61.6 dBW
 DIRECTV location: 101.2 W
 Tweener location: 105.5 W
 Topo separation: actual
 BW Advantage: 1.05 dB
 X-pol discrimination: co-pol + 10 dB

Rank	DMA	DIRECTV EIRP (dBW)	Tweener EIRP (dBW)	C/I (dB)			
				45 cm	60 cm	75 cm	90 cm
1	New York	58.82	44.86	1.74	9.45	11.39	12.98
2	Los Angeles	57.04	41.67	1.29	8.38	10.31	11.90
3	Chicago	57.61	44.81	3.27	10.74	12.68	14.27
4	Philadelphia	59.07	45.13	1.84	9.50	11.44	13.02
5	San Francisco-Oak	56.20	41.02	1.11	8.44	10.38	11.96
6	Boston	58.18	44.23	1.46	9.36	11.30	12.88
7	Dallas-Ft. Worth	59.65	45.16	2.48	9.36	11.30	12.88
8	Washington DC	59.18	45.77	2.51	10.08	12.02	13.61
9	Detroit	56.98	44.50	3.44	11.01	12.95	14.53
10	Atlanta	60.00	48.08	4.59	11.77	13.71	15.30
11	Houston	59.61	46.09	3.60	10.39	12.32	13.91
12	Seattle-Tacoma	55.78	40.33	0.10	7.91	9.85	11.43
13	Minneapolis-St. Paul	57.61	43.23	1.62	9.14	11.08	12.66
14	Tampa	61.27	49.95	5.49	12.48	14.42	16.00
15	Cleveland	57.73	44.86	3.05	10.62	12.56	14.15
16	Miami	60.49	50.27	6.59	13.58	15.51	17.10
17	Phoenix	57.60	43.07	2.28	9.27	11.20	12.79
18	Denver	57.01	43.31	2.74	9.97	11.91	13.50
19	Sacramento	55.82	41.17	1.64	8.97	10.91	12.49
20	Pittsburg	58.43	45.24	2.73	10.30	12.24	13.83

A sample calculation for New York using a 75 cm receive antenna is as follows:

Δ EIRP = -13.96 dB
 topo = 4.74 deg.
 topo w/mis-pointing and SK = 4.14 deg.
 BO.1213 co-pol off-axis = 24.72 dB
 x-pol off-axis = 34.72 dB

$$\text{BW adv.} = 1.05 \text{ dB}$$

$$\begin{aligned} C/I_{cp} &= \Delta \text{ EIRP (tweener - DIRECTV)} + \text{off-axis}_{cp} + \text{BW adv.} \\ &= -13.96 + 24.72 + 1.05 = 11.81 \text{ dB} \end{aligned}$$

$$\begin{aligned} C/I_{xp} &= \Delta \text{ EIRP (tweener - DIRECTV)} + \text{off-axis}_{xp} + \text{BW adv.} \\ &= -13.96 + 34.72 + 1.05 = 21.81 \text{ dB} \end{aligned}$$

$$\begin{aligned} C/I_{total} &= 10 \log (10^{-(C/I_{cp}/10)} + 10^{-(C/I_{xp}/10)}) \\ &= 11.39 \text{ dB} \end{aligned}$$

Clearly, if existing nine-degree spaced systems are to evolve and expand, as they must, higher EIRPs will necessitate the use of larger receive antennas for tweener satellite service. In determining the appropriate protection for nine-degree spaced systems in Region 2, the Commission should be mindful of the protection criteria used in the ITU's re-planning of the BSS bands for Regions 1 and 3 in 2000, which was based on digital systems and modern (improved) receive antennas. For Regions 1 and 3, the ITU determined that a single-entry C/I of 26 dB and an aggregate C/I of 21 dB were appropriate. DIRECTV's proposed protection criteria for currently-deployed DBS systems, set forth in its Petition for Rulemaking, were based on these parameters. The Commission should not adopt protection criteria for nine-degree assignments and modifications that are less protective than the Regions 1 and 3 re-plan.

III. THE ECHOSTAR AND PEGASUS TECHNICAL PROPOSALS ARE UNWORKABLE

In its initial Comments filed in response to the SES Petition for Declaratory Ruling that is referenced in the *Public Notice*, EchoStar emphasized the degree to which DBS operators "have designed and operated their digital networks based upon the fundamental assumption that there would be approximately 9 degree spacing between adjacent DBS satellites serving the United States," and was of the view that the insertion of a lower-power SES tweener satellite 4.5 degrees away from operating EchoStar and DIRECTV satellites "would fundamentally change the

interference and technical landscape for DBS operations in the United States.”¹⁸ As EchoStar framed the issue: “Stated simply, the Commission must protect service to U.S. consumers first and foremost – including existing DBS subscribers.”¹⁹ DIRECTV could not agree more.

Subsequently, EchoStar agreed to multiple satellite capacity deals with SES to purchase or lease all of the capacity on SES FSS, and apparently BSS, satellites to be co-located by SES at 105.5° W.L.²⁰ These arrangements with SES have engendered a radical “flip-flop” in EchoStar’s position on the viability of SES’s proposal. And EchoStar also has filed applications with the Commission for its own tweener spacecraft. Thus, EchoStar’s view of tweener satellites has become dramatically more favorable in a very short period of time.

In this proceeding, EchoStar calculates C/Is from SES’s proposed USAT satellite at 105.5° W.L. into adjacent EchoStar satellites in the range of 19.3 to 22.3 dB²¹ for its CONUS+ beam throughout CONUS. Assuming these values are correct, a second tweener satellite at 114.5° W.L. will decrease these C/Is approximately 1.3 dB according to EchoStar’s Aggregate

¹⁸ Comments of EchoStar Satellite Corporation, SAT-PDR-20020425-00071 (June 17, 2002), at 4-5. EchoStar argued that SES’s plans could be accommodated either at another orbital position (86.5° W.L.) or by using expansion DBS spectrum at 17 GHz. EchoStar stated that use of the DBS 17 GHz expansion band in 2007 “is consistent with the realistic time frame for implementing the new DTH service contemplated by SES.” *Id.* at i. These arguments have not resurfaced in more recent EchoStar filings.

¹⁹ *Id.*

²⁰ See, e.g., Satellite News (Sept. 22, 2003) (stating belief that EchoStar’s “SuperDish” product “could be used to receive signals from EchoStar’s current satellites, capacity it has agreed to lease from SES Americom at 105 degrees West, potential future broadcast satellite service capacity SES would launch at 105.5 degrees West, and Ku-band capacity on the Loral fleet); Business Wire, “SES Global Reports Stable Revenues at Constant Exchange Rates and Increased Contract Backlog in First Half, in Difficult Market Environment” (Sept. 15, 2003) (reporting on “long-term service agreement” on SES’s AMERICOM2Home platform to “provide satellite capacity to EchoStar Communications for the delivery of TV and broadband content directly to users’ homes from 105 degrees West”).

²¹ *Id.*, Technical Annex, at 15.

Interference chart,²² resulting in C/Is between 18.0 and 21.0 dB. Curiously, EchoStar also is willing to accept even more interference into its local channel service, with C/Is calculated to be 14.5 to 20.7 dB at edge of coverage – from USAT alone, and 13.2 to 19.4 dB in the aggregate. EchoStar dismisses these low C/Is by stating that in three of the six spot beams, availability is still above 99.7% (a very low availability by digital transmission standards), and the other three beams (below 99.7%) are either notoriously difficult to protect or already have very low availability. As a point of reference, the single-entry C/Is that EchoStar states that it is willing to accept are *3.7 to 11.5 dB* below the single-entry C/I value of 26 dB used in the ITU's re-plan of Regions 1 and 3.

EchoStar thus has gone to great lengths to downplay the effects of tweener satellite interference. The critical – but unspoken – assumption in these analyses is that EchoStar will essentially control virtually all of the orbital spectrum at the relevant slots, which will allow EchoStar to make internal decisions to optimize its own aggregate spectrum resources. Thus, EchoStar might be willing to accept C/Is of 18 dB and the resulting degradation in service for its existing operations at 110° W.L. in order to gain significant DBS capacity at 105.5° W.L. – even if the result is a degradation of overall DBS spectrum use across the entire orbital arc.

The Commission, however, cannot make such an assumption as the basis for its spectrum policy. Rather, it must adopt rules of general applicability that allow all systems (whether affiliated or not) to operate without undue interference in order to maximize the use of valuable spectrum resources. The Commission, and not any individual parochial interest, must make the public policy choice that optimizes spectrum use across the entire orbital arc. That is the purpose of the rulemaking that DIRECTV has proposed.

²² Comments of EchoStar Satellite Corporation, SAT-PDR-20020425-00071 (June 17, 2002), Technical Annex, at 19.

For its part, Pegasus has crafted a proposed two-tiered solution involving reduced tweener EIRP in the near term, and uniform performance constraints for all U.S. DBS satellites in the long term. This approach, however, does not appear to be a practicable accommodation of tweener and nine-degree-spaced DBS satellites.

Pegasus's near-term proposal of reduced tweener satellite EIRP is possibly workable in principle but does not go far enough in limiting interference into existing nine-degree satellites. It also does not account for the effects of receive antenna mis-pointing, satellite station-keeping, or the fact that the tweener and nine-degree satellites have nominal orbital separations as close as 4.3 degrees.

Pegasus' interference analysis and two examples (or four, counting the Errata submitted two days before the deadline for Reply Comments) fail to account for the effects of receive antenna mis-pointing, satellite station-keeping, and a nominal orbital separation of 4.3 degrees, rather than 4.5 degrees, between the closest U.S. assignments and tweener satellites. Pegasus argues that the effects of satellite drift (station-keeping) and subscriber antenna misalignment are negligible.²³ DIRECTV disagrees. At nine-degree orbital separations these factors are minimal because of the roll-off of the receive antenna. However, at 4.5 degrees, these effects are quite significant.

For example, for a nominal orbital separation of 4.3 degrees, such as between DIRECTV's DIRECTV 4S satellite at 101.2° W.L. and SES's proposed USAT satellite at 105.5° W.L., the topocentric angle in Chicago is 4.8 degrees. Off-axis discrimination at mid-band using the ITU-R BO.1213 reference pattern is 20.1 dB. Accounting for mis-pointing of 0.5 degrees (a generally accepted value) and station-keeping of 0.1 degree, the topocentric angle is 4.2 degrees,

²³ Comments of Pegasus Development Corporation, Technical Appendix, at A-3.

reducing the off-axis discrimination to 15.4 dB. The off-axis discrimination has a dB for dB effect on C/I – hence, the C/Is in Pegasus’s examples would be reduced by 4.7 dB.²⁴

Properly accounting for mis-pointing, station-keeping and 4.3 degree nominal orbital separation, tweener satellite EIRPs would need to be approximately 8.3 dB below DIRECTV satellite EIRPs to provide sufficient protection, *i.e.*, a C/I of 24 dB.²⁵ In addition, Pegasus’s long-term solution of uniform performance constraints is completely unworkable. Pegasus states that “[t]he earliest implementation of reduced orbital spacing with the final rules will occur only when all present BSS space stations, designed to meet the existing BSS rules, have expired.” DIRECTV currently has three new satellites on order. One of these spacecraft, DIRECTV 7S, will be launched early this year. With a predicted life of 15 years, these satellites will not expire until 2019, or later. Given the speed at which satellite technology is advancing, it is neither practical nor prudent to attempt to set up rules extending that far into the future. Moreover, uniform performance constraints would not apply to foreign systems with adjacent or overlapping coverage. Thus, constraining U.S. DBS satellites would likely put these spacecraft at a disadvantage relative to their foreign neighbors that are also providing U.S. service.

Pegasus also argues for the use of ITU Appendices 30 and 30A for coordination, which is acceptable procedurally, but Pegasus then makes the illogical case that “[s]uch a process, rather than an overhaul of the Region 2 Plans through a World Radio Conference, would most likely facilitate the deployment of these satellites and the timely entry of new competitors.”²⁶ To the

²⁴ It also is not clear why Pegasus uses Part 25.209 in determining the characteristics of 45 cm BSS receive antennas. Part 25.209 clearly applies to FSS earth stations, and is not appropriate for 45 cm BSS receive terminals. It is generally accepted practice to use ITU-R Recommendations, such as BO.1213, for characterization of receive antennas in the BSS.

²⁵ *Id.* at A-4.

²⁶ *Id.* at 6.

contrary, the use of Appendices 30 and 30A in the absence of domestic U.S. rules and parameters governing the entry of short-spaced DBS satellites would likely have the opposite effect. The process of seeking agreement under ITU regulations can be long and protracted. If a set of domestic operating parameters were crafted by the Commission, a tweener satellite applicant would know in advance the technical characteristics its satellite would need to qualify for *de facto* agreement from a U.S. operator and the U.S. Administration. In fact, it is likely to be a much simpler process than Pegasus proposes.

IV. PEGASUS'S CALL FOR A DBS "SPECTRUM CAP" SHOULD BE REJECTED

Pegasus has used the Commission's *Public Notice* to inject an opportunistic call for a DBS "full-CONUS spectrum cap" that Pegasus alleges would introduce "facilities-based competition into the DBS market" and would be "consistent with past Commission practice."²⁷ These misleading assertions are contradictory to recent, express Commission findings and should be rejected.

As a preliminary matter, Pegasus's proposal has virtually no relationship, especially at this early stage, to the technical issues involved in allowing reduced orbital spacing issues that the Commission is exploring in the *Public Notice*. It is not a proposal that belongs in this proceeding and therefore should not be considered.

In any event, however, on the merits, Pegasus's full-CONUS spectrum cap proposal is and should be easily dismissed. First, Pegasus's proposal is predicated upon the existence of a DBS-only market that the Commission has never utilized. In evaluating horizontal consolidation

²⁷ Comments of Pegasus at 5-6.

issues affecting DBS, both the Commission and the Department of Justice consistently have defined the relevant product market to include all MVPDs, not just DBS operators.²⁸

More important, acknowledging the cable industry's still-dominant MVPD market position, the Commission fully re-visited and rejected Pegasus's *exact* proposal less than two years ago, concluding:

[B]ecause we continue to view DBS as offering a strong competitive alternative to cable systems, we have not found any competitive problems with allowing a DBS operator to operate at more than one full-CONUS orbital position, and indeed, allowing such operation may enable DBS operators to better compete with cable systems in the future. Consequently, we will not adopt any restrictions on the number of full-CONUS orbital locations one satellite company can control.²⁹

Nothing has changed since the Commission reached this conclusion in June, 2002. Indeed, the Commission's most recent competitive assessment of the MVPD marketplace has determined that cable operators continue to dominate the MVPD market with a 75% share.³⁰ And only last month, in refusing to adopt any ownership limitations for the upcoming Western Slot DBS auction, the Commission reaffirmed its observation that "ownership restrictions of any kind" in the DBS service "generally are not appropriate" – including "limits on the ownership of satellites located at more than one full-CONUS orbital position."³¹

²⁸ See, e.g., In the Matter of General Motors Corporation and Hughes Electronics Corporation and The News Corporation Limited for Authority to Transfer Control, MB Docket No. 03-124, *Memorandum Opinion and Order* (rel. Jan. 14, 2004), at ¶ 53 & n. 186.

²⁹ *DBS Rules Order* at ¶ 144.

³⁰ See In the Matter of Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming, *Tenth Annual Report*, MB Docket No. 03-172 (rel. Jan. 28, 2004), at ¶¶ 124, 4.

³¹ In the Matter of Auction of Direct Broadcast Satellite Licenses, AUC-03-52, *Order* (rel. Jan. 15, 2004), at ¶ 24.

Pegasus has shown no basis in this proceeding for reconsideration of a full-CONUS spectrum cap proposal that the Commission already – and recently – has fully considered and rejected. Its proposal should be rejected.

V. THIS PROCEEDING HAS NO RELATIONSHIP TO DIRECTV'S UTILIZATION OF BSS CAPACITY AT 72.5° W.L.

EchoStar includes in its comments an effort to include in any rulemaking on reduced DBS orbital spacing “the potential access into the United States market from all non-U.S. DBS orbital positions,” alleging that “many of the same policy issues arise from access into the U.S. market from Canadian DBS slots (such as the 72.5 degree W.L. proposal recently filed by DIRECTV) as from orbital locations with reduced spacings.”³²

DIRECTV does not object to the general subject of market access issues being raised as an issue for comment in a rulemaking proceeding that addresses reduced orbital spacing, since it is the proposals of foreign administrations invoking the ITU BSS Plan modification process that have, by and large, given rise to the present need for the Commission to consider its overall orbital spacing policy and operational parameters that will govern tweener satellites and their possible co-existence with U.S.-licensed spacecraft. However, EchoStar's efforts to link the issues in this proceeding to DIRECTV's current arrangement with Telesat relating to the 72.5° W.L. orbital position, which is an existing nine-degree-spaced Canadian assignment in the Region 2 Plan, are specious.

The Commission has already examined the market access issues generally attending U.S. service from a Canadian orbital position,³³ and DIRECTV has explained in pending separate

³² Comments of EchoStar at 8.

³³ In the Matter of Digital Broadband Applications Corp., File No. SES-LIC-20020109-00023, DA 03-15 (May 7, 2003).

applications the reasons why DIRECTV's utilization of capacity at the 72.5° W.L. location is necessary and in the public interest.³⁴ EchoStar is merely trying to tie DIRECTV's arrangement with Telesat to a rulemaking proceeding in a transparent bid to delay or hamstring its implementation, in spite of an absence of any credible logical or policy linkage. EchoStar's attempt should be denied.

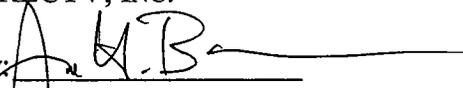
VI. CONCLUSION

DIRECTV supports the Commission's exploration of the technical and policy issues attending the possible introduction of tweener satellites at 12 GHz. But the Commission must proceed systematically to protect currently-deployed DBS services and the plans that DBS operators have for expansion in terms of serving additional local markets with satellite-delivered local channels, deploying higher-power spot beam satellites for this purpose, and launching additional spacecraft to provide other advanced digital services. There is too much at stake for U.S. DBS subscribers to leave the question of reduced DBS orbital spacing to individual international negotiations with no coherent policy framework or examination of appropriate protection criteria. Thus, DIRECTV urges further study on these issues in a rulemaking proceeding.

³⁴ See, e.g., DIRECTV Enterprises, LLC, File No. SAT-STA-20040107-00002, *Public Notice*, Report No. SAT-00187 (rel. Jan. 15, 2004), at 2.

Respectfully submitted,

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