Before the

FEDERAL COMMUNICATIONS COMMISSION

Washington, DC 20554

In the Matter of

Amendment of Part 2 of the Commission's Rules for Federal Earth Stations Communicating with Non-Federal Fixed Satellite Service Space Stations;	)	ET Docket No. 13-115
	)	RM-11341
Federal Space Station Use of the 399.9-400.05 MHz Band; and	)	
Allocation of Spectrum for Non-Federal Space Launch Operations	)	

To: The Commission

COMMENTS OF
THE BOEING COMPANY

Audrey L. Allison
Director, Frequency Management Services
The Boeing Company
1200 Wilson Boulevard
Arlington, VA 22209
(703) 465-3215

Bruce A. Olcott
Preston N. Thomas
Squire Sanders (US) LLP
1200 19th Street, N.W.
Washington, D.C. 20036
(202) 626-6615

Its Attorneys

August 30, 2013

SUMMARY

As a world leader in the development of space systems including commercial crew programs and launch operations, Boeing is pleased to lend its long experience and significant business interests to the Commission's efforts to facilitate the growth of this pioneering industry.

Near-future manned commercial spaceflight programs require reliable access and increased duration of access to critical communications spectrum. For on-orbit operations, the Commission may wish to seek a memorandum of understanding or other mechanism with NASA to ensure that non-Federal operators continue to have reliable access to the Federal Tracking and Data Relay Satellite System. Cargo and crew operations, such as those to the International Space Station and commercial platforms currently under development, will also require authorizations of more than the six months available through Special Temporary Authorization.

With regard to the current needs of commercial launch operations, the Commission may best facilitate the continued growth of the industry by maintaining the existing approach of experimental authorization and Federal spectrum coordination. Because the current coordination approach offers the confidence of a well-understood procedure, minimal regulatory burden, and *de facto* interference protection from Federal operations through the Federal coordination process, no non-Federal allocation may be necessary or desirable at this time. The Commission should likewise refrain from any actions that could limit the ability of non-Federal launches to use the same frequencies as Federal launches, because many launch systems need to support both Federal and non-Federal missions without costly redesign or replacement of communications hardware. If the Commission seeks to provide a more formal regulatory basis for commercial operations in Federal launch spectrum, the Commission may consider adopting a footnote allowing limited non-Federal use of these bands. The Commission may also consider providing

further assurance by taking steps to protect commercial space operations from any potential non-Federal sources of interference. In making the determination of whether a given launch is Federal or non-Federal, the Commission can draw on the considerable experience of the FAA in applying the relevant provisions of the Commercial Space Launch Act, which are similar in relevant respects to parallel sections of the Communications Act.

Finally, Boeing believes that, with appropriate assurances, it is fully possible to increase protection for Federal Fixed and Mobile Satellite Services earth stations operating in non-Federal bands without negatively impacting non-Federal users. Although an allocation raises significant risks of regulatory uncertainty for non-Federal users, these may be resolved if the Commission adopts the modifications suggested by SIA in their entirety. In the alternative, the approach of implementing interference protection through a footnote can accomplish the Commission's goals while avoiding the regulatory status uncertainty that may accompany an allocation. The footnote approach would nonetheless require strict adherence to the important assurances proposed in the NPRM to ensure that non-Federal users are not negatively impacted.

CONTENTS

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of

Amendment of Part 2 of the Commission's Rules for Federal Earth Stations Communicating with Non-Federal Fixed Satellite Service Space Stations;	)	ET Docket No. 13-115
	)	RM-11341
Federal Space Station Use of the 399.9-400.05 MHz Band; and	)	
Allocation of Spectrum for Non-Federal Space Launch Operations	)	

To: The Commission

COMMENTS OF
THE BOEING COMPANY

The Boeing Company ("Boeing") provides these comments in response to the Commission's Notice of Proposed Rulemaking ("NPRM") and Notice of Inquiry ("NOI") regarding the spectrum needs of the commercial space sector.[1] Boeing applauds the Commission's efforts to promote the continued growth of commercial space operations. Looking ahead to future commercial crew missions, Boeing believes that improvements to the reliability and duration of access to on-orbit communications spectrum is critical to the development of manned commercial spaceflight. In the near term, the Commission can best facilitate the commercial launch industry by maintaining the current well-tested approach of experimental authorization and Federal spectrum coordination. Finally, Boeing believes that,

[1] *Amendment of Part 2 of the Commission's Rules for Federal Earth Stations Communicating with Non-Federal Fixed Satellite Service Space Stations; Federal Space Station Use of the 399.9-400.05 MHz Band; and Allocation of Spectrum for Non-Federal Space Launch Operations, ET Docket No. 13-115, RM-11341,* Notice of Proposed Rulemaking, FCC 13-115 (2013) ("*NPRM*" or "*NOI*").

with appropriate assurances, it is fully possible to increase protection for Federal Fixed Satellite Services ("FSS") earth stations operating in non-Federal bands without negatively impacting non-Federal users.

As a leading contributor to the global space and satellite telecommunications industries, Boeing has significant interest in proceedings that affect communications for satellite and space exploration. Boeing has provided technical expertise, manufacturing, launch services, and on-orbit network control for a wide variety of commercial and government launch systems and spacecraft. Boeing built the first forty satellites for the Global Positioning System ("GPS") and in 2013 will complete its contract to deliver twelve next-generation GPS Block IIF satellites. Between 2013 and 2015, Boeing will build the next generation of Tracking and Data Relay Satellites to support reliable high-data communications with Earth-orbiting spacecraft.

For twenty years, Boeing has been NASA's prime contractor for the International Space Station program, with assignments including building 43,000 cubic feet of pressurized living and working space – the equivalent of the interior volume of two 747s. As one of NASA's leading contractors, Boeing also built the Shuttle Orbiters and their main engines, prepared the Shuttle's payloads and performed integration for the overall Shuttle system. Boeing is currently refining the design of the CST-100 crew capsule under NASA's Commercial Crew Integrated Capacity ("CCiCap") initiative. In this capacity, Boeing has developed system concepts, demonstrated key technologies, performed risk reduction tests, and initiated procurement of long lead items for a Commercial Crew Transportation System ("CCTS"). Boeing also partnered with Bigelow Aerospace to deliver crew to a commercially developed inflatable orbital habitat.

Boeing is also a world leader in providing launch services. For more than fifty years, Boeing's Expendable Launch Systems ("ELS") program played a major role in U.S. and

international space programs. Boeing developed and built the first and third stages of the Saturn V rocket, which launched the Apollo spacecraft. ELS was also responsible for the Delta II and Delta IV launch vehicles, which have an industry reputation for reliability and flexibility. In 2005, Boeing formed United Launch Alliance ("ULA") with Lockheed Martin, and ULA now provides launch services using the Delta II, Delta IV and Atlas V expendable launch systems.

Boeing is pleased to lend its long experience and significant business interest to the Commission's efforts to facilitating the growth of this pioneering industry. To this end, Boeing initially addresses the long term spectrum issues presented by the Commission's NOI and subsequently addresses the more near term issues raised by the NPRM.

I. THE COMMERCIAL SPACE SECTOR REQUIRES ASSURANCE THAT ON-ORBIT COMMUNICATIONS WILL HAVE ACCESS TO CRITICAL FREQUENCIES FOR THE ENTIRE DURATION OF MISSIONS

The Commission's NOI seeks comment broadly on what spectrum needs may be important as the commercial space sector develops.[2] As a leading contributor to NASA's Commercial Crew Program ("CCP"), Boeing continues to carefully consider the spectrum needs of manned commercial spaceflight operations, as well as cargo operations such as those to the International Space Station ("ISS") and other orbital platforms currently in development. The two most important needs that Boeing has identified are access to Tracking and Data Relay Satellite System ("TDRSS") for on-orbit communications, and longer duration experimental authority from the Commission to accommodate missions extending beyond six months.

[2] *Id.*, ¶ 88.

A. Current Non-Federal Access to TDRSS is Adequate, But Future Operations May Require Greater Assurance

Commercial crew crew launches, like any other launch, are currently designated to use the Federal 2200-2290 MHz spectrum for telemetry until they reach low earth orbit, at which point they generally use Federal TDRSS links to continue to communicate with ground stations.[3] Reliable access to TDRSS for on-orbit communications by commercial space operators will be a critical issue as the tempo of commercial crewed and cargo spaceflight programs continues to increase.

As a matter of policy, NASA has offered use of TDRSS to non-government space operators since 1984.[4] In 1985, at the request of National Telecommunications and Information Administration ("NTIA"), the Commission modified the table of allocations by adding footnote US303 to provide for non-Federal access to TDRSS.[5] In 1988, NTIA requested a further footnote to permit industrial space facilities' access to TDRSS operations in the 14.896-15.121 GHz band to accommodate high-speed data transmissions.[6] Consequently, the Commission adopted US310, mirroring the language of US303.[7] The access secured by these footnotes has thus far proven adequate. As commercial on-orbit operations develop, commercial operators

[3] *Id.*, ¶ 80.

[4] Amendment to Part 2 of the Commission's Rules providing an allocation in the 2285-2290 MHz band to allow access for non-Government space operations to the Tracking and Data Relay Satellite System, Order, 98 FCC 2d 908 ¶ 1 (1984) (citing NASA Management Instruction 8410.3) ("*1984 TDRSS Order*").

[5] *Id.*

[6] Amendment to Part 2 of the Commission's Rules to allow non-Government Use of the Tracking and Data Relay Satellite System in the 14.896-15.121 GHz band, Order, 4 FCC Rcd. 1591 (1989).

[7] *Id.*

may ultimately require additional spectrum, but at present Boeing has not identified any such need or potential candidate bands for such expansion.

In contrast, however, it is unclear whether NASA's 1984 policy of "offer[ing] use of TDRSS"[8] to non-Federal users provides the level of assurance of continued access to the critical TDRSS network that commercial space operators will require for increased investment and expanded operations in the near future. It may be necessary for the Commission to further formalize this thirty-year-old arrangement through a Memorandum of Understanding or other mechanism of assurance with NASA. Further investigation of this issue by the Commission through communication with both commercial and Federal stakeholders would be appropriate.

B. Commercial Space Operators Require Authorization for Longer than Six Months for Both On-Orbit and Launch Operations

A more pressing issue facing commercial space operators is the current practice of issuing six-month special temporary authorization ("STAs") for commercial launch operations. The 2013 Public Notice "Guidance on Obtaining Experimental Authorization for Commercial Space Launch Activities" contemplated STAs of only six months. Such short-duration authorization should not set precedent for Commission authorization of commercial space operations going forward. Instead, the Commission should issue full two-year experimental licenses to accommodate the potentially extended nature of orbital operations and the schedule uncertainty inherent in spacecraft development and launch.[9]

Commercial crew and cargo on-orbit operations, such as those to the ISS and other orbital platforms currently in development, will require authorization well in excess of six

[8] *1984 TDRSS Order*, ¶ 1.

[9] *Guidance on Obtaining Experimental Authorizations for Commercial Space Launch Activities, Public Notice*, DA 13-446 (2013) ("*Commercial Space Launch Notice*").

months to complete their missions. For launch operations, although six months is in theory adequate for the actual launch of a commercial space mission, in practice it is insufficient because of the significant possibility of launch schedule adjustments. For all launch operations, particularly those involving newly-developed hardware such as that developed for commercial crew operations, frequency authorizations must be of sufficient duration to accommodate extensive pre-launch testing as well as adjustments due to schedule slippage, coordination obligations, and weather delays.

To ensure that the Commission's process fully supports the spectrum needs of the commercial space industry, the Commission should not assume that six months is an appropriate duration for space operations authorizations or that an STA is the most appropriate regulatory vehicle for such authorization. The Public Notice identifies no reason why longer authorizations such as two-year experimental licenses should not be granted.[10] Although STAs are renewable, it would be inconsistent with the Commission's support for commercial space operations and highly unsatisfactory from an operations standpoint for operators to be subject to the uncertainty of a renewal requirement in the course of preparations for a launch, and even less so mid-mission when a craft is in orbit. Indeed, spacecraft designers, manufacturers, and launch providers require complete assurance as to the availability of specific frequencies long in advance of the first tests. STAs are limited under the Commission's rules to a maximum of six months before requiring renewal,[11] but nothing in its rules or Footnote US303 prevents the Commission from

[10] Indeed, the Commission routinely issues experimental licenses for periods four times this long (two years), and experimental licenses for up to five years are available with adequate justification. 47 C.F.R § 5.71(a).

[11] 47 C.F.R. § 5.61(a).

issuing longer-term authorizations, such as two-year experimental licenses,[12] for such operations where warranted. Thus, the Commission should direct the Office of Engineering and Technology to issue experimental licenses of the duration required to support commercial launch and on-orbit operations from development all the way through launch.

II. MAINTAINING THE EXISTING PROCESS TO ACCESS FEDERAL SPECTRUM FOR LAUNCH OPERATIONS WILL BEST FACILITATE SUSTAINED GROWTH IN THE COMMERCIAL LAUNCH SECTOR

The NPRM seeks comment on spectrum requirements to support further development of the commercial launch sector.[13] In particular, the Commission considers non-Federal access to three frequency bands commonly used by Federal agencies and non-Federal entities for communication with launch vehicles. The frequency ranges 420-430 MHz (for transmitting self-destruct signals), 2200-2290 MHz (for launch and telemetry), and 5650-5925 MHz (radar tracking) are important for launch operations but are not allocated for non-Federal use.[14]

Boeing joins with the Satellite Industry Association ("SIA") and others in reiterating that the current system works and that no non-Federal allocation appears necessary at this time.[15] As amplified below, the best way at present is to maintain, with only slight adjustments, the continued development of the commercial launch sector may be to maintain the current system of experimental authorization and Federal spectrum coordination, which provides operators the

[12] *Id*. The Commission's rules recommend but do not require a statement specifying the length of the proposed operations when applying for experimental licenses of less than two years. *Id*., § 5.71(b). On account of the significant scheduling uncertainty inherent in launch and on-orbit operations, the Commission should grant applications without such a statement.

[13] *NPRM*, ¶ 65.

[14] *Id.*

[15] *Comments of SIA* at Section III (filed August 30, 2013) ("*SIA Comments*").

confidence of a well-understood procedure, minimal regulatory burden, and *de facto* interference protection from Federal operations through the Federal coordination process.

As discussed below, any change in the current process should consist of, at most, refinements in the manner in which STAs are issued and, possibly, the adoption of a footnote similar in language to US303, which would permit non-Federal stations to access Federal launch frequencies for the purpose of launch operations. The Commission should refrain from adopting a new non-Federal allocation for these launch frequencies. The Commission should also refrain from any actions which would limit the ability of non-Federal launches to use the same frequencies as Federal launches, because many launch systems need to support both Federal and non-Federal missions without costly redesign or replacement of communications hardware. Broadly, Federal government control of these critical frequencies has provided, and will continue to provide, commercial space operators with the reliability and certainty of access needed to promote the growth of commercial launch operations while protecting Federal users.

A. Commercial Launch Operators Currently Receive *De Facto* Interference Protection from Federal Users Through the Federal Coordination Process

The Commission's NPRM raises questions about spectrum needs for commercial launch operations conducted at both Federal launch facilities and newly developed non-Federal launch facilities. Boeing and its affiliates currently conduct all of their launch operations using Federal launch facilities. Boeing has no present intent to use non-Federal launch facilities, although Boeing acknowledges that other participants in the commercial space industry are planning to do so. Thus, consideration of spectrum needs for launches at both Federal and non-Federal launch facilities is appropriate.

For commercial launches from Federal facilities, use of Federal launch frequencies is arranged through Federal launch controllers and Federal spectrum coordinators such as the

NASA flight facility spectrum managers and the Air Force Spectrum Management Office.[16] When scheduling a launch, Federal coordinators ensure that no other Federal users are using the spectrum in a potentially conflicting manner at the same time. Because the spectrum has no non-Federal allocation, this Federal coordination is sufficient to ensure that no potentially interfering uses will affect the launch.

The *de facto* protection secured through Federal coordination has worked well. Federal coordinators are able to ensure reliability and certainty by coordinating the limited users of the Federal spectrum to accommodate commercial launch operations. No reason appears to exist to change this approach to Federal coordination.

With regard to commercial launches at non-Federal facilities, such launches will likely be subject to the same spectrum coordination with Federal frequency coordinators as launches at Federal facilities, both with respect to the frequencies assigned and the dates that those frequencies are available for use. Launch operators using non-Federal facilities may therefore be able to anticipate the same *de facto* interference protection with respect to Federal users as operators using Federal facilities have enjoyed. This issue, however, may warrant further investigation.

Both with respect to commercial launches at Federal and non-Federal facilities, it may be appropriate for the FCC to continue to issue STAs to commercial launch operators. These STAs would continue to acknowledge that such launches have no formal interference protection from Federal spectrum users, but, as discussed below, should also indicate that the launches have interference protection from commercial spectrum users.

[16] *See* Orbital Sciences Corporation, Special Temporary Authorization, Call Sign WG9XBC (Granted Dec. 1, 2012) ("*Orbital STA*").

B. The Commission Could Consider Providing Commercial Launch Operators with Interference Protection from Non-Federal Spectrum Users

The Commission authorizes commercial launch operations through experimental STAs.[17] Under an experimental STA, grantees can neither cause interference nor claim interference protection.[18] Although authorization on a non-interference basis has been adequate for commercial launch operations thus far, manned commercial spaceflight programs will require interference protection from non-Federal sources as well as Federal sources.

As noted above, the Federal coordination process secures *de facto* interference protection from Federal sources. Likewise, the lack of a non-Federal allocation ensures that there is virtually no risk of interference from non-Federal operations in the band. There remains the possibility, although remote, that a commercial launch operator could receive interference, or an equally disruptive protection demand, from an authorized non-Federal spectrum user. As an additional precaution, the Commission should therefore grant such authorizations to commercial launch operators with an express right of interference protection from all non-Federal users of spectrum resources.

Currently, the Commission includes a Special Condition on commercial launch provider STAs stating that operations "shall be on an unprotected, non-interference basis to authorized Federal stations."[19] The Commission should add a second, complementary provision stating that commercial launch operations "may claim interference protection from non-Federal stations in the above frequency bands."

---

[17] *Commercial Space Launch Notice* at 1.

[18] *Id*. at 3.

[19] *See, e.g., Orbital STA.*

Boeing acknowledges that STAs do not normally grant to recipients interference protection from other uses of spectrum resources. Such an approach is necessary and appropriate, however, with respect to commercial launches of manned space vehicles and the Commission should establish an exception to its experimental license rules for this limited purpose. Fortunately, as noted above, given the fact that no non-Federal allocation exists in these spectrum bands, other than commercial launch providers, there is very little risk that non-Federal users will operate in these bands. Therefore, it is unlikely that the express right of interference protection from non-Federal interference sources that would be provided to non-Federal launch providers would normally be exercised in practice.

C. The Commission May Also Consider a Footnote Allowing Limited Non-Federal Use of Launch Frequencies

Given that the current system appears to work well for commercial operators and Federal coordination, Boeing is uncertain whether it concurs with the NPRM's assertion that action is necessary to support the forecasted increase in the number of commercial launches.[20] If the Commission sees a need to act to establish commercial operations on more clear regulatory footing, what may be appropriate is a footnote identical in function to US303,[21] which permits non-Federal stations to access TDRSS for on-orbit communications.

Like US303, the footnote for these three launch frequency bands would establish that non-Federal stations may be authorized to transmit in these frequencies, for the limited purpose of conducting launch operations, subject to such conditions as may be applied on a case-by-case basis. The footnote would also confirm that such operations are secondary to Federal operations

[20] *NPRM*, ¶ 66.

[21] 47 C.F.R. § 2.106, note US303.

in the band and shall not cause harmful interference to authorized Federal stations. Given that no formal allocation is necessary or desired, appropriate launch frequencies for non-Federal operations are currently and should continue to be assigned in cooperation with Federal spectrum coordinators and range operators. The NPRM's request for comment on the designation of specific sub-bands for non-Federal operations within the 2200-2290 MHz band is therefore moot because Federal coordinators will continue to assign the appropriate frequencies depending on the mission requirements and need to protect Federal users in the band.[22]

At the same time, the Commission should make explicit that such critical commercial operations are protected from interference from non-Federal spectrum uses. Because there is no non-Federal allocation, non-Federal spectrum uses other than commercial launch operations will generally not be encountered. Given the expected increase in such launches, however, the Commission should clearly articulate that authorized commercial launch operators can expect that their operations will be protected from all sources within the Commission's jurisdiction.

D. Existing Statutory Definitions and Federal Practice Provide Substantial Guidance for Determining Whether of Launch Operations are Federal or Non-Federal

The Commission seeks comment on how to determine whether a given launch is Federal or non-Federal for purposes of licensing spectrum during a launch.[23] Boeing believes that ample guidance exists on this matter in the form of statutory law as well as Federal precedent from FAA determinations. The Commission should avoid inconsistency on this well-settled matter by continuing to act consistently with FAA practice when such questions arise.

---

[22] *NPRM*, ¶ 82 (seeking comment on whether non-Federal use of the 2200-2290 MHz band should be limited to the 2207-2219 MHz, 2270.5-2274.5 MHz, and 2285-2290 MHz bands).

[23] *Id.*, ¶ 73.

The statutory provisions regarding commercial and non-Federal operations generally inquire as to the identity of the party controlling the station as the basis for the determination. Under the Communications Act, the Commission may license stations except for those "belonging to and operated by the United States." [24] Under the Commercial Space Launch Act, the term "commercial provider" means an entity conducting a launch the "primary control" of which is held by someone other than Federal, state or local government.[25] Applying these statutes to its agency procedures, NTIA examines whether a US government department or agency exercises "effective control" over the station.[26] The Commission employs a similar approach.[27]

In actual practice, a finding of "effective control" is arguably synonymous with "primary control" and therefore both are likely (and should appropriately) achieve the same result. Following NTIA procedures, the FAA has significant experience applying the statutory determination criterion of "control" to entities in the launch sector. Consequently, the Commission should give considerable weight to the FAA's conclusions as to whether a given launch is Federal or non-Federal.[28] The Commission and the commercial launch industry would

[24] 47 U.S.C. § 305(a).

[25] 51 U.S.C. § 50101.

[26] Manual of Regulations and Procedures for Federal Radio Frequency Management at § 8.2.17 (May 2013) ("*NTIA Manual*").

[27] *See Communications Services Rendered to the U.S. Government*, Public Notice, 27 F.C.C. 2d 926 (1971) (clarifying that Commission requirements are applicable to commercially-controlled radio facilities "even though Government frequencies are to be used" and deferring to the Interdepartment Radio Advisory Commission on for clearance of such use).

[28] In contrast, the remaining potential factors suggested in the NPRM as potentially relevant to determining whether a launch is Federal or non-Federal, such as the nature of the payload, the location of the launch, and the provider of the launch vehicle, are not relevant to the

be best served by the Commission following the established body of law on this topic and aligning itself with the FAA's determination unless the Commission identifies a clear reason why a different outcome is warranted.

III. THE COMMISSION SHOULD ENSURE THAT ANY ADDITIONAL SPECTRUM MADE AVAILABLE TO COMMERCIAL SPACE OPERATIONS DOES NOT IMPACT IMPORTANT EXISTING USES

In addition to specific proposals of the NPRM, the NOI sought comment broadly on whether other frequency bands will be required and what amendments to the Commission's rules will be needed to facilitate the growth of the commercial space flight industry.[29] At this time Boeing does not have recommendations as to specific candidate bands for such allocations, and has not yet concluded that a need has been shown for access to additional spectrum beyond the 420-430 MHz, 2200-2290 MHz, and 5650-5925 MHz bands discussed above.

With regard to the Commission's proposal that the 2360-2395 MHz Aeronautical Mobile Telemetry ("AMT") band be considered for use with commercial launch sector applications,[30] Boeing seconds the concerns raised by the Aerospace Flight Test Radio Coordinating Council ("AFTRCC").[31] Although AMT spectrum may at some point become a plausible route of expansion for launch operations should the existing 2200-2290 MHz band become overcrowded, the record does not currently indicate that such additional usage of this band is either necessary or feasible. In addition, it is critical that the Commission not take any action that would interfere

---

determination because they are at best peripheral to the central issue of control over the radio station. *NPRM*, ¶ 73.

[29] *Id.*, ¶ 88.

[30] *Id.*, ¶ 83.

[31] Comments of Aerospace and Flight Test Radio Coordinating Council Coordinating Council, ET Docket No. 13-115 (Aug. 30, 2013).

with the uniformity between frequency bands used for Federal and non-Federal launches, as many operators, launch systems, and ranges support both Federal and non-Federal launches. Therefore, further consideration of additional bands such as the 2360-2395 MHz AMT band is premature at this time in light of the requirements of launch operators and the important existing operations in this band.

IV. THE COMMISSION SHOULD ENSURE THAT NEW PROPOSED TERRESTRIAL USES DO NOT THREATEN SPECTRUM AVAILABLE FOR EXISTING AND FUTURE SPACE OPERATIONS

Boeing notes that proceedings that the Commission is considering parallel with the above-captioned NPRM may have significant impact on future commercial space operations. In particular, the Commission should take care that CTIA's proposed reallocation of the 2095-2110 MHz band for use with AWS-3 does not create harmful interference to space operations currently allocated in the 2025-2110 MHz band, which includes the TDRSS forward link that is used to convey commands, data, and voice communications. A NASA Feasibility Assessment shows that "high-density terrestrial base stations or user equipment operating co-frequency in the 2025-2110 MHz band will exceed established protection criteria for the TDRSS spaceborne receivers."[32] TDRSS is a critical communications link for both Federal and commercial on-orbit operations. The Commission should therefore refrain from authorizing such AWS-3 operations unless it establishes service rules or license conditions sufficient to protect these TDRSS operations.

[32] *Amendment of the Commission's Rules with Regard to Commercial Operations in the 1695-1710 MHz, 1755-1780 MHz, and 2155-2180 MHz Bands, GN Docket No. 13-185*, Notice of Proposed Rulemaking and Order On Reconsideration, FCC 13-102 ¶ 21 (2013) ("*AWS-3 NPRM*").

V. INTERFERENCE PROTECTION FOR U.S. GOVERNMENT EARTH STATIONS CAN BE INCREASED WITHOUT IMPACTING THE OPERATIONS OF COMMERCIAL USERS

The NPRM considers the request of NTIA to adopt a co-primary allocation for Federal FSS operations in certain exclusive non-Federal use frequency bands in portions of the C, Ku, Ka, and V bands.[33] The NPRM also considers an alternate suggestion of implementing interference protection through a footnote.[34] Boeing believes that either of these approaches could accomplish the important goal of achieving increased interference protection for Federal earth stations, but both require the adoption of critical assurances to ensure that the operations on non-Federal users are not negatively impacted.

In response to these concerns, SIA has developed a "modified" version of the allocation approach.[35] SIA's proposed modifications include important clarifications, including that the FCC has "exclusive regulatory jurisdiction over these co-primary allocations (except for those covered by US334)" and that the same technical, regulatory and procedural rules are applicable to non-Federal earth station licensees.[36] Importantly, under SIA's modified allocation approach, the affected spectrum would not be considered "shared" for purposes of Commission or NTIA rules and coordination procedures, and any NTIA *ex parte* presentations in connection with licensing in this band would be subject to the same FCC *ex parte* procedures as non-Federal applicants and licensees.[37]

---

[33] *NPRM*, ¶ 12.

[34] *Id.*, ¶ 47.

[35] *SIA Comments* at II.A.

[36] *Id*. at II.B.

[37] *Id*. (noting that NTIA does not seek any substantive changes in how spectrum matters are currently handled procedurally between the Commission and NTIA).

Boeing would support the proposed allocation approach, as modified by SIA, if it were adopted by the Commission in total. Without all of the important assurances detailed in SIA's proposal, Boeing recommends that the Commission proceed instead with the interference protection approach it has proposed as an alternative.

As the Commission acknowledges, all operations in spectrum with dual Federal/non-Federal allocation must be coordinated with NTIA.[38] Because such an allocation approach may "increase uncertainty over who is the regulator of the satellite systems that operate in these bands,"[39] it may be preferable to avoid the regulatory status questions raised by a co-primary allocation altogether and instead proceed under the proposed interference protection approach via a footnote to the allocation table.

The interference protection approach provides adequate protection for Federal earth stations while avoiding the potentially troublesome regulatory uncertainty of a shared Federal/non-Federal band. The most important benefit of the footnote approach over the allocation approach is the certainty it provides that the bands "would not be considered shared Federal/non-Federal bands," which would "avoid subjecting non-Federal earth station applicants to new licensing procedures, such as additional approval and coordination requirements."[40] The footnote also "explicitly conditions protected operation of Federal earth stations in these bands on the earth stations complying with Part 25 of the Commission's rules."[41] These assurances appropriately respond to the industry's legitimate concerns that any increased interference

[38] *Id.*, ¶ 39 n.89 and associated text.

[39] *Id.*, ¶ 22.

[40] *Id.*, ¶¶ 48, 54 (explaining "we propose not to coordinate license applications with NTIA in these bands").

[41] *Id.*, ¶ 51.

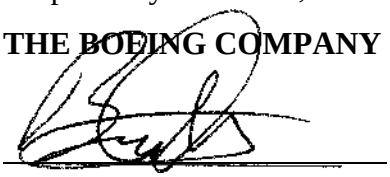
protection granted to Federal earth stations should not come at the cost of increased delays or regulatory burdens on non-Federal licensing.[42]

VI. CONCLUSION

Because the Commission's policies thus far have fostered a robust commercial launch industry, the best way for the Commission to support this growing sector at present may be to maintain the successful regulatory processes that have served well thus far. The Commission should, however, consider the several minor changes suggested above that could secure more assured access to needed spectrum, longer duration authorizations, and increased interference protection from non-Federal sources. Finally, the Commission can and should increase interference protection for Federal FSS and MSS earth stations, which may be through either an allocation or a footnote as long as the chosen approach provides adequate assurances to non-Federal users.

Respectfully submitted,

THE BOEING COMPANY

By: 

Audrey L. Allison
Director, Frequency Management Services
The Boeing Company
1200 Wilson Boulevard
Arlington, VA 22209
(703) 465-3215

Bruce A. Olcott
Preston N. Thomas
Squire Sanders (US) LLP
1200 19th Street, N.W.
Washington, D.C. 20036
(202) 626-6615

Its Attorneys

August 30, 2013

[42] *Id.*, ¶ 14 (citing SIA Comments, RM-11341, filed Sept. 18, 2006, at 5-6).