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

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| In the Matter of<br><br>LightSquared Technical Working Group Report | )<br>)<br>)<br>) | IB Docket No. 11-109 |
| LightSquared License Modification Application, IBFS Files Nos. SAT-MOD-20120928-00160, -00161, SES-MOD-20121001-00872 | )<br>)<br>)<br>)<br>) | IB Docket No. 12-340 |
| New LightSquared License Modification Applications IBFS File Nos. SES-MOD-20151231-00981, SAT-MOD-20151231-00090, and SAT-MOD-20151231-00091 | )<br>)<br>)<br>)<br>) | IB Docket No. 11-109; IB Docket No. 12-340 |
| Ligado Amendment to License Modification Applications IBFS File Nos. SES-MOD-20151231-00981, SAT-MOD-20151231-00090, and SAT-MOD-20151231-00091 | )<br>)<br>)<br>) | IB Docket No. 11-109 |

**OPPOSITION TO PETITIONS FOR RECONSIDERATION OR CLARIFICATION**

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## OPPOSITION TO PETITIONS FOR RECONSIDERATION OR CLARIFICATION

The Petitions filed in the above-captioned proceedings present no new data or legal analyses. Given that these proceedings have lasted 17 years it is unsurprising that there is nothing new to add. Under these circumstances, requesting reconsideration is inappropriate and should be promptly rejected.

The Commission began this proceeding in April 2016 when it issued a Public Notice asking for specific facts and data on the question whether the proposed power and emission levels contained in Ligado Networks LLC's ("Ligado") license modification applications would harm the operation of GPS devices. After more than four years, thousands of hours of testing, many thousands of pages of data and analysis submitted into the record, and a formal interagency review of the Commission's proposed Order that lasted more than six months, the Commission

adopted a thorough, well-documented, and unanimous Order and Authorization ("*Order*") that approved the applications and imposed stringent conditions on Ligado before it can begin service and imposed additional conditions that run with the license.[1] In response, eight parties including the National Telecommunications and Information Administration ("NTIA") submitted petitions for reconsideration that do nothing more than relitigate the technical questions the *Order* carefully considered and addressed, or assert vague process fouls where none exist.[2] Because the Petitioners fail to meet the basic standards set forth in the Commission's rules on reconsideration, *see* 47 C.F.R. § 1.106(g), Ligado hereby respectfully urges the Commission to deny the Petitions.

**INTRODUCTION AND SUMMARY**

The *Order* represents the culmination of an extraordinary 17-year-old proceeding. Presented with a compelling and unique opportunity to maximize mid-band spectrum that raised questions about impact on a small percentage of GPS devices, the Commission carefully and methodically worked through the complex technical issues presented in the record. The Commission's unanimous adoption of the *Order*, which has garnered support from the Administration, members of Congress, industry, and other interested third parties, is a reflection

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[1] *In re Ligado Amendment to License Modification Applications*, Order and Authorization, FCC 20-48, IB Docket Nos. 11-109, 12-340 (rel. Apr. 22, 2020) ("*Order*").

[2] Petition for Reconsideration or Clarification of NTIA, IB Docket Nos. 12-340, *et al.* (May 22, 2020) ("NTIA Pet."); Petition for Reconsideration of Air Line Pilots Association, International, IB Docket Nos. 12-340, *et al.* (May 20, 2020) ("ALPA Pet."); Joint Petition for Reconsideration of the Association of Equipment Manufacturers, *et al.*, IB Docket Nos. 12-340, *et al.* (May 22, 2020) ("AEM Pet."); Petition for Reconsideration of Aviation Spectrum Resources, Inc., *et al.*, IB Docket Nos. 12-340, *et al.* (May 20, 2020) ("ASRI Pet."); Petition for Reconsideration of Iridium Communications Inc., *et al.*, IB Docket Nos. 12-340, *et al.* (May 22, 2020) ("Iridium Pet."); Petition for Reconsideration of Lockheed Martin Corporation, IB Docket Nos. 12-340, *et al.* (May 22, 2020) ("Lockheed Pet."); Petition for Reconsideration of RNT Foundation, IB Docket Nos. 12-340, *et al.* (May 22, 2020) ("RNTF Pet."); Petition for Reconsideration of Trimble Inc., IB Docket Nos. 12-340, *et al.* (May 22, 2020) ("Trimble Pet.").

of the *Order*'s thorough analysis and of the appropriate deference afforded to the Commission's expertise regarding spectrum management. Indeed, this proceeding represents the Commission's decision-making process working as Congress intended. Since Ligado filed its applications in 2015, dozens of parties have participated in this proceeding, filing countless reports, briefs, and letters, filled with myriad technical data and legal arguments. The *Order* ably surveys this well-developed record and addresses all the issues that were presented to the Commission. Based on the evidence in the record and its expert technical analysis, the Commission concluded that granting Ligado's applications—subject to a number of strict conditions—would be in the public interest and would not result in harmful interference to GPS or other adjacent services.

The Petitions do nothing to cast doubt on this conclusion. Rather, Petitioners rehash arguments that the *Order* thoroughly considered and rejected. Petitioners' arguments are wrong on the merits, but at bottom, Petitioners simply disagree with the Commission and are asking for a second bite at the apple. This, of course, is not a basis for entertaining a petition for reconsideration. Accordingly, the Commission should deny the Petitions.

## DISCUSSION

The Commission generally will deny petitions for reconsideration that rely on "arguments that have been considered and rejected by the Commission within the same proceeding" or "facts or arguments not previously presented to the Commission." *In re Connect America Fund*, 33 FCC Rcd 5073, 5076–77 (2018) (citing 47 CFR § 1.106(p)). The Commission may consider facts or arguments that were not previously presented only if such new facts or arguments: "(1) relate to events which have occurred or circumstances which have changed since the last opportunity to present such matters to the Commission; or (2) were unknown to petitioner until after their last opportunity to present them to the Commission, and could not through the exercise of ordinary diligence have learned of the facts or arguments in

question prior to such opportunity; or (3) consideration of the facts or arguments relied on is required in the public interest." *Id.* at 5077 (alterations and internal quotation marks omitted) (citing 47 CFR § 1.106(c)). None of the Petitions satisfy this rigorous standard.

## I. <u>The Commission Satisfied its Procedural Obligations in this Proceeding.</u>

NTIA, ALPA, RNTF, Lockheed, and Trimble take issue with the process and procedure that led to the Commission adopting the *Order*. These alleged procedural infirmities are wrong on the merits and in any event provide no basis for reconsideration. Petitioners' procedural arguments are fatuous given the length of this proceeding and the extensive record developed during that time, which includes thousands of pages of comments, letters, reports, and other assorted filings. Each Petitioner, including NTIA, had ample opportunity to participate in this proceeding and, in fact, did participate. The Commission thus satisfied its obligations under the Administrative Procedures Act ("APA") and under the Memorandum of Understanding ("MoU") to which it is a party with NTIA.[3] No more was required of the Commission.

### A. The Commission Fully Consulted With NTIA and Considered its Views.

NTIA argues that the Commission failed to defer to the "judgement and expertise of NTIA and other federal agencies" and broke the Commission's "prior commitments and precedents." NTIA Pet. at 3–6. Specifically, NTIA argues that the Commission "summarily dismissed legitimate federal agency concerns and entirely disregarded a broad stock of valuable information and data." *Id.* at 6. NTIA argues that, before adopting the *Order*, the Commission should have "request[ed] that NTIA submit more information for the record." *Id.* at 7.

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[3] Relatedly, the Commission also complied with its obligations under section 343 of the Communications Act. *See Order* ¶ 130. RNTF's and Trimble's arguments to the contrary are unavailing. *See* RNTF Pet. at 4, Trimble Pet. at 8. Neither Petitioner cites to any legal authority to support its argument, and neither is supported by the text of section 343, which in no way repeals or limits the Commission's exclusive authority over spectrum management or states how the Commission should resolve such concerns.

Any suggestion that the Commission failed to comply with its obligations under the MoU is unsupported by the record and also not grounds for reconsideration. As the *Order* explains, the Commission and NTIA coordinate their spectrum management responsibilities pursuant to an MoU "to ensure that the spectrum is used for its highest and best purpose." *Order* ¶ 122 (citing FCC–NTIA MOU at 2). The MoU provides that both agencies will consult with each other and will provide advance notice of proposed actions that could potentially cause interference to government operations or non-government operations. *Id.* At the same time, however, the Communications Act is clear that the Commission has *exclusive* authority to regulate non-federal uses of spectrum, *id.* (citing 47 U.S.C. §§ 151, 301); *see also* 47 U.S.C. §§ 302–03, and that the Commission's jurisdiction over technical matters associated with radio frequency interference is absolute, *see, e.g.*, *Head v. New Mexico Bd. of Examiners in Optometry*, 374 U.S. 424, 430 n.6 (1963) (FCC's jurisdiction over "technical matters such as frequency allocation" is "clearly exclusive"). Thus, while the MoU requires consultation, it in no way limits the Commission's statutory authority or responsibility (nor could it). The MoU itself reflects this allocation of authority and responsibility: under the terms of the MoU, "[f]inal action by either agency [] 'does not require approval' of the other." *Order* ¶ 122 (citing FCC–NTIA MOU at 2–3).

The Commission complied with its obligations under the MoU, while at the same time fulfilling its statutory mandate to determine for itself how to regulate Ligado's spectrum. The agencies' staffs began collaborating on this issue in 2011, and the Commission shared the proposed *Order* with NTIA in October 2019, six months before its adoption. *See* Letter from Ajit V. Pai, Chairman, FCC, to Adam Smith, Chairman, House Committee on Armed Services, at 2 (May 26, 2020). NTIA filed five formal responses in this proceeding, *Order* ¶ 123, two of which were submitted *after* the Commission shared the proposed *Order*. Thus, after receiving

notice of the proposed *Order*, including its rejection of the 1 dB metric, NTIA had the opportunity to supplement the record, which it did twice. That it chose to do so by filing materials that added nothing new or nothing of substance was its prerogative, but is not a basis for reconsideration. *See Order* ¶¶ 124–26 (NTIA filings "convey[] no new information, data, or arguments," "make[] no recommendation," and "contain no data, analysis, or basis for their conclusion"). Rather, it is clear that the Commission complied with the terms of the MoU.[4]

Relatedly, NTIA's contentions that the Commission failed to take notice of certain materials and that it failed to request that NTIA submit further materials are baseless.[5] Contrary to NTIA's claim, the Commission *did* carefully consider the materials NTIA put forward, and it explained why it disagreed with NTIA.[6] *Order* ¶¶ 126–27. Specifically, and as discussed below in detail, the Commission correctly rejected the 1 dB metric as a measure to regulate GPS devices operating outside their assigned spectrum and, thus, disagreed with arguments premised on use of that metric.[7] *Id.* ¶¶ 47, 59, 126. Moreover, the Commission afforded all parties the

[4] The prior proceedings that NTIA cites do not support its argument that the Commission violated its precedents. *See* NTIA Pet. 4–6. In those instances, the Commission took the action that NTIA requested not because it was *bound* to do so, but because the Commission agreed with NTIA on the merits. Here, the Commission disagrees with NTIA, which the Commission of course is free to do. *See G.H. Daniels III & Assocs. v. Perez*, 626 F. App'x 205, 210–11 (10th Cir. 2015) (statutory "consultation" obligation requires agency to "seek advice from" another agency, but such "advice is only that; it can, and sometimes should, be prudently ignored"). Ultimately, it is for the Commission to determine how Ligado's spectrum is to be put to use.

[5] The authorities that NTIA cites regarding taking notice, NTIA Pet. at 7 & nn.28–29, provide that the Commission "may" take notice of matters; they do not impose any obligation on the Commission.

[6] Lockheed's and Trimble's related arguments that the Commission did not adequately weigh NTIA's evidence, including by failing to sufficiently defer to the Department of Defense, fail for the same reason. *See* Lockheed Pet. 11–12; Trimble Pet. 7–8.

[7] For this reason, the Nov. 22, 2019, letter that NTIA attached to its Petition is substantively irrelevant (in addition to being procedurally improper). *See* NTIA Pet. at iv n.5. The letter's analysis is derivative of the DOT ABC Report on which the Commission declined to rely because it was premised on the the 1 dB metric. Moreover, NTIA provides no explanation for

opportunity to file in the record whatever materials were needed to support their arguments. NTIA clearly understood how to submit materials to the record given that it filed five times, including twice in the last six months. Despite this, NTIA does not attempt to explain why it failed to submit into the record information such as an inventory of Government devices—information that will be useful in implementing the *Order*'s conditions but cannot be considered on reconsideration. *See* 47 C.F.R. § 1.106(c). Ultimately, the Commission is required to make its decision based on the record before it.[8]

NTIA's process-based arguments are additional examples of the continued delay sought by some Executive Branch entities that has plagued this proceeding, just as it has plagued other FCC spectrum initiatives.[9] What NTIA seems to be arguing is that the Commission should cede its authority and provide a subset of federal entities an effective veto over the Commission's actions. These arguments are wrong, and provide no basis for reconsidering the *Order*.

### B. The Commission Satisfied its Obligations Under the APA.

Other Petitioners raise a hodgepodge of meritless procedural objections.

Petitioners ALPA, RNTF, and Trimble argue that the actions the Commission took in the *Order* should have been accomplished through a notice-and-comment rulemaking, rather than a

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why it failed to submit this letter into the record before the Commission adopted the *Order*.

[8] Equally unavailing is NTIA's complaint that the Commission did not ask it to refute the *Order*'s characterization that the Air Force recognized its GPS receivers are not entitled to protection outside their designated band. *Order* ¶ 52. As NTIA itself notes, this point is "irrelevant." NTIA Pet. at 8. The protection afforded to such devices when operating outside of their allocated spectrum is for the Commission to decide. In any event, NTIA provides no explanation for why it failed to present this point despite its many opportunities to do so over the past two years, which means it cannot be raised on reconsideration.

[9] *See, e.g.*, Letter from Ajit V. Pai, Chairman, FCC, to Eddie Bernice Johnson, Chairwoman, House Committee on Science, Space and Technology (April 29, 2019).

license modification.[10] ALPA Pet. at 18; RNTF Pet. at 7–9; Trimble Pet. at 4. Petitioners are wrong because they essentially seek reconsideration of an FCC decision from 2003. The Commission did conduct a notice-and-comment rulemaking on this very issue—in 2003. That is when the Commission "adopted rules enabling an MSS operator to seek modification of its existing MSS license to obtain ATC operational authority." *Order* ¶ 20. The *Order*'s grant of Ligado's applications stems directly from the Commission authorizing and establishing ATC rules for this spectrum in 2003. To the extent Petitioners seek reconsideration of that decision, they are 17 years late.[11]

Petitioners' attempt to analogize the *Order* to a spectrum reallocation is misguided. The *Order* did not reallocate the spectrum at issue; the Commission's 2003 *ATC Report and Order* established the rules under which Ligado seeks to modify its license. *Order* ¶ 3 & n.4. Moreover, Petitioners characterization of Ligado's proposed service as stand-alone terrestrial is wrong. As the *Order* states: "Ligado remains a significant and substantial provider of MSS." *Order* ¶ 121. Any argument that the Commission was required to proceed by rulemaking because it was reallocating Ligado's spectrum is not grounds for reconsideration.

To the extent any party seeks reallocation of Ligado's spectrum, it is Petitioners. By taking the position that entities other than Ligado—be they DoD or GPS users—have the right to

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[10] The complaint from Trimble is especially inappropriate since it filed in this proceeding *supporting* Ligado's applications, *see* Trimble Comments, IB Docket Nos. 12-340, *et al.*, at 1 (May 23, 2016), and expressed its support to the Commission at an in-person meeting. Those statements should be accepted under rules of candor, and are noteworthy given that they predate the amendments to Ligado's applications that gave substantially more protection to GPS devices.

[11] Ironically, RNTF itself appears to violate the Commission's procedural rules by including in its Petition for Reconsideration a request for a stay of the *Order* (without even bothering to argue that it has met the requirements for a stay). *See* 47 C.F.R. § 1.44(e) ("Any request to stay the effectiveness of any decision or order of the Commission shall be filed as a separate pleading."). The Commission should not entertain RNTF's procedurally improper stay request.

restrict Ligado from using *its* spectrum, Petitioners seek to short-circuit the APA and the rules governing spectrum allocation—the very thing they accuse the Commission of doing. The Commission should not entertain this unlawful spectrum grab.

Finally, Lockheed asserts that the Commission should have designated Ligado's applications for hearing. Lockheed Pet. at 21. Lockheed did not previously present this argument to the Commission, and it fails to show excuse for that failure.[12] *See* 47 C.F.R. § 1.106(c). Lockheed also is incorrect. "[T]he Commission has wide latitude in determining whether the record as a whole presents a substantial and material question of fact warranting a hearing." *In re Application of Voicestream Wireless Corp.*, 16 FCC Rcd 9779, 9851 n.60 (2001). Here, the facts are not in dispute; the record is replete with testing and analyses. That the parties differ on how to interpret those facts—*e.g.*, whether the data shows harmful interference to GPS—is not a basis for designating the applications for hearing.

## II. The *Order* Properly Addressed Concerns Regarding Harmful Interference to Adjacent Band GPS Operations.

NTIA, AEM, Lockheed, RNTF, and Trimble attempt to relitigate issues related to GPS interference that the Commission analyzed in detail. Because the *Order* addressed and rejected these arguments, they are not grounds for reconsidering the *Order* and should be rejected.

### A. The *Order* Correctly Rejected the 1 dB Metric and Evaluated Harmful Interference by Measuring Actual Performance.

NTIA, Lockheed, and Trimble seek to rehash the debate regarding use of the 1 dB metric in this context, disagreeing with the Commission's method of analyzing harmful interference to

[12] Moreover, Lockheed itself failed to comply with the procedural requirements that apply to a request for the designation of a hearing: namely, that it submit a petition containing "specific allegations of fact sufficient to show that a grant of the application would be prima facie inconsistent with the public interest, convenience, and necessity." *In re Application of Voicestream Wireless Corp.*, 16 FCC Rcd 9779, 9851 n.60 (2001) (alterations omitted)).

GPS. *See* NTIA Pet. at 10; Lockheed Pet. at 6; Trimble Pet. at 15–18 (FCC conclusion is "wrong"). "Petitions for reconsideration are not granted for the purpose of altering [the Commission's] basic findings or debating matters that have been fully considered and substantively settled." *In re Broadwave USA*, 18 FCC Rcd 8428, 8450 (2003) ("We find that petitioners' arguments do little more than disagree with our analysis, judgments, and policy choices. Bare disagreement, absent new facts and arguments, is insufficient grounds for granting reconsideration."). That is exactly what Petitioners hope to do. Petitioners' attempt to raise issues that the *Order* conclusively put to bed provides no basis for reconsidering the *Order*.

1. The *Order* Correctly Rejected the 1 dB Metric.

The debate regarding whether the 1 dB metric is an appropriate standard for measuring harmful interference has played out through this proceeding for years. *See, e.g.*, Letter from Gerard J. Waldron, Counsel to Ligado Networks LLC, to Marlene H. Dortch, Secretary, FCC, IB Docket Nos. 12-340, *et al.* (Feb. 24, 2016). The *Order* surveyed the record, analyzing the evidence related to the 1 dB metric, and rejected its use in this context. *Order* ¶¶ 25–59. The reasons supporting the Commission's conclusions are well cataloged in the *Order*. *Id.* ¶ 59. Ultimately, none of the evidence in the record established a relationship between 1 dB and actual degradation in the functioning of GPS receivers. *Id.* A point NTIA concedes.[13] *See* NTIA Pet. at 11 ("1 dB metric[] is not intended to determine or quantify a level of actual 'harmful interference'"). The Commission's technical conclusions regarding 1 dB are supported by substantial evidence. *See, e.g.*, *Order* ¶ 47. Moreover, it would have been arbitrary and

[13] The declaration from Edward Drocella that NTIA attaches to its Petition—an attempt to supplement the record after the fact—*supports* these conclusions, stating that "the analysis of 1 dB, 3 dB, and 5 dB $C/N_0$ degradation criterion had similar results," and indicating that to the extent interference occurs, it is "when [GPS] receiver bandwidth extends outside RNSS allocation." *See* Decl. of Edward Drocella at 3 , attached to NTIA Pet.

capricious for the Commission to ignore its own established standard and instead use a metric that is not defined, not in the Commission's rules, and the record shows is not measured consistently. *See, e.g.*, Letter from Gerard J. Waldron, Counsel to Ligado Networks LLC, to Marlene H. Dortch, Secretary, FCC, IB Docket Nos. 12-340, *et al.* (Apr. 12, 2020).

2. The *Order* Correctly Concluded that Ligado Could Deploy Without Causing Harmful Interference to GPS Operations.

Having rejected the 1 dB metric, the *Order* properly concluded that granting Ligado's applications would not result in harmful interference to GPS operations based on (1) "technical information in the record that evaluates potential harmful interference from Ligado's proposed operations to GPS devices using performance-based metrics and analysis," and (2) "[t]he agreements Ligado has reached with major GPS receiver manufacturers, as well as support from other receiver or component manufacturers." *Order* ¶¶ 61–62. Petitioners' disagreement with this sound analysis is not a basis for granting reconsideration.

NTIA criticizes as "new" and untested the Commission's method of evaluating harmful interference by measuring actual receiver performance, and asserts that additional testing is needed before moving forward. NTIA Pet. at 10–14. This argument is preposterous. As the *Order* explained, the focus on harmful interference is not new, nor is evaluating this by measuring actual performance. *See, e.g.*, *Order* ¶ 60. The Commission's "long-standing definition" of harmful interference is based on whether interference "seriously degrades, obstructs, or repeatedly interrupts" the service—*i.e.*, whether it impacts performance. *See id.* (citing 47 CFR § 2.1(c)). NTIA's and the ITU's definitions are analogous. *Id.* ¶ 49 (citing NTIA manual and ITU regulations).

This is not a surprise. In *2016*, the Commission released a public notice seeking comment on Ligado's applications, asking for "technical information about affected GPS

receivers (*e.g.*, receiver category, receiver bandwidth) and their *performance or functioning* (*e.g.*, break lock, loss of tracking, specific effects on location and timing accuracy)." *Id.* ¶ 35 (emphasis in original) (citing *Comment Sought on Ligado's Modification Applications*, Public Notice, 31 FCC Rcd 3802, 3809 (IB, OET, WTB 2016)). To argue *four years later* that NTIA lacked notice of the Commission's intent to measure actual performance ignores the record. Moreover, Ligado has long argued that the 1 dB metric should not apply because it does not measure actual performance and therefore does not correlate to harmful interference. *See, e.g.*, Reply Comments of Ligado Networks LLC, IB Docket No. 11-109 (June 6, 2016). In other words, Petitioners had years to respond to this exact argument.[14] Any complaint regarding lack of notice is particularly remarkable from NTIA given that it received a draft of the proposed *Order* six months prior to its adoption. Following this, NTIA filed two formal responses without calling for more testing—thus, resting its case on the DOT ABC Report. It is too late to make this request now, especially given the evidence of NTIA's repeated reliance on the testing already in the record. *See Order* ¶¶ 17, 45–46.

Trimble's criticisms of the testing performed by Roberson and Associates (the "RAA Reports") and the National Advanced Spectrum and Communications Test Network (the "NASCTN Report") are equally unavailing. Trimble Pet. at 16. Trimble simply casts aspersions on these reports without disproving the objective data that resulted from their testing.[15] The

[14] For this reason, Lockheed's argument that it had no opportunity to respond to the Commission's rejection of the DOT ABC Report because it did not address performance is meritless. *See* Lockheed Pet. 8. These criticisms were part of the record, and Petitioners had years to respond. Instead, they focused their energy advocating for the adoption of the 1 dB metric. That their strategy failed is not a basis for granting reconsideration.

[15] This accusation is incredible with respect to NASCTN, a "'neutral forum' for testing, modeling and analysis necessary to inform future spectrum policy and regulations." *Order* ¶ 38. NTIA's call for "independent" testing performed by MITRE, *see* NTIA Pet. at 13, when it is one of NASCTN's chartering agencies is disingenuous and should not be countenanced.

Commission was correct to rely on these studies, and Petitioners' arguments to the contrary should be rejected.

Finally, the Commission also was right to rely on Ligado's agreements with the major GPS device manufacturers because those agreements demonstrate that Ligado's proposed deployment would not interfere with these companies' GPS devices. Lockheed and Trimble quibble with the label the Commission attached to the agreements, arguing that these are not co-existence agreements. *See* Lockheed Pet. at 9; Trimble Pet. at 12–14. The label used is irrelevant; what matters is the agreements' substance. And in that sense, the agreements speak for themselves. The agreements contain robust technical and administrative safeguards with which Ligado's future deployments must comply. *Order* ¶¶ 28–30, 32. The GPS device manufacturers are sophisticated commercial entities that understand how to protect their interests and the interests of their users; they would not have agreed to tolerate Ligado's deployment if it meant their devices would no longer function. The agreements thus demonstrate that Ligado will not adversely affect these GPS devices, and that because of the role these companies play in the GPS supply chain, "to the extent any modifications are necessary, other GPS consumer device manufacturers will necessarily incorporate any such modifications and therefore those devices will be similarly unaffected."[16] *Order* ¶ 31. The Commission correctly interpreted these agreements, gave them appropriate weight, and reached the proper conclusion. Petitioners' arguments to the contrary do not warrant reconsideration.

### B. The *Order* Correctly Calculated the Costs and Benefits Associated with Granting Ligado's Applications.

[16] This point finds support in NTIA statement that the federal government's inventory of GPS devices, especially high-precision receivers, has been or is expected to be replaced in the coming years. *See* NTIA Pet. at 11.

Some Petitioners argue that the *Order* incorrectly calculated the costs and benefits associated with granting Ligado's applications—either because the *Order* failed to fully consider the cost to GPS users, overestimated the public interest benefits arising from Ligado's proposed deployment, or erred in comparing the alleged costs against the public interest benefits. *See* AEM Pet. at 6–7; Lockheed Pet. 14–16, 18–20; RNTF Pet. at 2–3; Trimble Pet. at 9–12. Again, Petitioners' disagreement with the Commission's analysis is not a basis for reconsideration.

Petitioners fail to cite to any statutory obligation requiring the Commission to conduct a cost-benefit analysis, which itself is sufficient to dismiss these concerns. *See Nat'l Ass'n of Home Builders v. EPA*, 682 F.3d 1032, 1039 (D.C. Cir. 2012) (noting that in absence of statutory duty, agency is not required to conduct a cost-benefit analysis). These arguments also fail because "cost-benefit analyses epitomize the types of decisions that are most appropriately entrusted to the expertise of an agency." *Charter Commc'ns, Inc. v. FCC*, 460 F.3d 31, 42 (D.C. Cir. 2006) (citation omitted). The Commission's public interest analysis fully considered the costs and benefits associated with granting Ligado's applications.

The *Order* first explained the expected benefits that the public will derive from Ligado's proposed deployment. *Order* ¶¶ 19–24. Petitioners' complaints that this analysis involved predictions are meritless. "Predictions regarding the actions of regulated entities are precisely the type of policy judgments that courts routinely and quite correctly leave to administrative agencies." *Mozilla Corp. v. FCC*, 940 F.3d 1, 50 (D.C. Cir. 2019) (citation omitted).

The *Order* does not ignore the impact to GPS. Rather, it analyzed the effect that granting Ligado's applications would have on GPS users, concluding that the allegations of harmful interference are baseless or sufficiently addressed—which mitigates any possible costs.[17] *See*

[17] To the extent Petitioners complain that the Commission did not quantify the costs and benefits

*Order* ¶ 62, 64–106. In sum, the Commission should decline to reconsider the *Order* on the basis of its analysis regarding the costs and benefits of granting Ligado's applications.

### C. The *Order*'s Conditions Are Proper.

NTIA, AEM, Lockheed, and Trimble argue that the conditions the Commission imposed on Ligado are improper or insufficient. These arguments are insufficient to grant reconsideration because they amount to a bare disagreement with the Commission's analysis.

Trimble argues that the *Order* erred by requiring GPS device owners to report and determine the source of harmful interference. Trimble Pet. at 22–23. Relatedly, Lockheed argues that parties who believe Ligado is causing them harmful interference should not have to report such interference to Ligado. Lockheed Pet. at 17. But this is exactly how interference complaint resolution works in other spectrum contexts. *See, e.g.*, 47 C.F.R. § 22.879(a); *id.* § 90.674(a). Lockheed and Trimble do not explain why the circumstances here differ. Accordingly, the Commission should decline to reconsider this condition.

AEM asserts that the *Order*'s conditions are insufficient because they will not make incumbents whole. AEM Pet. 8. This claim is both absurd and insightful. *Ligado* is the incumbent here, not AEM or any other GPS user squatting on Ligado's spectrum. To the extent GPS receivers are adversely affected (which they will not be) because they are extending beyond their allocation and into Ligado's spectrum, they plainly shall not be treated as incumbents.

NTIA speculates that the *Order*'s government repair or replace condition is impracticable. NTIA failed to previously present this argument to the Commission, despite having notice of the proposed condition, and provides no excuse for this failure. The

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of its actions, the Commission's reliance on a qualitative analysis was proper. *See Mozilla*, 940 F.3d at 70–71 (affirming FCC use of qualitative rather than quantitative cost-benefit analysis where "hard and convincing quantitative data would be difficult to find").

Commission should therefore decline to reconsider the *Order* on this basis. NTIA also picks at the Commission's legal authority for adopting this condition; but it does not actually suggest that the condition is unlawful. Thus, there is no need to seek guidance from GAO; if the condition presented a legal impediment, NTIA should have said so after learning of the condition. In any event, the GAO decisions cited in the *Order* state that federal agencies have the authority under federal fiscal law to accept repair or in-kind replacement of damaged GPS devices. NTIA cites no authority to the contrary and thus presents no basis for granting reconsideration.

Finally, the Commission should reject NTIA's proposed clarifications, which are unnecessary and largely inappropriate.[18]

## III. The *Order* Properly Addressed Concerns Related to Certified Aviation GPS Receivers.

ASRI and ALPA mischaracterize the Commission's analysis of certified aviation devices as incomplete, and repeat the concerns discussed above about the 1 dB metric and non-certified aviation devices. Because ASRI and ALPA assert meritless and duplicative arguments, the Commission should deny their Petitions. *See* 47 C.F.R. § 1.106(p).

### A. The *Order* Properly Relied on the Expert Analysis of the FAA.

ASRI and ALPA erroneously suggest that the Commission relied upon testing sponsored by Ligado in concluding that Ligado's applications do not present an interference risk to certified aviation receivers. *See, e.g.*, ALPA Pet. at 2; ASRI Pet. at 9. The *Order* is unequivocal that the Commission relied upon and accepted "the *FAA's* standards-based analyses relating to certified

[18] NTIA suggests that the Commission should prohibit Ligado from seeking a modification or waiver of the *Order*'s conditions "unless NTIA, FCC, DOD, and DOT/FAA jointly" approve the request. NTIA Pet. at 15. This requirement—an effective veto over the Commission's ability to grant a license modification—would constitute an unlawful delegation of the Commission's licensing authority. *Cf. U.S. Telecom Ass'n v. FCC*, 359 F.3d 554, 565 (D.C. Cir. 2004) (discussing limits on agencies' ability to subdelegate statutory authority). The Commission should decline NTIA's invitation.

aviation devices" to "be consistent with the finding[s] in the FAA's certified aviation device analysis." *Order* ¶ 71 (emphasis added). ASRI and ALPA are wrong.

ASRI and ALPA next criticize the Commission for relying on the FAA's analysis, which the petitioners seek to mischaracterize as "incomplete." ASRI Pet. at 5; ALPA Pet. at 3, 8. These attacks on the Commission's deference to its sister agency are misplaced. As the *Order* makes clear, the FAA is unquestionably the "expert agency" in "ensuring the reliability of certified aviation GPS devices." *Order* ¶ 71. Despite questioning the FAA's analyses, ASRI itself admits that the FAA "is indisputably the central stakeholder in ensuring the safety of operations in the [National Airspace System]." ASRI Pet. at 6, 13.

The Commission is familiar with ASRI's and ALPA's remaining arguments concerning the sufficiency of the FAA's analyses, particularly with regard to the "assessment zone" concept the FAA used to evaluate interference risks near Ligado's base stations.[19] *See Order* ¶ 66. Most of ASRI's arguments on this issue just repeat its prior arguments, which the *Order* rejected. *See id.* ¶ 68. ASRI and ALPA yet again seek to spin the DOT ABC Report's statement that "[t]he FAA has not completed an exhaustive evaluation of the operational scenarios in developing this assessment zone" as undermining the FAA's analyses. *Id.* ¶ 66. This argument was meritless when ASRI first made it nearly two years ago, and it remains so now. *See* Reply Comments of ASRI, IB Docket Nos. 11-109, *et al.*, at 4 (July 24, 2018). As the *Order* states, the FAA based its conclusions regarding tolerable power limits on the most restrictive certified aviation scenarios analyzed, and these exact scenarios cover operations ASRI and ALPA suggest were overlooked. *See Order* ¶ 72. For instance, although the *Order* stated that the FAA "came to [its] conclusions based on the most restrictive scenarios involving helicopter flight near Ligado's base

[19] ASRI and ALPA also refer to this assessment zone as a "250/30 cylinder."

stations," *id.*, both ASRI and ALPA list helicopters as a class of aircraft whose operations were unaccounted for, *see* ASRI Pet. at 7; ALPA Pet. at 9. Moreover, the Commission and the FAA had notice of ASRI's and ALPA's concerns for years —concerns the FAA noted are not shared by all operators. *See* DOT ABC Report at VII (stating that concerns about the assessment zone were "expressed by several, though not all, operators"). Having recognized these concerns and explained its reasoning for deferring to the FAA's conclusions, the Commission need not yield to parties seeking to substitute the judgment of the FAA—the central stakeholder and expert agency—for their own.

### B. The Order Properly Accounted For and Addressed Concerns Regarding Terrain Awareness Warning Systems and Unmanned Aerial Systems.

ASRI and ALPA state that the *Order* does not sufficiently address the GPS needs of Terrain Awareness and Warning Systems ("TAWS"). ALPA even suggests that the *Order* failed to properly assess aviation risks because it did not account for situations involving potential compromises of TAWS. *See* ALPA Pet. at 10. First, this ignores that the FAA analyses specifically addressed TAWS scenarios involving helicopters, which reflect the most sensitive operational environments. *Order* ¶ 72; *see also* DOT ABC Report at 154 (listing both "TAWS and HTAWS Scenarios" as among the operational scenarios assessed). Second, the Commission properly weighed these concerns with stakeholder input concerning the use of visual flight rules for operations conducted in close proximity to obstacles. *See Order* ¶¶ 68, 70 (citing Letter from Mike Stanberry, President, Jim Arthur, Director of Operations, Metro Aviation, to Marlene H. Dortch, Secretary, FCC, IB Docket Nos. 11-109, *et al.*, at 1–3 (filed July 9, 2018)). ASRI's and ALPA's disagreement with other stakeholders' perspectives concerning both TAWS and flight by visual reference was part of the record and considered by the Commission. *See* Comments of ASRI, IB Docket Nos. 11-109, *et al.*, at 4–5 (July 9, 2018). That ASRI and ALPA did not get

the results they wanted does not provide grounds for reconsideration.

For similar reasons, ASRI's and ALPA's recycled concerns regarding Unmanned Aerial Systems ("UAS") are unavailing. Both ASRI and ALPA suggest that the *Order*'s reasoning was flawed because the FAA's analyses did not include operational scenarios involving UAS in its assessment zone evaluations. *See, e.g.*, ASRI Pet. at 6. These arguments ignore that the *Order* states that larger UAS equipped with certified aviation devices will receive the same interference protections that the FAA recommended for manned aircraft. *See Order* ¶ 72. The *Order* also notes that although smaller UAS likely will use non-certified aviation devices, the base station EIRP limits will allow UAS using these devices to operate within 50 feet of base stations. *Id.* ¶¶ 72, 88. ASRI, in particular, offers no new evidence to support its criticisms, citing to the same filings that have been before the Commission for years. Once again, the Commission need not entertain petitions for reconsideration that rely solely on rehashed arguments.[20]

### C. The *Order*'s Operational Conditions Involving Ligado's Notification and Reporting Obligations Comprehensively Address Interference Concerns.

ASRI criticizes the *Order*'s additional notification and reporting obligations. ASRI misunderstands both the *Order* and the Commission's long-held enforcement policies.

*First*, ASRI suggests that the *Order*'s requirement that Ligado maintain a database of base station locations is "ambiguous and flawed," because it "impermissibly imposes burdens on non-parties." ASRI Pet. at 14. ASRI also confusingly suggests that pilots would be unable to access such "standalone, private databases." *Id.* ASRI misreads these conditions. The *Order* unambiguously states that the burden of establishing and maintaining this database is on Ligado,

[20] ASRI's and ALPA's arguments concerning interference risks to UAS using non-certified GPS receivers boil down to another challenge to the *Order*'s rejection of the 1 dB metric. These arguments fail for the reasons discussed above. *See supra* section II.A.1.

noting that it expects Ligado to work *with* relevant stakeholders, including ASRI, to ensure this information is made available to the aviation community—but imposing no obligation on such stakeholders. ASRI also ignores that Ligado also must report base station location information *directly to the FAA*. *Order* ¶ 95. ASRI's omission underscores the weakness of its argument.

*Second*, ASRI criticizes the conditions requiring Ligado to respond to and resolve complaints of interference and suggests that granting Ligado the authority to identify and respond to such complaints is insufficient to ensure the complaints will be addressed. These statements ignore the Commission's standard enforcement policies. This sort of arrangement—where a licensee's operations are conditioned on certain affirmative compliance obligations—is a cornerstone of the Commission's enforcement scheme and has been employed in countless other contexts.[21]

*Third*, and finally, ASRI argues that the *Order* should be revised to incorporate an upgrade-and-replacement program for non-federal GPS devices, and to address the potential for interference to SATCOM operations performed by Inmarsat and Iridium. The Commission should reject the first request because ASRI never previously presented it and may not do so on reconsideration. Likewise, the Commission should disregard the second request as an attempt to drag the Commission into an unrelated commercial dispute between a vendor (such as Inmarsat) and its customers (the aviation community).[22]

## IV. The *Order* Properly Addressed Iridium's Concerns.

[21] *See, e.g.*, *Howard Stirk Holdings, LLC, HSH Flint (WEYI) Licensee, LLC; and HSH Myrtle Beach (WWMB) Licensee, LLC*, Consent Decree, DA 20-472, at 5 (2020) (requiring that broadcast licensee to maintain hotline and respond to reported compliance violations).

[22] ASRI's and ALPA's additional concerns regarding SATCOM operations are overblown and involve issues comprehensively addressed—and dispensed with—below. *See infra* section IV.

Iridium seeks to use its petition to align itself with others by raising the 1 dB issue and deference to NTIA, but it concedes, as it must, that its issues "differ greatly from those of the GPS providers."[23] Iridium Pet. at 15. But as with other Petitioners, Iridium repeats arguments that the Commission rejected. Accordingly, the Commission should deny Iridium's Petition.

### A. The *Order* Considered Iridium's Technical Analysis, and Iridium has Long Known of Ligado's Additional Offer of 9 dB OOBE Reduction.

Iridium criticizes the Commission for not adequately considering Iridium's technical analysis.[24] *Id.* at 4–9. This is a swing and a miss. In fact, the *Order* addressed Iridium's technical analysis and gave three reasons for not relying on it. *Order* ¶ 117. The *Order* thus gave Iridium's technical analysis due consideration, and the Commission should not reconsider its decision to reject it.

Iridium's claim that it did not have an opportunity to comment on the power levels that the Commission adopted is absurd. Iridium Pet. at 6. This information has been at Iridium's fingertips for three and a half years. Ligado first offered a 9 dB OOBE reduction to Iridium in the confidential version of its November 2, 2016 filing. *See* Confidential Attachment A, attached to Letter from Gerard J. Waldron, counsel to Ligado Networks LLC, to Marlene H. Dortch, Secretary, FCC, IB Docket Nos. 11-109, *et al.* (filed Nov. 2, 2016) ("November 2016 *Ex Parte*"). Ligado repeated this offer multiple times, including in public filings. *See, e.g.*, Letter from Gerard J. Waldron, counsel to Ligado Networks LLC, to Marlene H. Dortch, Secretary, FCC, IB Docket No. 11-109, *et al.*, at 4 (filed Oct. 22, 2019). Iridium cannot claim that it was

[23] It is therefore unclear how Iridium has standing to assert such arguments. It also is noteworthy that NTIA, which purports to speak for Iridium's single largest customer, does not even mention Iridium.

[24] Lockheed also raises this issue. Lockheed Pet. at 9–11. Because Lockheed's arguments are substantially similar to Iridium's, we respond to both here.

not aware of Ligado's offer, or that it could not submit a technical analysis using Ligado's new proposal before now.

Iridium next critiques the Commission for its "unexplained" and "unsupportable" choice of applying *the current FCC rules* to Ligado's out-of-channel emissions in the 1627.5–1637.5 MHz band. Iridium Pet. at 4. Specifically, the Commission imposed the limit found in section 25.253(g)(1) of its Commission's rules on Ligado in the *Order*.[25] *Order* ¶ 112; 47 C.F.R. § 25.253(g)(1). This straightforward decision is neither unexplained or unsupportable. The Commission need not demonstrate that long-standing rules are adequate to protect licensees. If Iridium wishes to request an amendment to section 25.253(g)(1), a rule which affects all MSS licensees, it must do so through a petition for rulemaking.[26] The Commission should reject Iridium's attempt to relitigate a rulemaking decision made over a decade ago.

### B. Iridium Erroneously Claims that the *Order* Did Not Adequately Consider Various Commission Rules or the Communications Act.

Iridium states that the *Order* contradicts section 25.255 of the Commission's rules. Iridium Pet. at 14–15. As Ligado has noted before, Iridium misconstrues this rule. *See, e.g.*, Letter from Gerard J. Waldron, counsel to Ligado Networks LLC, to Marlene H. Dortch, Secretary, FCC, IB Docket Nos. 11-109, *et al.*, at 4–5 (filed January 16, 2017); November 2016 *Ex Parte* at 11–13. Iridium's authorization at 1617.775-1626.5 MHz for downlink operations is on a secondary basis. *See Iridium Constellation LLC*, 31 FCC Rcd 8675, ¶ 3 n.9 (2016) ("MSS

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[25] In 2010, the International Bureau granted a waiver of this section to Ligado's predecessor-in-interest, SkyTerra. *See SkyTerra Application for Modification Authority for an Ancillary Terrestrial Component*, 25 FCC Rcd 3043, 3056–57 (IB 2010). Neither Iridium, nor any other party, opposed SkyTerra's waiver request. The OOBE limit imposed on the Ligado by the *Order* is stricter than the one afforded to SkyTerra..

[26] Note that section 25.253(g)(1) regulates "out of channel emissions," and thus protects operators within the L-Band—not operators like Iridium located in other bands.

downlinks in [the 1617.775-1626.5 MHz] band are secondary to other services."); *see also Motorola Satellite Communications, Inc.*, 10 FCC Rcd 2268, at ¶ 16 (1995) (Iridium downlinks are secondary). Ligado's authorization at 1627.5-1637.5 MHz is on a primary basis. *See generally Mobile Satellite Ventures Subsidiary LLC*, 19 FCC Rcd 22144 (2004). Of course, secondary users may not claim interference protection from primary services. *See* 47 C.F.R. § 2.105(c). Nothing in section 25.255 changes this, and to hold otherwise would upend the Table of Frequency Allocations.[27]

Finally, Iridium takes issue with the *Order*'s waiver of the integrated service rule, stating that the FCC cannot "satisfy the[] criteria" necessary for waiver. Iridium Pet. at 22. This argument is another attempt by Iridium to raise old arguments that the *Order* rejected. The *Order* explained why grant of the waiver does not undermine the purpose of the rule and is in the public interest. *Order* ¶¶ 120–21. Iridium's disagreement with the conclusion is not a basis for reconsideration.

### C. The *Order* Is Clear that the Ramp in EIRP Limits for the 1627.5-1632.5 MHz Band Expires Five Years from the Garmin-Ligado Agreement.

The *Order* provides the Ligado's maximum EIRP for 1627.5-1632.5 MHz will ramp up linearly from -31 dBW at 1627.5 MHz to -7 dBW at 1632.5 MHz for "a period five years"—a provision which was included in Ligado's applications at the request of Garmin. *Order* ¶ 135. In a footnote, Iridium states that this should be calculated from the date of the *Order*, and asks the Commission for clarification. Iridium Pet. at 16 n.62. The Commission should reject this request since it would overrule the clear intent of the parties who established the five-year period (Garmin and Ligado), and because Iridium seeks to distort a benefit granted to Garmin (and by

[27] Iridium also argues that the *Order* failed to satisfy section 343 of the Communications Act Iridium Pet. at 13. As explained above, this argument is meritless. *See supra* n.3.

extension its GPS devices and users) until December 2020 for its own anticompetitive gain.

This five-year power ramp in the Garmin agreement is part of Ligado's *in-band power* in the 1627.5-1632.5 MHz band, and has no bearing on the issue Iridium raises (Ligado's out of band emissions at or below 1626.5 MHz). Iridium has never raised concerns in this proceeding regarding Ligado's in-band power. Because Iridium does not explain why it failed to present this argument to the Commission, it cannot do so now on reconsideration. The Commission adopted an absolute OOBE limit of -67 dBW/4 kHz in the spectrum at 1627.5 MHz to address Iridium's stated concerns. This limit will result in a further reduction in dB at 1626.5 MHz to the benefit of Iridium. There is no Iridium issue to consider with regard to the in-band power ramp.

Turning to the in-band power ramp, this ramp-up on the first 5 MHz was carefully negotiated by Ligado and Garmin. The Garmin-Ligado agreement expressly states that this ramp-up terminates "five years from the Effective Date" of the agreement.[28] The *Order* sets out the power levels and stipulates that these power levels are "[c]onsistent with Ligado's agreements." *Order* ¶ 135. It is clear from the *Order* that this ramp-up period derives from the Garmin-Ligado agreement, since the *Order* states that the power levels are established "consistent with Ligado's agreements."[29] Accordingly, the ramp up runs from the effective date of the agreement in question, the Garmin-Ligado agreement.[30]

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[28] *See* Letter from Gerard J. Waldron, Counsel to New LightSquared LLC, to Marlene H. Dortch, Secretary, FCC, IB Docket No. 11-109, Exhibit B (filed Dec. 17, 2015) ( "*Garmin Agreement*"). The Agreement stipulates that the "Effective Date" of the agreement is Dec. 16, 2015. *Id.* at 1.

[29] The Commission has previously recognized that it should seek to effectuate the intent of the parties when it construes private contracts subject to the agency's purview. *See Interconnection Facilities for the W. Union Tel. Co.*, 53 F.C.C.2d 1045, 1051 (1975) (interpreting a reference to tariffs in a private agreement as applying at the time of contracting because the alternative would require a "construction rendering a provision or term meaningless or superfluous").

[30] If the Commission determines that clarity is needed, it should clarify that this period of the ramp up expires on December 16, 2020.

Extending the ramp-up period beyond the timeline contemplated in the Garmin-Ligado agreement would also be at odds with the *Order*'s incorporation of the co-existence agreements as another condition on Ligado. The *Order*'s requirement that "Ligado shall comply fully with any and all terms and conditions set forth in its currently effective agreements with [the GPS companies]," *id.* ¶ 133, makes clear that the Commission intended to incorporate the requirements included in these agreements consistent with the parties' intent. More fundamentally, this clarification also is consonant with what Garmin itself has submitted to the record. Specifically, Garmin stated in March 2016 that it included the "five-year transition period" for the Lower Uplink so that its engineers could accommodate the proposed network.[31]

## CONCLUSION

For the foregoing reasons, the Commission should deny the Petitions.

Respectfully submitted,

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[31] *See* Letter from M. Anne Swanson, Counsel to Garmin International, Inc., to Marlene H. Dortch, Secretary, FCC, IB Docket Nos. 11-109, *et al.* (filed Mar. 9, 2016) (citing *Garmin Agreement*). Garmin also referred to this five-year period as the timeframe "specified in the Garmin-LightSquared settlement agreement" and added it would undertake work so that compatible devices could be available "within the five-year frame specified in the Garmin-LightSquared settlement agreement." *Id.* at 2.

## CERTIFICATE OF SERVICE

I, Gerard J. Waldron, hereby certify that on this 1st day of June, 2020, I caused a copy of the foregoing Opposition to Petitions for Reconsideration or Clarification to be served on the following:

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