Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of	)	
	)	
Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L-Band, and the 1.6/2.4 GHz Bands;	)	IB Docket No. 01-185
	)	
Review of the Spectrum Sharing Plan Among Non-Geostationary Satellite Orbit Mobile Satellite Service Systems in the 1.6/2.4 GHz Bands	)	IB Docket No. 02-364

To: The Commission

PETITION FOR RECONSIDERATION

J. R. CARBONELL
CAROL L. TACKER
DAVID G. RICHARDS
CINGULAR WIRELESS LLC
5565 Glenridge Connector
Suite 1700
Atlanta, GA 30342
(404) 236-5543

Its Attorneys

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SUMMARY

Cingular and others have established throughout this proceeding that awarding terrestrial rights to 2 GHz MSS licensees without an auction is contrary to Section 309(j) and the decision to permit 2 GHz MSS applicants to succeed or fail on their own merits on the basis of a satellite-only authorization. The decision to award terrestrial authority to MSS licensees without holding an auction is wrong as a matter of law and policy. Even assuming *arguendo* that the FCC had the authority to award ATC rights in the first instance, however, the FCC's ancillary program is substantively flawed. Quite simply, the *Report and Order* fails to ensure that terrestrial use of the MSS bands will remain truly ancillary.

The *Report and Order* adopts a goal of ensuring that ATC use remains ancillary to the principal MSS service for good reason: authorizing unfettered terrestrial use would undermine the original satellite allocation, run contrary to the 2 GHz MSS licensing decisions to permit licensees to succeed or fail on their own merits on the basis of a satellite-only authorization, and unquestionably violate Section 309(j). The *Report and Order* as presently crafted, however, does not achieve this goal. While it adopts a number of gating criteria ostensibly to ensure "substantial" satellite service, these criteria *will not* in reality ensure that terrestrial use of the MSS bands will remain ancillary to MSS. Specifically:

- Geographic coverage – the *Report and Order* requires the provision of "necessary throughput to maintain" service in compliance with the space station *coverage* requirements for each band, but those coverage requirements are defined solely in terms of one or more satellites being "in view" of potential subscribers;
- Continuing coverage – the *Report and Order* requires simply that the coverage be ongoing with the availability of a back-up satellite;
- Commercial availability – the *Report and Order* requires the *offering* of service in accordance with coverage requirements, rather than requiring MSS licensees to actually have any (much less any significant threshold of) paying satellite service customers;
- Integrated Service – the *Report and Order* requires use of dual mode phones (or a special showing), but does not mandate that those phones actually seek out a satellite signal first; and
- In-Band – the *Report and Order* limits ATC to a licensee's "core" spectrum, but this has more to do with protecting against interference than preserving the ancillary character of ATC.

These gating criteria do not mandate that an MSS/ATC licensee maintain any particular level of MSS capacity. The *only* limitation is that an MSS licensee cannot dedicate *all* of its spectrum to terrestrial service. As a result, an MSS provider that configured its operations so as to dedicate 99% of its spectrum to ATC would be fully compliant with the Commission's rules. Although the Commission believed MSS providers would have incentives to maintain satellite services because of the significant upfront costs, this conclusion is belied by the ever-increasing number of MSS providers abandoning former multi-satellite NGSO systems in favor of a single GSO satellite, including Boeing (approved to reduce from 12 satellites to one) and Iridium (seeking to reduce from 96 satellites to one).

The MSS licensees have already demonstrated that they will respond to the *Report and Order*'s incentives to minimize satellite system investments; they can also be expected to respond to the incentive to dedicate spectrum to ATC because of relative spectral efficiency. Without changes to the gating criteria, the *Report and Order* will encourage and permit MSS licensees to abandon service to rural America – ostensibly the original basis for the 2 GHZ MSS allocation.

To ensure that ATC truly remains ancillary and is not allowed to supplant MSS, the Commission must adopt a limit on the ability of the MSS licensees to reduce satellite system capacity for the benefit of ATC. The Commission imposed limits on ancillary services in other contexts, *e.g.*, DBS, and needs to do so here. The basis for requesting ATC approval in the first place was to augment poor satellite signals in urban areas. Thus, the Commission must also require that customer equipment "look first" to the satellite to complete a connection. In addition, the Commission must make clear that MSS licensees must satisfy their implementation milestones as part of the gating criteria and that satisfaction of the gating criteria is license/band specific.

The decision also fails to properly weigh or address significant technical evidence in the record. The Telcordia Study submitted by Cingular and Sprint demonstrated that the claimed benefits of dynamic spectrum sharing were exaggerated, and that there are unlikely to be any spectrum efficiency benefits accruing uniquely from the MSS licensees' use of the band for terrestrial services. To the contrary, the study showed that even with dynamic frequency coordination, sharing would so erode the capacity of the satellite uplink that even moderate ATC use would pose a substantial risk of rendering the satellite incapable of providing MSS and serving rural areas. Telcordia therefore concluded that terrestrial use was likely to be accomplished by segmentation, in which case there is no difference between a single MSS/ATC provider and two separate providers. Accordingly, the spectrum must be auctioned. Although the *Report and Order* cursorily addressed some aspects of the Telcordia Study, it failed to refute, and in some cases even acknowledge, these ultimate conclusions.

Finally, the *Report and Order*'s finding that MSS licensees would not be unjustly enriched does not withstand scrutiny. The order is void of any analysis supporting its finding that the value of ATC rights is offset by the cost of building a satellite network. Indeed, the value of ATC rights appears to far exceed satellite construction costs, particularly given the increasing rate at which MSS licensees are abandoning multi-satellite NGSO networks for less expensive single-satellite GSO systems. Moreover, the FCC's statement that MSS operators and terrestrial wireless providers do not compete in the same market is contradicted by the findings in its CMRS competition report to Congress that members of the two industries compete against one another in the mobile telephony market. The FCC's findings thus should be reversed on reconsideration.

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PETITION FOR RECONSIDERATION

Cingular Wireless LLC ("Cingular"), pursuant to Section 1.429(d) of the Commission's rules, hereby submits this petition for reconsideration of the Federal Communications Commission's ("FCC" or "Commission") *Report and Order* in this proceeding.[1] Cingular and others have established throughout this proceeding that awarding terrestrial rights to 2 GHz MSS licensees without an auction is contrary to Section 309(j) of the Communications Act, as well as the FCC's decision in the licensing orders to allow 2 GHz MSS applicants to succeed or fail on their own merits on the basis of a satellite-only authorization. The decision to award terrestrial authority to MSS licensees without holding an auction in which other companies can bid is wrong as a matter of law and policy.

[1] *Flexibility for Delivery of Communications by Mobile Satellite Service Providers*, IB Docket No. 01-185, *Report and Order*, FCC 03-15 (rel. Feb. 10, 2003) ("*Report and Order*"), *summarized*, 68 Fed. Reg. 33640 (June 5, 2003), *recon.*, FCC 03-162 (rel. July 3, 2003) ("*Order on Reconsideration*").

Assuming *arguendo* that the FCC had the authority to award terrestrial rights in the first instance, this pleading focuses on the substantive flaws with the FCC's ancillary terrestrial component ("ATC") program.[2] The FCC defined its objective in this proceeding as providing flexibility while ensuring that any terrestrial use of the MSS bands would remain ancillary to the "principal" satellite service. It did so for good reason. Authorizing unfettered terrestrial use would undermine the original satellite allocation, run contrary to the 2 GHz MSS licensing decisions to permit licensees to succeed or fail on their own merits on the basis of a satellite-only authorization, unquestionably violate the auction requirement in Section 309(j) and, most importantly, deny the provision of MSS to rural and underserved areas – the public interest foundation for the MSS allocation. It would also negate the stated objective of the *Report and Order* itself that terrestrial use of the MSS bands remain ancillary. As shown below, the *Report and Order* is not faithful to its stated goal. Reconsideration is also warranted because the *Report and Order* failed to adequately consider evidence in the record that the benefits of integrated operations were exaggerated and it is more efficient to segment the spectrum, in which case an auction is compelled by statute.

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[2] Following release of the *Report and Order*, Cingular and others sought clarification that MSS ATC applications would not be granted until the gating criteria had been satisfied and the applications placed on public notice for comment. *See, e.g.*, Letter to Marlene H. Dortch, Secretary, FCC from Kathryn A. Zachem, Counsel to AT&T Wireless Services, Inc. ("AT&T Wireless"), Cingular, and Verizon Wireless at 4 (Mar. 6, 2003); Letter to Marlene H. Dortch, Secretary, FCC from Kathryn A. Zachem and Adam D. Krinsky, Counsel to AT&T Wireless, Cingular Wireless, and Verizon Wireless at 4 (June 20, 2003). On July 3, 2003, the Commission issued an *Order on Reconsideration* making clear that "we will not grant ATC authority until the applicant has demonstrated that it has actually satisfied each of the gating criteria." *Order on Reconsideration* at ¶ 7. To ensure that the criteria have been met, the *Order on Reconsideration* also "require[s] that the Commission place on public notice for public comment an initial application for authority to add an ATC component." *Id.* at ¶¶ 7, 10.

DISCUSSION

I. THE *REPORT AND ORDER* IS NOT FAITHFUL TO ITS ANCILLARY GOALS AND THUS IS UNLAWFUL AND ARBITRARY AND CAPRICIOUS.

The *Report and Order* repeatedly reflects the Commission's intention "to authorize ATC only as an ancillary service to the provision of the principal service, MSS" and to prevent abuse of this policy.[3] As shown below, however, the gating criteria intended to ensure "substantial satellite service"[4] are cosmetic at best. For example, nothing restricts an MSS licensee from using 99% of its spectrum capacity for terrestrial operations and only having terrestrial consumers.

Porous gating criteria which allow predominant, if not total, terrestrial operations expose the unlawfulness of the FCC's decision not to utilize auctions[5] and the inconsistency with its satellite-only service decisions.[6] They also reflect unreasoned decisionmaking because the *Report and Order* professed to be allowing terrestrial authority on an ancillary basis and the FCC has been able to adopt enforceable limits on ancillary use in other satellite contexts.[7] The gating criteria do not constrain MSS licensees to offer terrestrial service on a truly ancillary basis.

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[3] *See, e.g., Report and Order* at n.5.

[4] *See Report and Order* at § III(C)(2)-(4).

[5] The failure to ensure terrestrial service will truly be ancillary to the principal MSS authority the Commission previously granted means the license modifications associated with ATC will unquestionably be "so different in kind or so large in scope and scale" as to warrant treatment as "initial" licenses subject to Section 309(j). *See Competitive Bidding, Second Report and Order*, 9 F.C.C.R. 2348, 2355 (1994), *recon.*, 9 F.C.C.R. 5532 (1994).

[6] *See The Boeing Company et al.,* 18 F.C.C.R. 1405 (2003) (affirming 2 GHz MSS licensing decisions to allow applicants "to succeed or fail in the market on their own merits" on the basis of a satellite-only authorization), *appeal pending sub nom. AT&T Wireless Services, Inc. et al. v. FCC*, No. 03-1042 (D.C. Cir. filed Feb. 26, 2003).

[7] *See, e.g., Burlington Truck Lines, Inc. v. United States*, 371 U.S. 156, 168 (1962) (agency decisionmaking must reflect a "rational connection between the facts found and the

A. The Gating Criteria Fail to Ensure that ATC Will Remain Truly Ancillary and that MSS/ATC Licensees Will Provide "Substantial Satellite Service."

In the text of the *Report and Order*, no less than nine times the Commission refers to its requirement that the MSS licensee must provide "substantial satellite service" in order to obtain or retain eligibility to provide ATC.[8] However, the gating criteria and the rules do not incorporate any such obligation. While the rules do require the launch and continued operation of a mobile satellite system that meets the *coverage* requirements for the various MSS bands, those coverage requirements are defined solely in terms of one or more satellites being "in view" of *potential* subscribers anywhere in the United States (and in additional areas outside the United States in the case of NGSO systems).[9] The gating criteria do not mandate that an MSS/ATC licensee maintain any particular level of MSS capacity so as to provide "substantial satellite service." Indeed, the *Report and Order* only requires that an MSS system "remains capable of providing the necessary throughput to *maintain* space-segment service" across the coverage area.[10] Likewise, commercial availability is tied to meeting coverage requirements, rather than requiring that MSS licensees actually have any paying satellite service customers.[11]

Thus, if the MSS operator reduces the satellite communications capacity by dedicating nearly all of its spectrum to ATC, the satellite system would still be in compliance with the gating criteria to maintain its ATC eligibility. The *only* limitation on such voluntary reductions

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choice made"); *Achernar Broad Co. v. FCC*, 62 F.3d 1441, 1447 (D.C. Cir. 1995) ("agencies are bound to adhere to their own rules and procedures").

[8] *See Report and Order* at ¶¶ 3, 34, 35, 41, 66, 72, 225.

[9] *See* 47 C.F.R. §§ 25.149(b)(1), 25.143(b)(2).

[10] *See Report and Order* at ¶ 74 (emphasis added).

[11] *See Report and Order* at ¶ 85.

in capacity is the requirement in Section 25.149(a)(6) that an MSS licensee cannot dedicate *all of its spectrum* to terrestrial service: "ATC base station operations shall use less than all available MSS frequencies when using all available frequencies for ATC base station operations would exclude otherwise available signals from MSS space-stations." An MSS provider that configured its operations so as to dedicate 99% of its spectrum to ATC would be fully compliant with the Commission's rules (and thus fully eligible to retain ATC authority), even though it had severely reduced its ability to provide mobile satellite services. If there were any MSS customers, the result would be more busy signals and fewer bandwidth-intensive service offerings.

The MSS licensees have strong incentives to engage in such behavior. As reflected in the record in this proceeding, the MSS spectrum can accommodate significantly more subscribers in the same amount of bandwidth when the spectrum is used to provide service to terrestrial customers. Indeed, Globalstar asserted that with ATC authority, it could serve 490 terrestrial callers in the same capacity necessary for one MSS caller.[12]

Although the Commission believed that the MSS providers would have incentives to maintain or expand their satellite services because the "significant upfront and sunk costs of satellite systems increase the likelihood that the licensees would continue to operate their satellite systems,"[13] such a conclusion is inconsistent with the Commission's observations

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[12] *See* Letter to Marlene H. Dortch, Secretary, FCC, from William D. Wallace, Counsel for Globalstar, Att. at 10 (June 27, 2002); *see also* Letter to Donald Abelson, Chief, IB, FCC, from Brian Fontes, Cingular, and Luisa L. Lancetti, Sprint Corp., at 2 (Aug. 5, 2002) ("Cingular/Sprint Aug. 5, 2002 Ex Parte").

[13] *Report and Order* at ¶ 35.

elsewhere in the *Report and Order* that such historic costs do not affect a licensee's behavior.[14] Moreover, it is not even clear that the MSS licensees will expend "significant" upfront costs to acquire the satellite system to qualify them for receipt of ATC authority.[15]

Indeed, since the release of the *Report and Order*, a trend has emerged as MSS licensees seek to minimize satellite system expenditures. Iridium recently filed a modification request to substitute a single GSO satellite for the authorized 96-satellite NGSO constellation specified in its 2 GHz authorization.[16] In addition, although the Commission dismissed MSV's ATC application as premature,[17] MSV was attempting to obtain ATC authority without making any additional investment in satellite capabilities by relying on its current satellite, notwithstanding that its original request for ATC authority was tied to its second generation satellite.[18] MSV also

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[14] *See Report and Order* at ¶ 39 (indicating that the cost of acquiring spectrum is irrelevant to a carrier's pricing decisions in the context of assessing the risk of predatory pricing); *see also Alenco Communications, Inc. v. FCC*, 201 F.3d 608, 615 (5th Cir. 2000) (noting that current and anticipated costs, rather than historical costs, are relevant to business decisions to enter markets and price products); *Fresno Mobile Radio, Inc. v. FCC*, 165 F.3d 965, 969 (D.C. Cir. Feb. 5, 1999) (the use to which an asset is put "is based not upon the historical price paid for it, but upon what it will return to its owner in the future"). Notably, Iridium originally determined to de-orbit its Big LEO constellation when it could not initially find a qualified buyer of those assets out of bankruptcy, notwithstanding the very significant (in excess of $5 billion) "sunk" costs of deploying that satellite system.

[15] For example, according to trade press reports, ICO is seeking to buy Globalstar's Big LEO constellation for some $55 million, *see ICO Saves Competitor Globalstar from Bankruptcy with Investment,* Comm. Daily, Apr. 29, 2003, at 4-5, and Boeing recently was granted a modification of its 2 GHz MSS license to go from a 16-satellite NGSO constellation to a single GSO satellite, *see The Boeing Company, Order and Authorization*, DA 03-2073 (IB/OET rel. June 24, 2003).

[16] *See* Iridium 2 GHz LLC, File No. SAT-MOD-20030609-00103, at 2 (June 6, 2003) ("Iridium Modification App.").

[17] *See* Letter to Bruce D. Jacobs, Counsel for Mobile Satellite Ventures Subsidiary LLC ("MSV"), from Thomas S. Tycz, Chief, Satellite Division, International Bureau, FCC, re: File No. SAT-MOD-20030604-00110.

[18] *See* Application of Mobile Satellite Ventures Subsidiary LLC, File No. SAT-MOD-20030604-00110, at 4 (filed June 4, 2003) ("MSV ATC App."); *cf.,* Letter to Marlene H. Dortch,

sought a waiver of the requirement that it construct an on-ground spare,[19] and recently surrendered licenses for two of the three satellites for which it was authorized.[20] Finally, Globalstar has requested authority to reduce its constellation from 48 to 40 satellites so as not to have to replenish the in-orbit satellites that have already failed.[21]

Such actions are not surprising. The absence of any real "substantial satellite service" obligation in the gating criteria incents the MSS licensees to minimize their satellite system investments while still remaining eligible to receive valuable terrestrial rights without having to pay for those rights. If the Commission does not impose and enforce a real requirement that the MSS licensees continue to provide "substantial satellite service" to obtain and retain ATC authority, then MSS licensees will surely follow the strong incentives created by the relative spectral efficiency of terrestrial versus satellite operations and devote the preponderance (if not all but a token amount) of their licensed spectrum to ATC. Thus, without changes to the gating criteria, mobile satellite service, including service to rural America, will be undermined by the Commission's *Report and Order*. It would be unreasoned decisionmaking not to adopt restrictions on ATC use when substantial terrestrial use is foreseeable and, for many MSS licensees, economically compelled.[22]

Secretary, FCC, from Gary Epstein, Counsel for Inmarsat (Dec. 20, 2002) (challenging MSV's more recent intentions to use the first generation satellite to qualify for ATC).

[19] *See* MSV ATC App. at 5 n.17.

[20] *See* Letter to Marlene H. Dortch, Secretary, FCC from Lon C. Levin, Vice President, MSV (June 30, 2003).

[21] *See* L/Q Licensee, Inc., File No. SAT-MOD-20030606-00098, Ex. A at 1 (filed June 4, 2003) ("Globalstar Modification App.")

[22] *See infra* notes 71-72 and accompanying text.

B. The Commission Must Strengthen the Gating Criteria to Ensure ATC Is Truly Ancillary and MSS Remains the "Principal" Service.

The Commission must adopt two changes to the gating criteria to ensure that ATC truly remains ancillary and is not allowed to supplant MSS. First, it must limit the ability of the MSS licensees to reduce satellite system capacity. Second, it must require that customer equipment "look first" to the satellite to complete a connection.[23] The Commission must also make clear that MSS licensees bear the burden of demonstrating by credible evidence – not just mere certification – that the ATC gating criteria have been satisfied to provide a basis upon which they can be verified by the Commission and the public.[24]

The Commission declined to constrain ATC operations by applying a "dictionary definition" of ancillary, and instead simply declared that compliance with the gating criteria would constitute "ancillary" service.[25] As noted above, however, the gating criteria do not ensure that ATC will be ancillary to MSS. In addition, rejecting the calls for a "predominant" use test, the Commission claimed that it would be difficult to measure "predominance" by the satellite system or to select among the different potential tests for predominance.[26] This was unreasoned decisionmaking, particularly in light of the importance the Commission ascribes to

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[23] If these changes are not adopted, other potentially less spectrally-efficient measures, including limitations on terrestrial minutes of use, call revenue, or consumers served, would need to be imposed to ensure that ATC remains ancillary.

[24] *Cf. Amendment of the Commission's Space Station Licensing Rules and Policies,* IB Docket No. 02-34, *First Report and Order*, FCC 03-102, at ¶¶ 185, 191, 193 (rel. May 19, 2003) (recently revising the Commission's rules to require that MSS licensees submit information sufficient to demonstrate that they have complied with their milestones); *Public Notice*, "Updated Filing Requirements for Bell Operating Company Applications Under Section 271 of the Communications Act," DA 01-734 (rel. Mar. 23, 2001) (requiring regional Bell Operating Companies seeking to offer long distance service in their home region to provide credible factual evidence, supported by affidavit, as part of the Section 271 approval process).

[25] *Report and Order* at ¶ 69.

[26] *Report and Order* at ¶ 99.

the provision of MSS to rural areas and the fact that the FCC has been able to adopt enforceable limits in other satellite contexts.

In contrast to its actions here, the Commission in other situations has prescribed meaningful limits on "ancillary" services. On several occasions the Commission has authorized licensees to provide ancillary services, but has also imposed restrictions to prevent such "ancillary" services from becoming predominant. For example, in the case of the Direct Broadcast Satellite ("DBS") service, the Commission allowed licensees to provide ancillary services such as Fixed Satellite Service ("FSS") in the DBS bands, but imposed technical and temporal limitations to prevent a *de facto* reallocation of the DBS band to FSS.[27] Similarly, the Commission allows broadcasters to provide ancillary and supplemental services so long as there is no derogation of the primary service – over-the-air free programming.[28] Thus, the Commission has in the past imposed effective limitations on "ancillary" services.[29]

While more restrictive limits would be justified in light of the importance placed upon MSS by the Commission,[30] at a minimum it should restrict ATC such that at least one-half of the

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[27] *See United States Satellite Broadcasting Company, Inc., Memorandum Opinion and Order*, 1 F.C.C.R. 977, 979 (1986) ("*USSB*") (although the licensees were permitted to provide ancillary services, they could only do so on transponders that were also providing DBS, and for no more than 50% of the time), *aff'd*, 2 F.C.C.R. 3642 (1987).

[28] *See Advanced Television Systems, Fifth Report and Order*, 12 F.C.C.R. 12809, 12817 (1997), *recon.*, 13 F.C.C.R. 6860 (1998).

[29] The Commission's failure to provide a reasoned basis for this departure from its prior practices in actually limiting "ancillary services" constitutes arbitrary and capricious rulemaking. *See Greater Boston Television Corp. v. FCC*, 444 F.2d 841, 852 (D.C. Cir. 1970).

[30] *See, e.g.,* Letter to Marlene H. Dortch, Secretary, FCC, from Thomas Wheeler, Cellular Telecommunications & Internet Association ("CTIA") at 4 (Dec. 17, 2002) ("CTIA Dec. 17, 2002 *Ex Parte*") (capacity in the satellite should never be reduced by more than 20% for ATC).

mobile satellite system's capacity remains available to subscribers at all times.[31] Under this approach, an MSS licensee could only decrease the satellite system's bandwidth by up to one-half when shifting capacity to ATC. This straightforward test would ensure that MSS capacity would only suffer constrained (although not insignificant) degradation in order to afford the MSS licensees with flexibility to augment (but not supplant) their satellite services with terrestrial services.

Such a limitation would ensure that there would be no complete derogation of the "primary" service, consistent with the Commission's past treatment of "ancillary" services. Such a limitation is also readily measured, so the MSS licensees would have no difficulty certifying on an annual basis as to their continuing compliance.[32] In addition, such a restriction would not arbitrarily limit the relative number of satellite versus terrestrial customers or minutes of use and thereby unnecessarily constrain the MSS licensee's ability to maximize spectral efficiency. Finally, such a restriction would presumably incent the MSS licensees to develop and enhance their satellite services, because unused satellite capacity would carry an "opportunity cost," *i.e.*, only a maximum amount of spectrum could be transferred to ATC.

In addition to adopting a meaningful "substantial satellite service" obligation through such a limit on ATC, the Commission must also adopt a "look first" to the satellite requirement. Although ATC was intended simply to augment poor satellite signals,[33] and a "satellite first"

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[31] *See USSB*, *supra* note 27; Comtech Mobile Datacom Corporation Comments at 5 (Oct. 19, 2001); VoiceStream Wireless Corporation Reply Comments at 22-23 (Nov. 12, 2001).

[32] *See* Engineering Statement of Hardin & Associates at 1-3 ("Engineering Statement"), appended as Attachment A hereto; *cf. Report and Order* at ¶ 99 (expressing concern for the first time regarding how to measure predominant use).

[33] *Flexibility for Delivery of Communications by Mobile Satellite Service Providers, Notice of Proposed Rulemaking*, 16 F.C.C.R. 15532, 15546 ¶ 30 (2001) (ATC is intended to "augment[] signals in areas where the principal service signal, the satellite signal, is attenuated").

requirement was proposed in the record,[34] the *Report and Order* did not address it.[35] Under such a requirement, the customer equipment would be required to look first to determine whether a reliable satellite signal is available before seeking a terrestrial signal. Handsets can easily be designed to incorporate such an algorithm.[36] This requirement would also reinforce the "ancillary" character of ATC and would be fully consistent with the flexibility requested by the ATC proponents – to augment satellite service in areas where satellite service is unavailable or unreliable.

Finally, the Commission should clarify two aspects of the integration requirement so as to eliminate potential loopholes that would allow MSS providers to offer a stand-alone terrestrial service. The Commission should make clear that the dual mode handset "safe harbor" requires that the customer equipment actually incorporates the capability to communicate with both the satellite and the ATC base stations. The ATC proponents had sought flexibility to offer "dual mode" phones where the capability to access the satellite was merely a component available at the point of sale. In its *Errata*, the Commission eliminated an arguable reference to such a

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[34] *See, e.g.*, CTIA Dec. 17, 2002 *Ex Parte* at 4; CTIA Comments at 6 (Oct. 22, 2001).

[35] *See AT&T Wireless Services, Inc. v. FCC*, 270 F.3d 959, 968 (D.C. Cir. 2001) (agencies must "'examine the relevant data and articulate a satisfactory explanation for its action including a rational connection between the facts found and the choice made'") (quoting *U.S. Telecom. Ass'n v. FCC*, 227 F.3d 450, 461 (D.C. Cir. 2000) and *Motor Vehicle Manufacturers Association v. State Farm Mutual Automobile Insurance Co.*, 463 U.S. 29, 43 (1983)); *see also GTE Service Corp. v. FCC*, 205 F.3d 416, 422 (D.C. Cir. 2000) (failure "to consider an important aspect of the problem" is error). The *Report and Order* discussed only separate proposals to route all calls through the satellite system or to require technical demonstrations of MSS inability to serve proposed ATC locations – neither of which Cingular is advocating here. *See Report and Order* at ¶¶ 100-01.

[36] *See* Engineering Statement at 3-5; *cf. Report and Order* at ¶¶ 100-01 (expressing concern for the first time about mandatory satellite routing or like proposals that would create spectrum and administrative efficiencies).

"point of sale" loophole in Paragraph 225,[37] but there was no explicit rejection of the ATC proponents' proposal. Second, the Commission should eliminate and/or clarify the intended scope of the exemption for Personal Data Assistants ("PDAs") set forth in Footnote 229 of the *Report and Order*. If PDAs, laptops or other computers are not subject to the integration requirement, then potentially significant terrestrial services could be provided on a stand-alone basis. This problem would be further exacerbated insofar as there is no clear definition of what constitutes a PDA at a time when handsets have begun to incorporate various computer and Internet access functions, along with voice capability.[38] At present, there is no rationale in the *Report and Order* for the exception; thus, it must be eliminated.

II. THE COMMISSION MUST CLARIFY THE *REPORT AND ORDER* TO LIMIT GAMING OF THE ATC PROCESS.

A. The Commission Must Make Clear that an MSS Licensee Must Satisfy All of Its Milestones Prior As Part of the Gating Criteria.

The Commission should make clear in its rules that, consistent with the text of the *Report and Order*, an MSS licensee must satisfy all of its implementation milestones as part of the gating criteria. While the *Notice* sought comment on whether to permit terrestrial operations by a licensee that had not launched its entire constellation, the Commission agreed with commenters that ATC operations prior to full compliance with a licensee's implementation milestones presented opportunities for abuse.[39] In particular, the Commission noted the risk that early ATC

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[37] *Errata*, IB Docket No. 01-185, at ¶ 5 (Mar. 7, 2003).

[38] *Cf. Report and Order* at n.42 (defining "handsets" to refer to all types of communications terminals capable of transmitting voice, data, or both). There are now numerous handsets on the market that combine voice and "PDA" functionalities. *E.g.*, Toshiba 2032; Handspring Treo 300; Samsung SPH-i700; Audiovox Thera Pocket PC; Kyocera 7135 Smartphone; Research in Motion Blackberry 6750; Siemens SX56; Palm Tungsten W.

[39] *See Report and Order* at ¶ 86 & n.227 (citing Boeing Comments at 8 for the proposition that "[a] prior condition for offering [ATC] should be full compliance with" existing satellite implementation milestones).

operations would present to subscribers who could find themselves without service if the licensee later failed to satisfy a milestone and its license (and attendant ATC authority) became null and void.[40]

Accordingly, the Commission reaffirmed that it "remain[s] committed to the vigorous enforcement of our satellite implementation milestones."[41] The *Report and Order* thus makes clear that "ATC authority wholly depends on MSS licensees' fulfillment of their construction, launch and operation requirements," citing to FCC rules requiring certification of milestone compliance and providing for automatic license cancellation for failure to meet *any* requirement of its authorization.[42] Indeed, the *Report and Order* states that licensees "must have complied with MSS implementation milestones imposed on licensees at the time of seeking [ATC] authority."[43]

Nevertheless, despite the seemingly clear language and intent of the *Report and Order* itself, the new rules adopted do not explicitly require the satisfaction of a licensee's implementation milestones to obtain ATC authority, but rather state that a licensee's service "must be commercially available . . . in accordance with the coverage requirements that pertain

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[40] *See Report and Order* at ¶ 86.

[41] *Report and Order* at ¶ 86. In the 2 GHz band, for example, each authorization requires the satisfaction of implementation milestones, including launch and operation of the entire authorized system within 6 years of licensing. *See id.* at ¶¶ 83 & n.222, 106 & n.280 (citing *2 GHz Report and Order*, 15 F.C.C.R. at 16177 ¶ 106)); *see also, e.g., ICO Services, Inc.*, 16 F.C.C.R. 13762, 13775 ¶ 34 (IB/OET 2001), *aff'd*, 18 F.C.C.R. 1405 (2003), *appeal pending sub nom. AT&T Wireless Services, Inc. et al. v. FCC*, No. 03-1042 (D.C. Cir. filed Feb. 26, 2002).

[42] *Report and Order* at ¶ 34 & n.83 (citing 47 C.F.R. §§ 25.143(e)(3), 25.161). Consistently, Commissioner Copps noted that the *Report and Order*'s gating requirements "to win ATC rights" include "meeting tough construction and deployment milestones." *See Report and Order*, Separate Statement of Commissioner Michael J. Copps.

[43] *Report and Order* at ¶ 3.

to each band."[44] A licensee seeking to game the system could seize upon this language to argue that the placement of a bare minimum number of satellites in orbit sufficient to meet the geographic coverage requirement is sufficient to obtain ATC rights, without the need to first complete its entire constellation. This runs the very risk the *Report and Order* sought to protect against. It would enable an MSS licensee to obtain ATC subscribers in advance of completing its authorized MSS system, but place them in jeopardy if the licensee subsequently failed to complete that system in its entirety. To prevent this possibility for abuse, the Commission should clarify in its rules that a licensee seeking ATC authority must have met all of its implementation milestones as one of the gating criteria.[45]

B. The Commission Must Make Clear that Satisfaction of the Gating Criteria Is License/Band Specific.

To avoid further potential for manipulation of the ATC process, the Commission should make clear that satisfaction of the gating criteria is license/band specific, *i.e.*, a licensee's satisfaction of the gating criteria for one band cannot be used to satisfy the gating criteria for a license it or an affiliate may hold in another band. This clearly seems to be the *Report and Order*'s intent. For one thing, ATC authority is limited to in-band operation.[46] Thus, in the case of the 2 GHz band, ATC must remain within an operator's selected assignment.[47] Moreover, the

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[44] *See* 47 C.F.R. § 25.149(b)(3).

[45] To do so, Section 25.149(b)(3) should be revised as follows (proposed language is underlined): "Commercial availability. Mobile-satellite service must be commercially available (*viz.*, offering services for a fee) in accordance with the implementation milestones ~~coverage requirements~~ that pertain to each band and as prescribed in each MSS licensee's authorization as a prerequisite to such licensee obtaining ATC authorization ~~an MSS licensee's offering ATC service~~.

[46] *See Report and Order* at ¶ 93 ("[A] licensee's authority to operate MSS ATC should remain linked to its MSS authority, and limited to the precise frequency assignment authorized for MSS."); 47 C.F.R. § 25.149(a)(2).

[47] *See id.*

gating criteria contemplate certain band-specific demonstrations. For example, to satisfy the substantial service requirement, the *Order* states that "an MSS licensee . . . must provide space-segment service across the entire geographic area stipulated in our rules and policies for that operator's *particular space-station system geometry and frequency band.*"[48] Likewise, "MSS [must] be commercially available in accordance with the coverage requirements *that pertain to each band* as a prerequisite to an MSS licensee's offering ATC service."[49] Indeed, the International Bureau recently reminded MSS licenses that:

> the Commission's requirement that MSS licensees provide substantial satellite service to the public requires certain *band- and network-specific demonstrations* concerning the MSS space-segment's geographic coverage area, coverage continuity and commercial availability.[50]

While the Commission has made it clear that it does not intend to allow "gaming" of its ATC rules,[51] the failure to explicitly state that satisfaction of the gating criteria is license/band-specific and not licensee-specific presents that opportunity. It would be clearly contrary to the *Report and Order*'s intent "to ensure that ATC may operate only after the provision of MSS has commenced" were the Commission to permit a non-operational licensee in one band to be able to acquire an operational license in another band and use the latter's operational status to claim ATC rights across *both* spectrum bands. Given the fact that at least one non-operational 2 GHz licensee has already announced its intention to acquire an operational license in another band,[52]

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[48] *See Report and Order* at ¶ 73 (emphasis added).

[49] *See Report and Order* at ¶ 85 (emphasis added).

[50] *See The Boeing Company, Order and Authorization*, DA 03-2073, at n.66 (IB/OET rel. June 24, 2003) (emphasis added).

[51] *See Report and Order* at n.5.

[52] *See Public Notice*, "New Globalstar Corporation Seeks Consent to Assignment and Transfer of Control of Licenses and Authorizations Held By Globalstar, L.P. Subsidiaries and

the Commission should clarify its rules now rather than waiting to react to an attempt to abuse its ATC processes.[53]

III. THE *REPORT AND ORDER* FAILS TO PROPERLY WEIGH OR ADDRESS SIGNIFICANT TECHNICAL EVIDENCE IN THE RECORD

The record establishes that the Commission could auction terrestrial rights without significant risk of loss of any of the claimed efficiencies from "integrated" operations, and without creating any undue risk of harmful interference to the MSS licensees' satellite services. To the extent the Commission believes that granting the MSS licensees ATC authority is necessary to subsidize satellite service and so preserve its availability for rural areas or public safety services, such a rationale would be inconsistent with the rationale of the 2 GHz MSS licensing orders that MSS licensees should be permitted to succeed or fail on their own merits on the basis of a satellite-only service. Moreover, as demonstrated above, the Commission's ATC decision as presently structured is counterproductive to such a policy goal, because the ATC rules are likely to lead to a *reduction* in the availability of satellite services to these markets.

The record is replete with numerous *claims* by the ATC proponents of the expected benefits of an MSS carrier integrating terrestrial service with its satellite service. For example, the ATC proponents asserted that the costs of satellite handsets will spiral downwards because of scale economies that will follow from their ability to add millions of new ATC subscribers, and

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Affiliate," DA 03-1932 (rel. June 12, 2003) (seeking consent to assign or transfer Globalstar's Big LEO and other licenses to and entity majority-owned and controlled by ICO Global Communications (Holdings) Limited).

[53] One way to accomplish this would be to revise the language in new Section 25.149(b) to read (proposed language is underlined): "Applicants for an ancillary terrestrial component shall demonstrate compliance with the ~~following~~ criteria <u>set forth below</u> through certification. <u>Such demonstrations are band- and network-specific. A licensee may not use its network facilities and operations in one band to satisfy the criteria with respect to license(s) held in another band</u>."

the Commission apparently accepted those claims.[54] At the same time, the ATC proponents were adamant in their objection to a requirement that dual mode handsets be required.[55] The ATC proponents failed to explain, however, how the claimed scale economies for satellite-capable phones would result from the ATC-only handsets they argued they should be able to provide.[56]

The ATC proponents also claimed that their unique ability to provide dynamic spectrum sharing between the satellite and terrestrial operations would create significant additional spectrum efficiencies. On the other hand, the Telcordia Study and related submissions entered into the record by Cingular and Sprint Corp. ("Sprint") demonstrated that these claimed benefits of dynamic spectrum sharing were exaggerated, and that any such sharing was unlikely to be deployed in any event because of the unmanageable technical complexity that such "dynamic" sharing would entail.[57] Telcordia also concluded that there are unlikely to be any spectrum

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[54] *See Report and Order* at ¶ 24.

[55] *See* Letter to Marlene H. Dortch, Secretary, FCC, from Lawrence H. Williams, ICO, at 2 (Dec. 16, 2002); Letter to Marlene H. Dortch, Secretary, FCC, from Tom Davidson, Counsel to the Official Creditors Committee of Globalstar, L.P. at 3 (Jan. 3, 2003).

[56] To the extent there are significant benefits to a combined MSS and terrestrial service so as to be able to offer seamless service in rural and urban environments, the MSS carriers could presumably capture those benefits by offering a dual-mode, dual band phone. Indeed, as Telenor Broadband Services ("Telenor") points out, Thuraya is doing so successfully today. *See* Telenor Comments at 7.

[57] *See generally* Telcordia Technologies, "Analysis of Spectrum Sharing Between MSS and Terrestrial Wireless Services" (May 10, 2002) (Telcordia Study"), appended as Att. A to Letter to Donald Abelson, Chief, IB, FCC, from Brian Fontes, Cingular, and Luisa L. Lancetti, Sprint (" (May 13, 2002) ("Cingular/Sprint May 13, 2002 *Ex Parte*"); Letter to Donald Abelson, Chief, IB, FCC, from Brian Fontes, Cingular, and Luisa L. Lancetti, Sprint (July 31, 2002) ("Cingular/Sprint July 31, 2002 *Ex Parte*"); Cingular/Sprint Aug. 5, 2002 *Ex Parte*; Letter to Donald Abelson, Chief, IB, FCC, from Brian Fontes, Cingular, and Luisa L. Lancetti, Sprint (Oct. 1, 2002) ("Cingular/Sprint Oct. 1, 2002 *Ex Parte*"); Letter to Donald Abelson, Chief, IB, FCC, from Brian Fontes, Cingular, and Luisa L. Lancetti, Sprint (Dec. 2, 2002) ("Cingular/Sprint Dec. 2, 2002 *Ex Parte*").

efficiency benefits accruing uniquely from the MSS licensees' use of the band for terrestrial services. To the contrary, it showed that even with dynamic frequency coordination, sharing would so erode the capacity of the satellite uplink that even moderate ATC use would pose a substantial risk of rendering the satellite incapable of providing MSS and serving rural areas. Telcordia thus concluded that any terrestrial use was likely to be accomplished by segmentation, in which case there would be no loss of spectral efficiency if the terrestrial and satellite operations were performed by two different operators rather than one. Under these circumstances, the Commission must auction off the terrestrial rights.[58] Although the *Report and Order* cursorily addressed some aspects of the Telcordia Study, it failed to refute, and in some cases even acknowledge, these ultimate conclusions.[59]

Cingular and Sprint submitted the Telcordia Study in response to the Commission's request for additional information on the feasibility of awarding terrestrial rights in the MSS bands to parties other than the MSS licensees. Telcordia based its analysis on the proposals and data furnished by the ATC proponents. Telcordia agreed with the assessments of the ATC proponents that operations on the same channels by MSS and even limited numbers of terrestrial users was likely to cause harmful interference to the satellite calls. As Telcordia pointed out, however, that problem is the same whether the terrestrial system is operated by the MSS licensee or by an independent company, and the most efficient method of avoiding the risk of such harmful interference (from the perspective of spectral efficiency and system deployment costs) is to segregate the spectrum. While "dynamic" allocation of spectrum between the terrestrial and satellite operations could theoretically increase slightly the number of satellite calls that could be

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[58] *See* 47 U.S.C. § 309(j).

[59] *Compare supra* note 57 *with Report and Order* at ¶ 53. The failure to materially address this evidence is error. *See supra* note 35.

accommodated, that theoretical increase would come at the significant cost of developing and implementing a much more complex system, which far exceeds any incremental gain in capacity that could in theory be achieved. Moreover, current technology does not support the necessary near-instantaneous changes in the thousands of ATC base stations that would be necessary under the ATC proponents' claims for dynamic sharing, and it is not clear that the theoretical incremental increase in capacity would exceed the capacity lost as a result of dropped calls.

The ATC proponents maintained that they will utilize "dynamic" spectrum sharing between the MSS and ATC operations, but provided nothing more than "chalkboard" proposals on how such sharing would be accomplished. As the Cingular and Sprint submissions demonstrated, those claims are simply not credible.[60] The ATC proponents also claim that "dynamic" sharing between unrelated entities would be too complicated, particularly because as "competitors" the necessary cooperation (and information exchange) would not be forthcoming. Such claims ignore the fact that the Commission regularly relies on "competitors" to coordinate operations so as to avoid interference.[61] Moreover, such claims are undercut by the Commission's acknowledgment that the MSS licensees may likely partner with independent

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[60] The Commission declined to impose a requirement for a centralized data switch to manage dynamic sharing or otherwise require the MSS licensees to use dynamic sharing. *Report and Order* at ¶ 97.

[61] Indeed, the Commission sanctioned a sharing agreement between two competing Little LEO satellite systems that required exchange of satellite ephemeris between the companies to manage the sharing so that one operator's transmissions could be shut down when within a defined "overlap" with the competing system's transmissions. *Orbital Communications Corporation, Order and Authorization*, 9 F.C.C.R. 6476, 6478 ¶ 13-14, 6483 ¶ 36 (1994), *aff'd*, 10 F.C.C.R. 7801 (1995). Such an information exchange is similar to the coordination that would be necessary here.

terrestrial operators,[62] and by several 2 GHz MSS licensees' proposals to operate ATC outside their selected frequencies.[63] Such operations would necessarily involve coordination between "independent" companies. The Commission erred by simply relying on these unsubstantiated claims by the ATC proponents as grounds for summarily rejecting the conclusions of the Telcordia Study and the other submissions by the terrestrial carriers demonstrating that these claims by the ATC proponents were simply not credible.[64]

To the extent the Commission remains concerned about potential harmful interference to the MSS operations or the burden MSS licensees might bear from such coordination, it could require that terrestrial operations would be on a non-interference basis. There is precedent for MSS and mobile terrestrial operations in the same band, with one of the services protected from harmful interference. The Commission allowed sharing between mobile terrestrial and mobile satellite operators in the subscriber uplink bands for the Little LEO service, although in that case it was the satellite service that was required to operate on a non-interference basis.[65] In addition, the Commission has auctioned services in which the auction winners are required to protect the incumbent users, and the auction participants account for the value of such "encumbered"

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[62] *Report and Order* at ¶¶ 41, 44. Indeed, in its recent application to modify its 2 GHz license, Iridium indicated that for ATC services it was considering partnering with an independent terrestrial carrier. *See* Iridium Modification App. at 23-24.

[63] *Report and Order* at n.238 & ¶ 110. ICO, TMI and Constellation nowhere explain why they believed that they alone could conduct coordinated, non-interfering ATC operations in other MSS licensees' frequencies, but that non-MSS licensees could not.

[64] *Report and Order* at ¶ 57.

[65] *Allocation of Spectrum to the Fixed-Satellite Service and the Mobile-Satellite Service for Low-Earth Orbit Satellites, Report and Order*, 8 F.C.C.R. 1812, 1815 (1993).

spectrum in formulating their bids.[66] The Commission should follow these precedents and conduct an auction for ATC spectrum.

The ATC proponents quibbled with some of the Telcordia calculations, but were unable to refute the study's ultimate conclusions.[67] With regard to the disagreements on some of the calculations, Telcordia's analyses were based on the information furnished by the ATC proponents and the limited descriptions of their proposed "dynamic" sharing techniques. To the extent the ATC proponents subsequently submitted new information, the Telcordia numbers would change slightly. In any event, those disagreements on the calculations are not decisionally significant and do not undercut the conclusions reached by Telcordia. Moreover, any such relative efficiencies "disappear" to the extent that the MSS carriers can (and have strong incentives to) dedicate upwards of 99% of their spectrum to ATC.[68]

While many of the various benefits claimed by the ATC proponents are disputable, it is noteworthy that an auction of the spectrum would not preclude an MSS licensee from providing such integrated satellite and terrestrial services. Indeed, if there were any unique spectrum sharing capabilities that the MSS licensees could capture, or to the extent the MSS licensees

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[66] *See, e.g., Petition Regarding Applications and Licenses Of Winners of the 39 GHz Auction, Order*, 16 F.C.C.R. 19412, 19413-14 (2001), *aff'd*, 16 F.C.C.R. 11156 (2001); *Licensing of Fixed Services at 24 GHz, Report and Order*, 15 F.C.C.R. 16934, 16945-46 (2000); *Filing Procedures in the Multipoint Distribution Service and in the Instructional Television Fixed Service*, 10 F.C.C.R. 13821, 13826 (1995).

[67] *See* ICO Further Comments at 3-8 & Att. (June 13, 2002); Letter to Marlene H. Dortch, Secretary, FCC, from William D. Wallace, Counsel to Globalstar, L.P. at 3-12 (June 7, 2002); Letter to Marlene H. Dortch, Secretary, FCC, from David S. Konczal, Counsel to MSV at 6-7 (July 29, 2002). Cingular and Sprint demonstrated that the ATC proponents' attempts to refute the Telcordia Study conclusions were invalid. *See* Cingular/Sprint July 31, 2002 *Ex Parte*; Cingular/Sprint Aug. 5, 2002 *Ex Parte*; Cingular/Sprint Oct. 1, 2002 *Ex Parte*; Cingular/Sprint Dec. 7, 2002 *Ex Parte*. No further responses were submitted by the ATC proponents.

[68] *See supra* Section I.

would not have to treat the spectrum as "encumbered," then they presumably would be willing to bid more for the terrestrial spectrum rights at the auction and thereby obtain those benefits. However, the Commission should not attempt to make such predictions. The marketplace – via auctions as required by Section 309(j) – must make those judgments.

IV. THE *REPORT AND ORDER*'S FINDING OF NO UNJUST ENRICHMENT DOES NOT WITHSTAND SCRUTINY.

The *Report and Order* concludes without analysis that any increase in the value of an MSS license as a result of the ATC modifications permitted thereunder is offset by the high costs of building and maintaining a satellite network, particularly given the claimed limits on ATC use.[69] The FCC thus concludes its decision is not inconsistent with Section 309(j)(3)'s objective of avoiding unjust enrichment.[70]

Even a rough assessment shows that the FCC should have examined the issue more carefully. For example, MSS licensees in the 2 GHz band are currently allocated 10 MHz of spectrum. Analysts have placed a value of approximately $4.45 billion on 10 MHz of nationwide terrestrial spectrum.[71] While MSS licensees will need to devote at least a *de minimis* percentage of their spectrum to satellite use under the current rules, receiving ATC rights will substantially raise the value of their holdings. By comparison, the movement by Boeing, Iridium

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[69] *See Report and Order* at ¶¶ 226, 229.

[70] *See Report and Order* at ¶ 229.

[71] *See, e.g.,* Legg Mason, "Nextel Communications, Inc. OTC:NXTL, Netxtel takes another step in spectrum swap plan," Dec. 31, 2002 (estimating the value of a nationwide 10 MHz block of contiguous spectrum in the 1.9 GHz band as $4.45 billion based on spectrum valuations in the recent transaction between Verizon Wireless and Northcoast Communications at $1.60/MHz/POP); *see also* Dan Meyer, "Verizon Wireless boosts spectrum in Northcoast buy," RCR News, Dec. 23/30 2002, at 1.

and others away from more expensive multi-satellite NGSO networks to a single GSO satellite will reduce construction costs to $1 billion or less.[72]

Having failed to assess the value of the ATC rights it was awarding, the *Report and Order* states that it is not unjust in any event with respect to terrestrial wireless operators who had to pay for their licenses at auction because the two are not close substitutes and do not directly compete with one another.[73] No support is offered for this conclusion, which is not surprising given the Commission's contrary findings elsewhere. In the *Seventh CMRS Competition Report*, the Commission specifically informed Congress that satellite providers are competitors with terrestrial cellular and PCS providers in the mobile telephony market.[74] Indeed, the report identified Globalstar, Iridium and, in the future, ICO, as specific competitors in the mobile telephony segment.[75] The FCC's findings thus do not withstand scrutiny and should be reversed on reconsideration.

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[72] *See* "RCR's Top 20 Mobile Satellite Carriers," RCR News, Feb. 7, 2000, at 18; Celsat Application, File No. 26/27/28-DSS-P-94, IBFS No. SAT-A/O-19940408-00016/17/18 at 43 (filed Apr. 12, 1994); <http://www.thuraya.com/corporate (corporate profile)>. Presumably a licensee could acquire and launch a single "bare bones" GSO satellite for even less, which would still be compliant with the coverage requirement that defines "substantial satellite service."

[73] *See Report and Order* at ¶ 229.

[74] *See Seventh Annual CMRS Competition Report*, 17 F.C.C.R. 12985, 12997, 13025-13028 (2002) ("This section discusses two other types of operators that are competing in the mobile telephony segment: resellers and satellite operators.").

[75] *See id.* at 13026 & n.277. By contrast, it declined to address Inmarsat and MSV because the voice and data services offered by those carriers "do not compete directly with mobile telephony services." *Id.*

CONCLUSION

For the foregoing reasons, the Commission should reconsider and/or clarify its *Report and Order* to the extent indicated herein.

Respectfully submitted,

/s/ David G. Richards
J. R. CARBONELL
CAROL L. TACKER
DAVID G. RICHARDS
CINGULAR WIRELESS LLC
5565 Glenridge Connector
Suite 1700
Atlanta, GA 30342
(404) 236-5543

Its Attorneys

July 7, 2003

ATTACHMENT A

Engineering Statement

Introduction

Hardin and Associates has been retained to review certain issues in connection with the Cingular Wireless LLC's Report and Order allowing Mobile Satellite Service ("MSS") operators to seek authority to implement an ancillary terrestrial component ("ATC") into their satellite networks. As discussed below, it is quite feasible to measure capacity in connection with a preponderant use requirement adopted to ensure that the ATC portion of the MSS service remains ancillary. Likewise, it is relatively easy to implement a handset that allows the satellite service to be primary in terms of use and the ATC service to serve on an ancillary basis. Programming the handset to use ATC system on an ancillary basis is analogous to a diversity path, improving coverage and reliability of the overall MSS service with minimal sacrificing of the spectral efficiency of the service's satellite portion and maximization of the spectral efficiency of the ATC component.

Tracking ATC Preponderant Use Requirement

As discussed in the ATC proceeding, capacity is one of various criteria that can be considered for tracking use of the ATC component of the MSS system. Number of customers, minutes of use, coverage area and others also have been mentioned in this proceeding. In Paragraph 99 of the Report and Order, the Commission declined to adopt a "predominant" or "primary" use

requirement, citing to a lack of evidence to determine any basis for measurement of the usage. There are, however, examples in current conventional mobile system technology of quantification techniques that can be applied to measure the use of MSS capacity for satellite versus terrestrial use.

Obviously, in order to bill for utilization of MSS service, certain figures of merit must be measured and quantified on a per user basis. Current mobile Operational Support Systems ("OSS") track a customer's use on a sector-by-sector basis. Billing is then determined by aggregating the call time of a customer's handset within each sector from each base station throughout the network. Associating a handset's electronic serial number with a cell ID and a database that contains the customer's pricing plans identifies home and roaming charges. The OSS software collects other vital statistics from the switch to allow the operator to optimize the network performance and increase capacity and coverage.

There is no reason MSS service with ATC cannot function in a similar manner. Both the satellite and ATC portions of the service can be tracked and monitored for utilization. An OSS system can provide vital statistics on key operational parameters, as mentioned above, for both billing and network optimization. Reports can be taken from this system to show compliance of both the ATC and satellite systems with a preponderant use requirement defined on the basis of capacity (or other measure, such as minutes of use). So long as the regulated preponderant use requirement can be measured by the network's OSS

and billing systems, ATC carrier capacity can be quantified without being burdensome to the network or reducing flexibility.

Implementation of a Dual Mode Handset for MSS

Current mobile handsets are produced with dual and tri-mode capabilities. These capabilities allow a handset to select the channel associated with a provider for continuous connectivity while in motion. Transitions are made based on received signal level and may be hard (handset changes frequency in mid-call) or soft (handset changes base stations in mid-call but remains on the same frequency) depending on the technology and quality of each signal.

Similarly, an MSS handset can be designed that will receive both ATC and satellite components of the MSS system. This handset can easily be designed to always look first to the satellite service as the primary communication channel, and then to the ATC component on an ancillary basis, as in a diverse communication link. If a handset communicating via the satellite component of the MSS system experiences difficult propagation characteristics due to obstructions or clutter in the surrounding environment, the ATC component of the system should engage when the satellite signal quality falls below a predetermined threshold. This threshold will depend on the technology chosen by the MSS provider.

At the point where the handset is receiving both satellite and ATC signals, a handset can be programmed to consider the ATC component as if it were a frequency diverse component of a microwave path. The handset would then maintain communications with both satellite and ATC signals and behave as if it

were in a "soft handoff" mode. The system would maintain the path to the satellite as its primary mode of communications with the network when the carrier-to-noise ratio is above the required threshold.

However, when the carrier-to-noise ratio of the satellite component falls below the threshold, the ATC component would maintain the link until satellite connectivity can be reestablished. The satellite link may take several seconds to renegotiate once an adequate signal can be found. In this mode, the ATC signal will be the primary link in maintaining the communication link from the handset to the network. This architecture will assure good call quality and only utilize the ATC component on an ancillary basis as a backup to the satellite signal.

Utilization of the ATC component of an MSS system on such an ancillary basis will minimize the required terrestrial spectrum to that needed to augment attenuated satellite signals. This maximizes the spectral efficiency of the MSS system as a satellite based service. The ATC system will not require large amounts of spectrum in order to support MSS users on an ancillary basis. Given the technologies being considered by the MSS providers for the ATC component, high levels of frequency reuse will be possible and will be capable of providing service to large numbers of users regardless of whether they are being served via the primary satellite component or the ancillary terrestrial component.

For example, it has been proven in many CDMA deployments that a 1:1 reuse can be achieved. With a minimum of 1.25 MHz of spectrum, a CDMA carrier can provide from 12 to 24 simultaneous voice channels per sector. Therefore in a market with 12 ATC cell sites, an MSS provider can allow up to 24

voice channels x 3 sectors per cell x 12 sites equaling up to 576 simultaneous users. Using the Erlang B traffic model with a busy hour usage of 0.1 Erlangs (6 minutes) per user, the system could support up to 5120 subscribers. For an average market size, this represents a significant penetration of potential users by the MSS ATC system. Additional cell sites can be deployed, as capacity and coverage demands increase.

Conclusion

The ability to measure the utilization of the satellite and ATC components of the MSS system on a capacity basis should not be an issue. There are numerous processes and points within the OSS system of the network to allow the usage to be monitored and controlled without limiting system flexibility.

Building upon current mobile system technology, handsets and their associated firmware can be designed to treat the ATC component as an ancillary diverse path for improving the quality of the MSS satellite signal when degraded by obstructions. By treating the ATC component as ancillary, spectral efficiency is maintained on the terrestrial network and primary focus and utilization is maintained on the satellite delivery portion of the service. As a result, the improvement in system performance desired by the MSS providers is achieved.

By providing ATC in areas where propagation of signals from satellites is problematic, ATC can be deployed allowing path diversity to maintain adequate call quality. It has been shown that a sufficiently large number of subscribers can be maintained in this mode and should be more than adequate to meet the MSS needs and minimize the number of cell sites required within the ATC system.

Certification of Engineer

I, James C. Cornelius, P.E., am a Professional Engineer licensed in the Commonwealth of Virginia and my credentials are a matter of record with the Federal Communications Commission. The foregoing analysis was prepared by me or under my direct supervision. The information contained herein is true and correct to the best of my knowledge.

/s/ James C. Cornelius
James C. Cornelius, P.E.

July 7, 2003

James C. Cornelius, P.E.
Director of Strategic Consulting
Hardin and Associates, Inc

Mr. Cornelius is responsible for strategic consulting at Hardin and Associates. He has vast experience in the design and licensing of fixed wireless systems. The majority of Mr. Cornelius' experience is in the MDS/ITFS, WCS, LMDS, LPTV, unlicensed, and point-to-point microwave frequency bands. Mr. Cornelius is extremely knowledgeable on (1) the propagation characteristics of these bands, (2) the FCC rules regarding the licensing and operation of two-way systems in the above frequency bands, (3) the various technologies, equipment and networks being proposed for use in these same frequency bands and (4) frequency planning, interference analysis and capacity studies for these frequencies.

Mr. Cornelius joined Hardin & Associates in 1994 after earning his Masters of Science Degree in Electrical Engineering from Virginia Tech University and a Bachelors of Science Degree in Electrical Engineering from the University of Kentucky. His thesis was entitled "Computer Simulation of a Direct Sequence Spread-Spectrum System" dealing with the ability of a spread spectrum satellite delivered communication system to resist interference from other satellite and terrestrial users. He is a licensed Professional Engineer in the State of Virginia.

Mr. Cornelius is active in the wireless comminations industry. He served as a technical leader for the Wireless Communications Association ("WCA") International's Technical Rules Revision task group, which submitted a white paper to the FCC entitled "A Proposal for Revising the MDS and ITFS Regulatory Regime". Also, he provided the technical discussion to the WCA's comments filed in regarding the reallocation of spectrum for Advanced Wireless Services. He recently served on Institute of Electrical and Electronics Engineers' 802.16 Working Group on Broadband Wireless Access and serves as a member of their government relations committee. He is also a member of the Wireless Communications Association's Spectrum Guard Task Force. He has had various technical articles published in trade journals and spoken at technical conferences throughout the United States including "A Brief Tutorial of FDMA, TDMA, and CDMA Modulation Techniques In a Two-Way Digital Wireless Cable Environment." WCA International 4th Annual Technical Symposium, Republished Private Cable and Wireless Cable July 1998: 58-65 and "Design and Implementation of a Two-Way Data System in a Existing Analog Market." WCA International 5th Annual Technical Symposium.