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December 23, 2004

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Federal Communications Commission
Office of Secretary

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Re: *Ex Parte* Submission
IB Docket No. 01-185

Dear Ms. Dortch:

Inmarsat Ventures Limited ("Inmarsat") hereby supplements the record in this proceeding with a copy of its December 8, 2004 Application for Review (see Attachment A) of the International Bureau's partial grant of applications filed by Mobile Satellite Ventures Subsidiary LLC ("MSV") to operate an Ancillary Terrestrial Component ("ATC") to its licensed Mobile Satellite Service ("MSS").[1] The Bureau's licensing decision raises significant policy and technical issues that are relevant in the reconsideration phase of the Commission's ATC rulemaking proceeding. The substantial overlap of these issues makes it imperative that the Commission fully consider and address the issues raised in Inmarsat's Application for Review in this proceeding. Inmarsat therefore submits a copy of its Application for Review to ensure that the record in this proceeding is complete.

In the *ATC Order*,[2] the Commission authorized ATC subject to important limitations designed to protect the continued provision of MSS service in the L-Band:

- The interfering power generated by ATC mobile terminals and ATC base stations must be constrained to specified levels;

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1 *In re Applications of Mobile Satellite Ventures Subsidiary LLC,* DA 04-3553 (rel. Nov. 8, 2004) (the "*MSV Order*").

2 *See 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*, 18 FCC Rcd 1962 (2003), *Errata*, IB Docket Nos. 01-185 and 02-364 (rel. March 7, 2003), *on reconsideration*, FCC 03-162 (rel. July 3, 2003) (the "*ATC Order*").

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- Advanced ATC antenna technology must be deployed to focus interfering power away from the MSS victim;

- Any variations from the FCC's "baseline" ATC system parameters are permitted only if those variations produce "no greater interference potential"; and

- ATC deployment must be phased in over 18 months at reduced levels to minimize the chance of harm to safety-related and other services, and to allow Inmarsat the chance to study the real-world consequences of ATC deployment.

In the expediency of issuing the first ATC license, and in order to save MSV the cost of complying with the ATC rules, the *MSV Order* undercuts each of these limitations:

- It elevates terrestrial service from secondary to primary status, effectively rendering MSS service "ancillary" to terrestrial operations;

- It permits ATC base stations to be deployed at six times the power, and 40% the number, permitted in the *ATC Order*, rather that following the Commission's policy to phase in ATC in the L-Band to minimize the risk to safety and other services; and

- It freezes MSS satellite services and coverage in time, rather than allowing the continued expansion of new and innovative MSS services across the U.S., in urban, suburban and rural areas alike.

The *MSV Order* has the net effect of increasing ATC interference into Inmarsat's MSS services and of punching "swiss cheese" holes throughout Inmarsat's service area. The Bureau's decision threatens the continued reliability of Inmarsat services, which are essential to the safety and security-related communications of many federal, state and local governmental agencies. Moreover, it constrains the ability of MSS to provide broadband service across America, in urban, suburban, and rural areas alike, a capability that is just starting to be realized.

These developments constitute a fundamental policy shift regarding ATC. Thus, the issues raised in Inmarsat's Application for Review are intimately related to the issues in this rulemaking proceeding. Inmarsat urges the Commission to fully consider these issues in this rulemaking proceeding.

Sincerely yours,

John P. Janka

cc: Sheryl Wilkerson, Legal Advisor, Office of Chairman Powell
Jennifer Manner, Legal Advisor, Office of Commissioner Abernathy
Paul Margie, Legal Advisor, Office of Commissioner Copps
Sam Feder, Legal Advisor, Office of Commissioner Martin
Barry Ohlson, Legal Advisor, Office of Commissioner Adelstein
Donald Abelson, Chief, International Bureau
Ed Thomas, Chief, Office of Engineering and Technology
Richard Engelman, International Bureau

Attachment A

Application for Review

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

In the Matter of	)	
	)	
Mobile Satellite Ventures Subsidiary LLC	)	
	)	
Application for Modification of Space Station License (AMSC-1)	)	File No. SAT-MOD-20031118-00333
	)	
Amendment to Pending Application to Launch and Operate a Next-Generation Replacement MSS Satellite System	)	File No. SAT-AMD-20031118-00332
	)	
Application for a Modification of Blanket License to Operate Mobile Earth Terminals with MSAT-1	)	File No. SES-MOD-20031118-01879

APPLICATION FOR REVIEW

INMARSAT VENTURES LIMITED

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(202) 637-2200

December 8, 2004

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

In the Matter of	)	
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	)	
Application for a Modification of Blanket License to Operate Mobile Earth Terminals with MSAT-1	)	File No. SES-MOD-20031118-01879

APPLICATION FOR REVIEW

Inmarsat Ventures Limited ("Inmarsat") hereby files this Application for Review of the *MSV Order*,[1] in which the International Bureau granted in part the applications of Mobile Satellite Ventures Subsidiary LLC ("MSV") (collectively, the "*ATC Application*") to operate an Ancillary Terrestrial Component ("ATC") to its licensed Mobile Satellite Service ("MSS").

I. INTRODUCTION AND SUMMARY

Full Commission review is warranted of the International Bureau's ATC licensing decision because the Bureau has effectuated fundamental changes in the Commission's policy framework for licensing ATC. Moreover, in granting the first license under the *ATC Order*,[2] the Bureau has addressed new and novel arguments not previously considered by the Commission,

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[1] *In re Applications of Mobile Satellite Ventures Subsidiary LLC,* DA 04-3553 (rel. Nov. 8, 2004) (the "*MSV Order*").

[2] *See 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*, 18 FCC Rcd 1962 (2003), *Errata*, IB Docket Nos. 01-185 and 02-364 (rel. March 7, 2003), *on reconsideration*, FCC 03-162 (rel. July 3, 2003) (the "*ATC Order*").

and therefore has exceeded its delegated authority.[3]

More specifically, the Bureau's decision effectively reverses the Commission's established ATC policies for the L-Band in a number of key respects:

- The Bureau elevates terrestrial service from secondary to primary status, effectively rendering MSS service "ancillary" to terrestrial operations;
- The Bureau permits ATC base stations to be deployed at six times the power permitted in the *ATC Order*, rather that following the Commission's policy to phase in ATC in the L-Band to minimize the risk to safety and other services; and
- The Bureau's action freezes MSS satellite services and coverage in time, rather than allowing the continued expansion of MSS service across the U.S., in urban, suburban and rural areas alike.

In its *ATC Order*, the Commission provided MSS operators a measure of flexibility to enhance their satellite-based services with terrestrial transmitters. In doing so, the Commission authorized ATC, subject to important limitations designed to protect the continued provision of MSS service in the L-Band, which is already heavily used for MSS service:

- The interfering power generated by ATC mobile terminals and ATC base stations must be constrained to specified levels;
- Advanced ATC antenna technology must be deployed to focus interfering power away from the MSS victim;
- Any variations from the FCC's "baseline" ATC system parameters are permitted only if those variations produce "no greater interference potential"; and
- ATC deployment must be phased in over 18 months at reduced levels to minimize the chance of harm to safety-related and other services, and to allow Inmarsat the chance to study the real-world consequences of ATC deployment.[4]

The Commission recognized that the deployment of ATC was an experiment, and that the technical parameters it imposed on ATC operations might not achieve the goal of protecting MSS systems from ATC interference. It therefore made crystal clear that ATC operations were authorized on a secondary, non-harmful interference basis, even in those

[3] 47 CFR § 0.261(b)(1)(ii).

[4] *ATC Order* at 2036-2038 and n. 394.

instances in which ATC operations otherwise comply with Commission Rules:

> [I]n the unlikely event that an adjacent MSS or other operator does receive harmful interference from ATC operations, either from ATC base stations or mobile terminals, the ATC operator must resolve such interference.[5]

Inmarsat is not opposed to the concept of ATC. The problem is that no one – neither MSV, the Commission, nor Inmarsat – knows precisely how ATC will impact the Inmarsat system. ATC *will* generate interference into MSS, and Inmarsat has not seen anything that resolves its very serious concerns about the level of that interference or the impact that Inmarsat users would suffer due to ATC. It is not possible to know the full impact of ATC because (a) MSV's ATC system is still under development, (b) no L-Band ATC system has yet been deployed, and (c) the "real world" impact of ATC has yet to be studied. For these reasons, the Commission's ATC "phase in" policy, and its authorization of ATC as a secondary service, were and remain not only appropriate, but *necessary* to preserve (i) the integrity of the safety services provided over the Inmarsat system, and (ii) the settled expectations of Inmarsat and its users, whom Inmarsat estimates have collectively invested well over $5 billion in MSS technology based on longstanding international spectrum allocations and Commission policies regarding MSS. The integrity and future of MSS service must not be compromised in order to accommodate ATC.

With a few strokes of a pen, however, the Bureau's ATC licensing order has undermined key Commission policies and eviscerated the carefully constructed framework that was designed (i) to ensure that the secondary ATC service did not "morph" MSS into "ASC" –

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[5] *Id.* at 2017. "Stations of a secondary service: (i) Shall not cause harmful interference to stations of primary services to which frequencies are already assigned or to which frequencies may be assigned at a later date." 47 CFR § 2.105(c)(2). The Commission authorized ATC on a non-harmful interference basis to ensure consistency with applicable ITU regulations, because such terrestrial uses of the L-Band were not provided for in the International Table of Frequency Allocations. *ATC Order* at 2066.

an "ancillary satellite component" to terrestrial wireless services,[6] and (ii) to protect Inmarsat and its users from interference.[7] In the expediency of issuing the very first ATC license, and in order to save MSV the cost of complying with the ATC rules, these fundamental principles have been cast to the wind, the ground rules have been changed, and the Bureau has ignored relevant evidence, all to the detriment of Inmarsat and its users:

- The Bureau has significantly increased the area around an ATC base station where an MSS mobile terminal will not work, by permitting a substantial increase in base station power level, and simultaneously allowing use of a non-compliant ATC base station antenna;
- The Bureau has required Inmarsat, in advance, to demonstrate that it will provide service in the vicinity of such a higher-power ATC base station in order to preserve the right to provide MSS service there;
- The Bureau failed to require MSV to comply with the constraint that ATC mobile terminals limit their power when operating outdoors;
- The Bureau ignored evidence about the susceptibility of Inmarsat receivers to ATC interference, and did not address the cumulative effect of the waivers it granted; and
- The Bureau acknowledged that MSV's base stations will generate interference into nearby Inmarsat mobile terminals, but "punted" resolution of that issue to negotiations between MSV and Inmarsat.

This decision warrants review and reversal by the Commission because it shifts the burden to the primary service – MSS – to demonstrate that it will serve the area surrounding a high-powered ATC base station, it has the net effect of increasing ATC interference into Inmarsat's MSS services, and it punches "swiss cheese" holes throughout Inmarsat's service area. It cuts up Inmarsat's service area by creating large "exclusion zones" around ATC base stations where Inmarsat terminals will not work, and where Inmarsat users may not be able to retain interference protection. Thus, this decision threatens the reliability of existing Inmarsat services, and also constrains the future development of broadband MSS service in the U.S.

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[6] *ATC Order* at 2000.

[7] *Id.* at 2036.

The Bureau's decision threatens the continued reliability of Inmarsat services, which are essential to the safety and security-related communications of many federal, state and local governmental agencies. Inmarsat MSS terminals were relied on in New York City following the September 11 attacks, and the Fire Department of New York has recently chosen Inmarsat terminals to support its emergency response communications. Inmarsat MSS service is essential for these purposes because the system is independent of the terrestrial and cellular communications networks that may be unavailable or overwhelmed in an emergency. MSS communications simply cannot be at risk of ATC interference in the time of an emergency, when police, firefighters and other rescue personnel need reliable communications the most.

The decision also constrains the ability of MSS to provide broadband service across America, in urban, suburban, and rural areas alike, a capability that is just starting to be realized. In 2005, Inmarsat will deploy its next-generation, state-of-the-art, Inmarsat-4 spacecraft, which will provide ubiquitous 432 kbps broadband service through smaller, less expensive and easier to use user terminals than ever before. This service will be competitive with third generation terrestrial wireless networks (3G) in terms of both price and service quality. This new class of highly-reliable, "anytime, anywhere" broadband service therefore will revolutionize the MSS industry. But this service cannot reach its full potential if there are zones around ATC base stations where these terminals will not work, or in which these terminals are not protected from ATC interference.

Thus, the policy issues raised by this proceeding do not really revolve around providing regulatory flexibility that will enhance MSS service in the L-Band. To the contrary, MSV's efforts in this proceeding and the ATC rulemaking, if successful, would establish ATC parameters that are more in line with a nationwide cellular or PCS buildout, than filling in "gaps" in satellite service. MSV is currently operating a "wounded" spacecraft, and its replacement

satellite is at least three years away from being launched, if ever.[8] MSV has retreated from its many promises to greatly constrain the extent of its ATC deployment, and therefore constrain the level of ATC interference into Inmarsat.[9] And MSV has reneged on its proffer to the Commission to use the sophisticated ATC antenna technology on which the agency relied in establishing the ATC rules.[10]

This proceeding is really about two questions: (i) whether the Commission should constrain the ability of all Americans to have access to broadband MSS service, wherever they may be located, in order to support MSV's efforts to bypass the rules adopted in the ATC proceeding, and (ii) whether MSV should be allowed to change the nature of its business and make satellite service the "ancillary" component in the L-Band.

The answer to both is a resounding "No." Such a result would turn on its head the original policies underpinning the Commission's decision to authorize an ancillary terrestrial component to MSS in order to enhance the provision of MSS service. Absent Commission reversal of the Bureau's decision, it is MSS that very well could become ancillary to terrestrial service in the L-Band within the United States.

II. BACKGROUND

Inmarsat's ability to serve the United States historically was constrained to limited maritime and aeronautical services. The Commission's October 2001 market access

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[8] Jason Bates, *MSV Moving Ahead with Second-Generation System Plans*, SPACE NEWS, Nov. 22, 2004 at 6.

[9] For example, MSV repeatedly represented to the Commission that its ATC offering would (i) reuse ATC channels a maximum of 2000 times CONUS-wide, (ii) support a maximum of 90,000 carriers simultaneously transmitting mobile terminals, and (iii) contribute no more than 1% ΔT/T interference level into Inmarsat's satellites. *Opposition of Inmarsat Ventures Ltd* at 8 (filed Mar. 25, 2004).

[10] *See, e.g., ATC Order* at 2183-2185 (Appendix C2 §§ 2.2.3.1 and 2.2.3.2). MSV represented that it could produce such an antenna in a cost effective manner. *See, e.g., Reply Comments of Motient Services, Inc., et al.*, IB Docket No. 01-185 at 15-16 (November 13, 2001). Immediately after the ATC service rules were promulgated, MSV complained that such an antenna would be difficult to produce and expensive. *ATC Application* at 23 and n. 35.

order first allowed Inmarsat to provide a full range of services to the U.S. over its existing spacecraft.[11] However, authority to use next-generation spacecraft – the Inmarsat-4 series – to provide land mobile services in the United States had to wait until Inmarsat satisfied the requirements of the ORBIT Act, which Inmarsat recently just certified that it has done.[12]

Inmarsat's next generation Inmarsat-4 system, launched in 2005, will revolutionize the MSS industry. This system, fully funded at a cost of over $1.2 Billion so far, was more than five years in the making, and the spacecraft and mobile terminals are now in final testing. Inmarsat-4 will change the MSS paradigm by extending true broadband service (432 kbps) to users whose needs are unmet by terrestrial networks. These MSS spacecraft are more powerful, and have greater capacity, than ever before. Inmarsat-4 will allow Inmarsat to significantly reduce the price of MSS services, support the full range of Internet Protocol (IP)-based services, and deploy mobile terminals that are smaller, less expensive, and easier to set up and use, than ever before. Thus, the Inmarsat-4 system will create a plethora of new uses for MSS technology, make satellite services accessible to an even wider population, and thereby allow Inmarsat to compete even more vigorously with terrestrial and other providers of data and voice services.

Land mobile MSS presents significant growth opportunities.[13] Specifically, Inmarsat's next-generation land mobile services, called BGAN, offer an entirely new class of high-bandwidth, IP–based solutions. BGAN supports transmission rates that are seven times faster than any service Inmarsat offers in the United States today, and are faster than those

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[11] *In the Matter of Comsat Corporation d/b/a Comsat Mobile Communications, et al.*, 16 FCC Rcd 21661 (2001) (the "*Market Access Order*").

[12] Letter from Inmarsat to Secretary, FCC, *Re: SAT–MSC–20040210–00027, Request for Declaratory Ruling* (filed Nov. 15, 2004).

[13] For the nine-month period ended September 30, 2004, land mobile services accounted for 29.3% of Inmarsat's revenues, and during the year ended December 31, 2003, they increased 31% over the year ended December 31, 2002.

planned for many third generation terrestrial wireless networks (3G). The ability to support these new types of services over small, affordable, and easy to install MSS terminals provides a unique opportunity for BGAN to "fill the holes" in broadband coverage, in urban, suburban, and rural areas. BGAN therefore can be an important component of the broadband solution in America, and thereby can support the Commission's broadband policy goals.[14]

Aeronautical services are another area where Inmarsat-4 spacecraft present the opportunity for new classes of ubiquitous MSS service in the U.S. – to both the cabin and the cockpit. Inmarsat-4 provides the opportunity to augment the congested air traffic control system,[15] as well as offer communications services to the aviation industry – commercial, government and private aircraft of all sizes.

The future of broadband service to aircraft is yet to be written. But it is clear that satellite provides a unique opportunity---in fact, the only opportunity---to provide broadband services to airplanes. The growing use of IP-based communications provides the opportunity to have an "always on" link to airplanes, wherever they are flying, to support air traffic control, weather updates, navigation, and voice and data communications. Inmarsat's Swift Broadband service will bring high-data-rate IP and multicast services to airplanes, using the same Inmarsat antenna that is already widely installed on many commercial and private aircraft. Thus, Swift Broadband is well positioned to very quickly meet the needs of the many users who already

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[14] Inmarsat has already launched a regional 144 kbps version of the BGAN service in 99 countries with over 20,000 laptop sized satellite terminals produced already. This service will be extend to CONUS as soon as an Inmarsat-4 satellite with U.S. coverage is launched. The Commission has granted several experimental licenses for the testing of this new BGAN service over Inmarsat-3 at 54° W.L.

[15] Today, most air traffic control communications in the United States occur through a terrestrial-based VHF system that is overloaded and out of date. The FAA and Eurocontrol have been assessing various solutions, including satellite-based systems. *Future Communications Study (FCS)*, Brent Phillips and Jim Eck, Federal Aviation Administration, at 5, 10 (Aug. 25, 2004) (*available* at http://acast.grc.nasa.gov/workshop/2004/FAA-Eurocontrol_Future_Comm_Study/01-Phillips.pdf).

enjoy the significant benefits and reliability of Inmarsat's existing aeronautical services.

With Inmarsat having now satisfied the final requirements of the ORBIT Act and two Inmarsat-4 series spacecraft scheduled for launch over the next year, Inmarsat is poised to deploy a new generation of services to smaller mobile terminals, at higher data rates, and with more reliable service, than ever before. The Commission wisely acknowledged in granting U.S. market access, that the presence of Inmarsat in the U.S. market "serve[s] the public interest by increasing competition and providing additional services for U.S. consumers."[16] But this public interest benefit and the Congressional policy articulated in the Orbit Act will not fully be realized unless the Commission reverses the Bureau's ATC license grant, which constrains the ability of Inmarsat to make satellite-based broadband service available to users throughout the U.S., whether they are located in or traveling through urban, suburban or rural areas.

III. DISCUSSION

A. The Bureau Modified Commission Policy on the Secondary Nature of ATC

The Bureau effectively has elevated MSV's ATC service from secondary to co-primary status with MSS by (i) eviscerating the ability of Inmarsat and other satellite users of the L-Band to maintain interference protection in the vicinity of an ATC base station, and (ii) allowing MSV to deploy "high powered" ATC base stations and significantly expand the size of the "exclusion zones" around an ATC base station where an Inmarsat mobile terminal will not work.[17] In doing so, the Bureau has adversely affected the ability of Inmarsat, its distributors, and the approximately 350,000 registered users of the Inmarsat system, to provide and receive MSS service throughout the United States.

In the *MSV Order*, the Bureau acknowledged that by granting MSV a waiver of certain power limits, it was substantially increasing the area around an ATC base station where

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[16] *Market Access Order* at 21668-21669.

[17] *See* Appendix A at 1.2 ("Technical Annex").

an Inmarsat terminal would not work in the face of ATC interference. The Bureau did so on the premise that this was not a material change, because it assumed that Inmarsat terminals are not likely to be operated in the vicinity of an ATC base station. Moreover, the Bureau adopted a mechanism by which once MSV provides Inmarsat with notice, Inmarsat has a limited period of thirty days to object to the deployment of that high-powered base station.

The advance showing requirement regarding the likelihood of service in the vicinity of ATC base stations effectively creates a presumption in favor of ATC service, rather than MSS service, wherever ATC is deployed. Moreover, this requirement is unsustainable because it (i) is based on false premises – that ATC will be deployed only in urban areas and that Inmarsat mobile terminals will not be able to operate near ATC base stations, and (ii) impermissibly elevates ATC to a co-primary status, and is unworkable in any event.

1. *The Policy Change is Based on False Premises*

The Bureau's advance showing requirement is based on two related and false premises, and an unstated conclusion:

- Most ATC base stations will be deployed in "urban" areas, where MSV's satellite signal is weak;
- Inmarsat's satellite positions are lower in elevation than MSV's, such that it is very likely that Inmarsat's satellite signal will be even weaker than MSV's in the vicinity of an ATC base station; and
- Inmarsat does not and will not provide service to urban areas and therefore will not be affected by the deployment of ATC base stations in such areas.[18]

The first premise regarding the deployment of ATC base stations in urban areas is false because, in the *ATC Order*, the Commission expressly determined that "achieving optimal spectrum usage may require an MSS operator to use ATC *even though a particular call might be served by satellite.*"[19] The Commission made this determination in the context of rejecting

[18] *MSV Order* at ¶ 81.

[19] *ATC Order* at 2015.

proposals that ATC be allowed only where an MSS licensee was technically incapable of providing satellite service. MSV is not constrained in the location of its ATC base stations, and the Commission has found that there will be cases where ATC base stations are deployed even though satellite service is feasible to that location. Thus, there is no basis for the Bureau's conclusion that most MSV ATC base stations will be deployed in "urban" areas, where MSV's satellite signal is "weak."

The second premise---that Inmarsat's satellite signal is unsuitable for service in the vicinity of an ATC base station---falls by the wayside once one realizes that there is not necessarily any relationship between the areas in which ATC is deployed, and the areas that Inmarsat serves. This premise also does not bear scrutiny because it fails to recognize all of the orbital locations where Inmarsat may operate a spacecraft to serve the United States. The Bureau acknowledges the need to take into account, for purposes of uplink interference analyses, those prospective satellites that would be "line-of-sight" with the MSV service area.[20] But it fails to take the same factors into account when considering the potential for downlink interference into Inmarsat. That failure is arbitrary and capricious.

Inmarsat currently has an Inmarsat-2 spacecraft operating at 98° W.L. and the United Kingdom has recently submitted a Request for Coordination for an Inmarsat-4 spacecraft at 104° W.L., and a further Request for Coordination will shortly be submitted for an Inmarsat-4 spacecraft at 98° W.L as well. Those orbital locations provide virtually the same elevation angles as MSV's orbital location. Moreover, by the Commission's own analysis in the *ATC Order*, there are a number of cities where the elevation angles to Inmarsat's spacecraft at 54° W.L and 142° W.L are as good as, if not better than, the elevation angles toward MSV's

[20] *MSV Order* at ¶ 63.

spacecraft at 101° W.L.[21] Thus, there is no basis for concluding that Inmarsat is unable to provide satellite service in the vicinity of ATC base stations.

More broadly speaking, the underlying assumption that satellite service generally is not possible in urban areas is belied by the facts and by other Commission decisions that recognize the possibility of such service.

The Fire Department of the City of New York (FDNY) has chosen Inmarsat satellite-based emergency response communications for the "dependable transmission of video and voice communications between on-the-scene responders and headquarters locations."[22] This selection follows the successful demonstration of Inmarsat technology for FDNY's field and command center units. Indeed, because they are independent of terrestrial and cellular communications networks, satellite-based communications are particularly advantageous in emergency response situations when traditional technologies may be either unavailable or overwhelmed. In sum, because MSS service is provided in New York City, and relied on by the fire department there, it is irrational for the Bureau to have assumed that MSS service cannot be provided in urban areas because a satellite signal is "weak."[23]

One need only look at the proliferation of DBS or FSS antennas in urban areas to realize that satellite service is possible and expected in urban areas. The level of urban satellite service is so significant that it has prompted Commission action at least twice before:

- The Commission stopped the proposed merger of DIRECTV into Echostar specifically because it was concerned (in part) about anti-competitive effects in urban markets;[24] and

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[21] *ATC Order* at 2148 (Appendix C2 § 1.2.3, table 1.2.3.A).

[22] *See* Appendix B.

[23] Indeed, even MSV once touted the use of its MSS service in New York after September 11. *Comments of Motient Services, Inc., et al.*, IB Docket No. 01-185 at Exhibit C (October 22, 2001).

[24] *In the Matter of Application of EchoStar Communications Corporation*, Hearing Designation Order, 17 FCC Rcd 20559, 20629 (2002).

- The Commission relocated terrestrial PCO operators from urban areas in order to facilitate the deployment of Ka band FSS broadband services there.[25]

Finally, the Bureau's assumption that access to Inmarsat's system by MET users "would presumably be unlikely if there are not streets, residences, office buildings, etc. within that distance," is counterintuitive and counterfactual.[26] Locations away from streets, residences, or office buildings are the precise locations where one would expect a *mobile* unit to be most useful. This is true regardless whether the service provided is satellite or terrestrially based.

2. *The Bureau's Prior Showing Requirement for Retaining Interference Protection around ATC Base Stations Should be Abandoned*

The Bureau's prior showing requirement fundamentally reverses the Commission's original vision of ATC deployment, where an ATC proponent bears the burden of demonstrating non-interference, and ATC remains a secondary service. Moreover, this requirement is not clearly laid out, and even in a best case, is utterly impractical. Finally, it impermissibly constitutes a modification of the licenses held by Inmarsat's distributions. For these reasons, this prior showing requirement should be abandoned. But if it nonetheless is retained, this requirement must be modified.

The prior showing requirement appears in two separate places in the *MSV Order*. It appears in the *MSV Order* at paragraph 81.[27] A slightly different formulation appears in the

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[25] *In the Matter of Redesignation of the 17.7-19.7 GHz Frequency Band, etc.*, 17 FCC Rcd 24248, 24254-24255 (2003).

[26] *MSV Order* at ¶ 81.

[27] "[W]e require MSV to notify Inmarsat, and any other authorized L-Band MSS operator, of any ATC base stations that would operate at peak sector power levels above the peak levels allowed under the current rules. A notified party would then have an opportunity to object within 30 days if: 1) it can prove that its system provides a usable MSS satellite signal within 204 meters of the proposed ATC base station's location, and 2) it can show that there is a reasonable likelihood that METs will attempt to access its MSS network from a location within 204 meters of the base station... However, if it is convincingly shown that a higher-power MSV ATC base station could be a problem, MSV must reduce the base station's aggregate per-sector power to a level consistent with the current rules." *MSV Order* at ¶ 81.

ordering clauses at paragraph 95.[28]

As an initial matter, the burden that must be met is unclear. The text of the *MSV Order* provides for MSV to cease operation if Inmarsat makes a "convincing" showing that the ATC base station "could be a problem." However, the ordering clause appears to reflect a different standard of proof, as it provides for MSV to cease operation at higher base station power levels if the operation would "unduly increase the potential for harmful interference." To the extent that any test is retained, the formulation in the text of the order is the only one consistent with ATC being a secondary service.[29] Moreover, it is not clear what the Commission means by "unduly" increasing the potential for harmful interference. That formulation suggests that some level of harmful interference can be created by ATC, but that is clearly contrary to the policy set forth in the ATC Order.[30]

The prior showing requirement is unworkable. As an initial matter, because the 350,000 registered users on the Inmarsat system use *mobile* terminals, those terminals could be used anywhere in the Inmarsat coverage area at any given time, and because the beams on Inmarsat spacecraft encompass both "urban" and "non-urban" coverage, Inmarsat has no way to tell whether those users go near a proposed ATC base station location.

Moreover, each time MSV forms an "intent" to operate an ATC base station at a higher power level, it can send Inmarsat and others on a wild goose chase across the country,

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[28] "MSV must notify Inmarsat, and any other party with authority from the FCC for provision of L-band MSS in the United States, of the location and power specifications of any ATC base stations that it intends to operate with...aggregate EIRP in any sector above 18.9 dBW toward the physical horizon or above 23.9 dBW in another direction at least 30 days prior to commencing such operations and must cease or desist from operation at such higher power levels if such operation would unduly increase the potential for harmful interference." *Id.* at ¶ 95.

[29] Section 2.105(c)(2)(i) of the Commission's rules provides that a "secondary service" "[s]hall not cause harmful interference to stations of primary services to which frequencies are already assigned or to which frequencies may be assigned at a later date."

[30] *ATC Order* at 2017.

imposing extraordinary expense on these parties as they race to take measurements, survey areas, and contact potential users all within 30 days. And then if MSV decides not to deploy the higher powered ATC base station after all, it can simply retract its earlier notification, leaving Inmarsat and others with an enormous expense for trying to protect their MSS service area. Nor does this approach appear to accommodate, after the 30-day objection period has run, inevitable developments such as (i) new Inmarsat services and technology, (ii) new customers with new service coverage requirements, (iii) changes in topography in the vicinity of an ATC base station, or (iv) the modification or razing of buildings in the vicinity of an ATC base station. At a minimum, Inmarsat should not be foreclosed from making such a showing at a later date to allow it to address such future developments.

Thus, the prior showing requirement threatens to limit the full potential of MSS services in the United States because the failure to protect primary MSS service in the vicinity of ATC base stations would poke "swiss cheese" holes throughout Inmarsat's hemispherical service area – thereby balkanizing Inmarsat distributors' nationwide licenses – and thus threatening to constrain the future satellite growth of MSS services.

As with all other MSS service authorizations, the Commission has authorized Inmarsat distributors on a nationwide basis through "blanket licenses," thereby recognizing the ubiquitous nature on MSS service, and the need to allow users to use their mobile terminals wherever they may be. That approach to licensing is consistent with the expectations of MSS subscribers – that they will be able to communicate through their devices when and as they need to do so. MSS users in the L-Band do not expect to find "holes" in the service area, whether created by a problem with the satellite's coverage, or by nearby terrestrial interference. This is certainly the case for the over 100,000 "mini M" land mobile terminals that have been commissioned on the Inmarsat system and are able to be used anywhere in the United States a subscriber needs service.

The morass that would be created by the prior showing requirement is the very reason the full Commission expressly declined in the ATC rulemaking to license ATC on a site-by-site basis: it would create "spectrum and administrative inefficiencies" and require "expensive, time consuming testing and monitoring " of proposed ATC base station locations. [31] Those reasons, which are similar to the reasons the Commission has given for foregoing site-by-site licensing in other contexts,[32] were good enough to obviate the need for the site-by-site licensing of ATC as a secondary service. They surely are even more compelling reasons *not* to adopt such a requirement merely to *enable the primary MSS service to retain interference protection* for existing services or future services.

Requiring Inmarsat and other L-Band users to employ such a site-by-site approach to maintain their authorized service area is not only antithetical to the very reasons the Commission declined to license ATC on a site-by-site basis, but also is inconsistent with the way the Commission licenses most other nationwide services, wireless or terrestrial.[33]

Moreover, having recognized that higher base station emissions can in fact present interference problems to Inmarsat mobile terminals,[34] it would be irresponsible to allow MSV to roll out its higher power service and then embroil the Commission in a series of

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[31] The Commission rejected a proposal that MSS licensees provide evidence they could not serve via satellite a location that they intend to serve via ATC." *ATC Order* at 2015.

[32] *See Amendment of Parts 1, 21, 73, 74 and 101 of the Commission's Rules*, 19 FCC Rcd 14165, 14190 (2004) ("eliminating inefficient, administratively burdensome site-by-site licensing rules, the transaction costs of which are too high to permit competitive businesses to flourish using next generation technology."); *Service Rules for Advanced Wireless Services in the 1.7 GHz and 2.1 GHz Bands,* 18 FCC Rcd 25152, 25175 (2003) (explaining many advantages of geographic licensing over site-by-site licensing, especially for ubiquitous mobile services).

[33] *See In the Matter of Amendments to Parts 1, 2, 27 and 90 of the Commission's Rules*, 17 FCC Rcd 9980, 9991-92 (2002) ("We believe that nationwide licensing provides licensees flexibility to develop and provide new services ubiquitously across the entire band . . . . [and] serves the public interest by promoting flexibility and efficient spectrum markets.").

[34] *MSV Order* at ¶ 82.

adjudicatory disputes about whether those operations really are a problem. It will be near impossible for the Commission to put the genie back into the proverbial bottle once MSV has deployed base stations and commenced service to the public. Thus, once Inmarsat or any other party objects to the operation of the ATC base station at higher power, MSV should not be allowed to operate at that higher power unless and until the Bureau has resolved the dispute. Otherwise, MSV would be allowed to "unduly increase the potential for harmful interference" and Inmarsat and others would have no short term mechanism to prevent such interference from occurring. Inmarsat users certainly do not expect to forego essential services while the Commission conducts a series of proceedings to resolve interference disputes.

Moreover, because it appears to require Inmarsat's distributors to accept harmful interference unless they object within 30 days, the prior showing requirement constitutes a violation of the prohibition in Section 316 of the Communications Act against modifying a license without notice and a hearing.[35]

B. The Bureau Failed to Enforce a Critical Constraint on ATC Interference into Spacecraft

Inmarsat objected below to MSV's failure to provide a demonstration that (i) MSV's mobile terminals have a 63x power reserve[36] that will be used solely indoors to overcome signal attenuation from a building or vehicle that completely encloses the MT (as opposed to being used to overcome outdoor signal attenuation), and (ii) MSV will not extend the edge of coverage of its ATC cells beyond the point where its mobile terminals could operate beyond a certain power level. As to the first element, MSV has not even attempted to show that the 63x

[35] Section 316 of the Act provides licensees the right to advance notice of any proceeding that would modify their licenses, and an opportunity to object. *AMSC Subsidiary Corporation v. FCC*, 216 F.3d 1154, 1158 (D.C. Cir 2000) ("we regard 'a license [as] modified for purposes of section 316 when an unconditional right conferred by the license is substantially affected.'"); *see also Aircell, Inc.*, 15 FCC Rcd 9622, 9636 (2000) (Section 316 not invoked because cellular licensees were not required to accept harmful interference).

[36] In terms of power, 18 dB equals 63 times.

power factor would not also be used while an MT was outside. As to the second element, MSV described some theoretical techniques it could employ to comply with the power constraint, but MSV has not committed to actually employing those techniques.

The Bureau dismissed both of Inmarsat's objections, (i) indicating that it does not agree that Section 25.253(a)(8) requires an applicant to demonstrate that the emitted power of its MTs will never exceed –18 dBW (the 63x power factor) when they are operated outdoors, and (ii) indicating that it interprets MSV's application as containing commitments about how the edge of cell power will be limited.[37]

Enforcement of these requirements is critical to constraining interference into Inmarsat spacecraft to manageable levels. Even if MSV complies with all the other restrictions imposed by the Commission, if its ATC mobile terminals operate at *full power* while outdoors (*i.e.*, at 18 dB or 63x higher than otherwise permitted), then a few dozen ATC terminals operating on the same channel could produce the same interference impact as the overall 1725 co-channel reuse limit set by the Commission in the *ATC Order*.[38] Review is further warranted because the Bureau has acted on an ATC rule interpretation that is currently subject to reconsideration by the full Commission, it has ignored clear language in the *ATC Order* to Inmarsat's detriment, and it also has ignored the plain absence of any commitment by MSV to comply with these provisions and thereby protect Inmarsat from interference.

A critical element underlying the Commission's analysis in the *ATC Order* was the need to constrain the power generated by ATC terminals that could reach Inmarsat spacecraft. In this regard, the Commission considered that the power level emitted by an ATC terminal that could cause interference to Inmarsat is the power level of the terminal, less a

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[37] *MSV Order* at ¶¶ 31-32.

[38] Technical Annex at 2.1.

number of interference reduction factors,[39] the most important of which is a 20 dB power control factor. The main component of this power control factor is the 18 dB "structural attenuation" factor.[40] The Commission clearly defined "structural attenuation" as reduction in signal strength that takes place when an ATC mobile terminal transmits within a building, automobile of other structure that completely encloses it.[41] The Commission distinguished that effect from "outdoor blockage," which occurs when an obstacle interrupts the line-of-sight path to a transmitter. Then, the Commission stated:

> "Our understanding of cellular system design is, for example, if a user standing in the open at the edge of the cell coverage area accesses the ATC system, the MT would be requested . . . to reduce its power by the full 18 dB of structural attenuation because no structural attenuation exists between the user MT and the base station."[42]

The assumptions underlying the Commission's decision to authorize ATC in the L-Band remain true only as long as the ATC operator actually complies with the requirement that 18 dB of potentially interfering power *not* be used while outdoors. As explained in Section 2.1 of the Technical Annex, terrain or another structure exists outdoors that shields an ATC user from the base station, and that terminal increases its power by up to 63x to overcome that obstacle, Inmarsat clearly would suffer increased satellite interference that the Bureau has not accounted for.

The Bureau is wrong when it states that the structural attenuation requirement is the same as the requirement to limit the size of ATC cells to ensure mobile terminals do not need to exceed certain power levels under free space conditions. This interpretation would render irrelevant the definition of structural attenuation in the rules, as well as the use of that term in

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[39] The factors are: 25 dB Inmarsat-4 satellite antenna discrimination, 3.1 dB outdoor blockage, 20 dB power control, 3.5 dB vocoder factor, 1 dB voice activity, and 1.4 dB polarization isolation.

[40] *ATC Order* at 2152 (Appendix C2 § 1.3.5).

[41] *Id.* at 2034 (n. 375), 2109 (Appendix B § 25.201), and 2151 (Appendix C2 at n. 69).

[42] *Id.* at 2151 (Appendix C2 at § 1.3.1).