

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

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In the Matter of)
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Mobile Satellite Ventures Subsidiary LLC)
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Application for Modification of Space)
Station License (AMSC-1))
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Amendment to Pending Application to)
Launch and Operate a Next-Generation)
Replacement MSS Satellite System)
)
Application for a Modification of)
Blanket License to Operate Mobile Earth)
Terminals with MSAT-1)

DEC 28 2004

Federal Communications Commission
Office of Secretary

Policy Branch

International Bureau

File No. SAT-MOD-20031118-00333

File No. SAT-AMD-20031118-00332

File No. SES-MOD-20031118-01879

COMMENTS IN SUPPORT OF
APPLICATION FOR REVIEW

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| 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 |
| |) | |

COMMENTS IN SUPPORT OF APPLICATION FOR REVIEW

Stratos Mobile Networks (USA) LLC and MarineSat Communications Network, Inc. (collectively "Stratos") hereby submit these comments in support of the Application for Review filed on December 8, 2004, by Inmarsat Ventures Limited ("Inmarsat")¹ of the *MSV Order*,² 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"). Stratos urges the Commission to grant the Application for Review in order to ensure that MSS services in the L-Band remain protected from ATC interference, and to preserve the ability of Stratos to deploy new and innovative MSS services in all parts of the United States, including urban, suburban and rural areas.

¹ See Application for Review, File Nos. SAT-MOD-20031118-00333, et al. (filed Dec. 8, 2004).

² See In re Applications of Mobile Satellite Ventures Subsidiary LLC, DA 04-3553 (rel. Nov. 8, 2004) (the "MSV Order").

Stratos strongly supports Inmarsat's request that the Commission review the International Bureau's decision to allow MSV to operate its proposed ATC network. By granting the ATC Application of MSV, the Bureau has gone well beyond the carefully balanced framework set forth in the *ATC Order*³ for licensing such networks and protecting from harmful interference MSS operations in the L-band. MSV's ATC network, as licensed by the Bureau with its numerous waivers of the Rules, could seriously threaten the performance of critical public safety and other MSS communications services provided by Stratos to its customers as well as inhibit the operations of future broadband MSS services.

I. STRATOS' ROLE AS A DISTRIBUTOR OF MSS IN THE UNITED STATES

As the largest U.S. distributor of MSV services and the largest distributor in the world of Inmarsat and Iridium Satellite LLC services, Stratos is uniquely qualified to comment on the critical role that MSS plays in providing vital communications services for public safety, commercial users and governments to remote as well as urban areas in the United States. For example, the U.S. Department of Defense is the largest user of commercial MSS in the world. With communications needs that are global in reach and require reliability, access and security, MSS is uniquely positioned to satisfy the "mission critical" needs of the U.S. military.⁴

³ 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").

⁴ See "DoD Awards \$72 Million Contract to Revamped Iridium," *Satellite Today*, (Dec. 7, 2000) ("The Iridium service is attractive to DoD to provide communications for personnel whose duties take them to places where conventional phone service is not available. The Navy will gain most from the Iridium service, since it needs more than twice as much capacity as it now has, Pentagon officials said. Special Forces, combat search and rescue activities and polar communications also will be enhanced by the Iridium service, they added.").

Similarly, other government agencies, such as the Federal Emergency Management Agency, as well as domestic and worldwide relief organizations, rely on MSS because of its ability to provide communications capability in inaccessible locations and during emergency situations. This was clearly demonstrated on September 11th when terrestrial communications facilities failed, Stratos and other MSS providers rushed hundreds of MSS mobile terminals to New York City and Washington, D.C. to provide reliable communications to the United Nations, the U.S. State Department, the FBI and other government agencies at the federal, state and local levels. News reports highlight the increased demand for MSS in the wake of September 11th:

In the hours after the attacks, people turned to satellite phones when traditional cellular networks were overloaded with calls Now, soldiers, intelligence officers and members of the media are purchasing satellite phones to keep in contact as they fan out to remote areas of the globe in anticipation of U.S. military action.⁵

Satellite phones provided a vital communications link during the September 11 catastrophe in New York and Washington⁶

Indeed, MSV (formerly Motient) observed in the ATC rulemaking proceeding that:

[i]n addition to serving the Commission's goal of bringing advanced communications to all areas, MSS systems also serve a critical role in times of national emergency and disasters. Many disasters, such as earthquakes and hurricanes, disrupt terrestrial wireline and wireless telecommunications systems. Because [Motient's] satellites will be located 22,000 miles above the Earth, its infrastructure is unaffected by these disasters. MSS systems thereby provide a reliable means of communications for emergency response organizations.⁷

⁵ See "Satellite Phone Companies Rebounding," The San Diego Union-Tribune, Sept. 29, 2001, at C1.

⁶ See "Satellite Phones Find Renewed Interest in Wake of September 11 Assault," Agence France Presse, Sept. 28, 2001.

⁷ See Motient Comments, IB Docket No. 01-185, at 9-10 (10/22/01).

Of particular note is the recent announcement by the Fire Department of New York City and Stratos to use Inmarsat terminals in New York City for emergency response communications for the “dependable transmission of video and voice communications between on-the-scene responders and headquarters locations.”⁸ This selection follows the successful demonstration of Inmarsat technology for the New York Fire Department’s field and command center units. Based upon these successful trials, it can be expected that other emergency response organizations will deploy Inmarsat terminals in metropolitan areas throughout the United States.

II. MSS MUST BE PROTECTED FROM HARMFUL INTERFERENCE BY ATC NETWORKS OPERATING IN THE L-BAND

With the critical role that MSS plays for industry and government, especially in the L-band, it clearly is not in the public interest to allow ATC networks to operate significantly more base stations with reduced performance and increased power levels than authorized by the full Commission in the *ATC Order*. Indeed, as the Commission correctly recognized, MSS communications in the L-band are particularly susceptible to harmful interference, and therefore required the gradual deployment of ATC networks in this spectrum. An ad hoc decision by the Bureau to relax these restrictions before the first ATC base station or mobile terminal is deployed goes against the clear direction of the Commission’s “go slow” approach. For this reason alone, the Commission must review and reverse the *MSV Order*.

The increased likelihood of harmful interference into MSS operations in the United States is particularly troubling since the Commission only recently authorized companies, like Stratos, to operate a wide-range of mobile earth terminals to provide domestic land mobile

⁸ See Application for Review, at Appendix B.

MSS via Inmarsat.⁹ In the words of the Commission, this authority was granted because it would "serve the public interest by increasing competition and providing additional services for U.S. consumers."¹⁰

There are several critical assumptions that the Bureau made in its analysis of MSV's ATC Application that are simply in error and must be corrected. Most significantly, it is incorrect to assume, as the Bureau has done in granting a multiplicity of waiver requests, that there will be little, if any, overlap between the coverage of ATC base stations and the location of Inmarsat terminals in the United States. In expanding the number of ATC base stations on the same channel by approximately 40 percent and increasing the power limits for high-powered base stations by 8 dB, the number and size of MSS "exclusion zones" in the L-band will necessarily increase substantially. The Bureau believes, however, that this substantial increase should not seriously affect MSS operations in the United States due to the assumed limited number of MSS terminals currently being used in urban areas where most ATC base stations presumably would be located.¹¹

Contrary to this Bureau assumption, MSS services are being provided in urban areas today and will likely continue to increase as new broadband MSS services are brought into use as result of the expected launch next year of Inmarsat-4 satellites. As indicated above, the recent announcement by the Fire Department of New York to use Inmarsat terminals in New York City for emergency response communications belies any suggestion that such terminals are not being deployed in urban settings. And as pointed out by Inmarsat, with the upcoming launch

⁹ See *In the Matter of Comsat Corporation d/b/a Comsat Mobile Communications et al.*, FCC 01-272 (rel. Oct. 9, 2001).

¹⁰ *Id.* at ¶ 1.

¹¹ See *MSV Order*, at ¶ 81.

of Inmarsat-4 satellites, additional MSS services will soon be made available throughout the United States, including in many urban areas previously unable to receive adequate reception from previous generations of Inmarsat satellites.¹²

Nor was it correct for the Bureau to assume that ATC base stations would only be deployed in urban areas. Indeed, in the *ATC Order*, the Commission found that “achieving optimal spectrum usage may require an MSS operator to use ATC *even though a particular call might be served by satellite.*”¹³ Thus, there is no basis for the Bureau to assume that most ATC base stations will be deployed by MSV in urban areas, where MSV’s satellite signals are weak. MSV is not constrained as to where it can deploy its ATC base stations, only as to how many base stations it can initially deploy and at what power levels.

The Bureau’s novel mechanism for resolving disputes regarding interference concerns that might arise due to the sighting of particular ATC base stations is also flawed and does not correct the other deficiencies in the *MSV Order*. As pointed out by Inmarsat, this mechanism impermissibly places the burden on MSS distributors, like Stratos, to demonstrate that their primary MSS services will be used in the areas surrounding high-powered ATC base stations and would be adversely affected by the “ancillary” ATC services of other MSS providers. The Bureau’s new prior showing requirement fundamentally reverses the Commission’s determination that as an “ancillary” service, an ATC proponent bears the burden of demonstrating non-interference. ATC operations were authorized by the Commission only on

¹² See Application for Review, at 5, 7-8. Inmarsat also notes that the U.K. is in the process of coordinating orbital locations for its Inmarsat-4 satellites using L-band spectrum at 98° W.L. and 104° W.L. *Id.* at 11-12. With these slots over the middle of the United States, Inmarsat users should be able to achieve superior link margins and line of sight coverage even in densely populated urban areas.

¹³ See *ATC Order* at 2015 (emphasis added).

a secondary, non-harmful interference basis, even in those instances in which ATC operations otherwise comply with the Rules.¹⁴ The placement of such a burden on MSS operators is inconsistent with the relative status of the two services and was never contemplated by the Commission in its *ATC Order*.

Moreover, the prior showing requirement contemplated by the Bureau is clearly unworkable. As a large distributor of Inmarsat services in the United States, much of the burden placed upon MSS operators for demonstrating the likelihood of an interference problem with high-powered ATC base stations will rest squarely on Stratos. Inmarsat correctly points out that there are hundreds of thousands of registered users on the Inmarsat system who operate mobile terminals, including over 100,000 “mini M” land mobile terminals, and virtually all of these terminals could be used anywhere in the Inmarsat coverage area at any given time. This is because the beams of the Inmarsat spacecraft encompass both urban and non-urban areas, and Stratos is unable to determine whether any of these users are near a proposed ATC base station location. In addition, this mechanism does not appear to accommodate, after the initial 30-day objection period, the deployment of new Inmarsat services and technologies, changes in the marketplace, or new customer requirements, such as the expected deployment in New York City of Inmarsat terminals by the Fire Department of New York. At a minimum, Stratos should not be foreclosed from making such a showing at a later date to allow it to address such future developments.

¹⁴ *Id.* at 2017. 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. *Id.* at 2066.

III. INMARSAT HAS RAISED SIGNIFICANT ISSUES REGARDING THE INCREASED POTENTIAL FOR HARMFUL INTERFERENCE BY ATC NETWORKS INTO MSS OPERATIONS

A. Interference from ATC Mobile Terminals

Inmarsat correctly points out that MSV has never been able to demonstrate how its ATC mobile terminals would be able to avoid causing harmful interference into Inmarsat's satellites when operating outdoors with 18 dB of power control for "structural attenuation." While the use of power control was authorized for indoor operations in order to overcome signal attenuation from buildings or vehicles that completely enclose the mobile terminals, it was never contemplated that such higher-powered operations would be used outdoors. The reason for such a limitation is clear. When operating indoors or in vehicles, a mobile terminal's transmissions presumably would be attenuated both in the direction of the ATC base station as well as an Inmarsat satellite in geostationary orbit. However, when located outdoors, an ATC mobile terminal could increase its power by up to 18 dB in order to overcome outdoor signal attenuation while maintaining a clear line of sight to an Inmarsat satellite. As Inmarsat observes:¹⁵

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 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*.

The Commission clearly defined "structural attenuation" as a reduction in signal strength that takes place when an ATC mobile terminal transmits within a building, automobile

¹⁵ See Application for Review, at 18.

of other structure that completely encloses it.¹⁶ The Commission distinguished that effect from “outdoor blockage,” which occurs when an obstruction interrupts the line-of-sight path to a transmitter.¹⁷ The Bureau is simply wrong when it states that the structural attenuation requirement is the same as the constraint to limit the size of ATC cells to ensure mobile terminals do not exceed certain power levels under free space conditions.¹⁸ The structural attenuation requirement obligates MSV to demonstrate how it will ensure that its ATC system does not exceed the interference level assumed in the Commission’s analysis. The Commission went on to adopt a distinct and separate requirement; *i.e.*, that “MSS licensees shall not extend the coverage area of any ATC cell beyond the point where an ATC MT could operate at the edge of coverage of the ATC cell with a maximum EIRP of $-[18]$ dBW.”¹⁹

In addition, the Bureau improperly granted a relaxation of the 1725 co-channel reuse limit that the Commission deemed critical for constraining interference into Inmarsat spacecraft antenna. The Bureau based its decision on MSV’s claim that an ATC mobile terminal’s *average* antenna gain should be used in the interference calculations instead of the *peak* antenna gain specified in the Rules. Thus, the Bureau waived the strict application of Section 25.253(g)(1), which expressly requires that the ATC mobile terminal be limited to a peak power level. The Bureau reasoned that even though peak power was used to determine the co-

¹⁶ *ATC Order* at 2034 (n. 375), 2109 (Appendix B § 25.201), and 2151 (Appendix C2 at n. 69).

¹⁷ *See ATC Order* at 2151 (Appendix C2 at § 1.3.1).

¹⁸ *See* 47 C.F.R. § 25.253(a)(8); *ATC Order*, at ¶¶ 140 & 142 (“Our analysis assumes . . . that the link budget for ATC reserves a minimum of 18 dB for structural attenuation”); *see also ATC Order* at 2035, 2152 (Appendix C2 § 1.3.5) (“analysis is based on the expectations that MSV will implement the full 18 dB of margin for structural attenuation that they state is ‘per standard PCS design practices’”).

¹⁹ *See ATC Order* at 2036.

channel reuse limits in Section 25.253(g)(1), the underlying purpose of that provision is satisfied by taking into account the average power of MSV's mobile terminals.²⁰

As Inmarsat correctly notes, in granting this waiver request, the Bureau has failed to take into account the impact that such a waiver would have on the margin available to accommodate other variables in the Commission's ATC interference analysis, such as the future locations of Inmarsat's satellites that will be more susceptible to interference.²¹ MSV admittedly does not comply with the Commission's peak power limits for mobile terminals, and instead of relaxing these limits through the grant of a waiver of the Rules, the Bureau should have allowed for fewer than 1725 co-frequency ATC base stations in the United States.

B. Interference from ATC Base Stations

The Bureau also impermissibly granted waivers to MSV that will allow it to increase ATC base station EIRP by up to 8 dB and to deploy lower performance base station antennas. The cumulative effect of these waivers will increase the potential for interference into MSS terminals, and as previously indicated, increase the size of the exclusion zones around high-powered ATC base stations. Of particular note, the Bureau appears to have failed to take into account Inmarsat's thorough analysis of the increase in potential interference into Inmarsat aeronautical terminals resulting from the requested waivers as well as the effects of intermodulation products on Inmarsat terminals.²² Inmarsat raised serious interference issues and supported its assertions with technical details and a test report, and the Bureau simply cannot ignore such objections without any explanation.

²⁰ See *MSV Order* at ¶ 56.

²¹ See *Application for Review*, at 24-25.

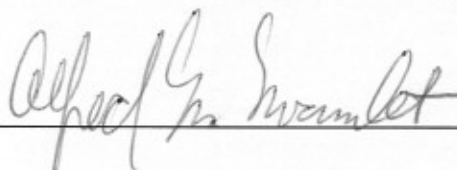
²² See *Application for Review*, at 22-24.

IV. CONCLUSION

For the reasons discussed above and in Inmarsat's Application for Review, Stratos urges the Commission to review the *MSV Order*, and reject those waivers granted by the Bureau that threaten the reliability of existing Inmarsat services and constrain the future development of broadband MSS service in the United States.

Respectfully submitted,

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December 23, 2004

I, Brendan Kasper, hereby certify that on this 23rd day of December 2004, the foregoing "Comments" was served by hand (*) or via first-class mail, postage prepaid, upon the following:

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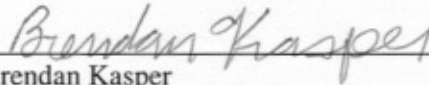
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