

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)	
)	
Amendment of the Commission's Rules to)	WT Docket No. 04-435
Facilitate the Use of Cellular Telephones and)	
other Wireless Devices Aboard Airborne)	
Aircraft)	

**JOINT COMMENTS OF
MOBILE SATELLITE VENTURES SUBSIDIARY LLC AND GLOBALSTAR LLC**

Mobile Satellite Ventures Subsidiary LLC (“MSV”) and Globalstar LLC (“Globalstar”) hereby file these Joint Comments in the above-captioned proceeding in which the Commission is considering ways to facilitate the use of wireless handsets and devices on airborne aircraft.¹ MSV and Globalstar support the Commission’s proposal to allow the use of “pico cell” technologies on board aircraft. In addition, Mobile Satellite Service (“MSS”) systems, such as the ones operated by MSV and Globalstar in the L-band and S-band, can play a vital role in enabling passengers to communicate while airborne. MSV and Globalstar urge the Commission to promote flexible and efficient use of spectrum by (i) facilitating the use of satellites to serve as the air-ground link from an airborne pico cell and (ii) allowing MSS handsets operating in terrestrial mode, just like other terrestrial handsets, to be used on aircraft in conjunction with an airborne pico cell.

Background

MSV. MSV is the entity authorized by the Commission in 1989 to construct, launch, and operate an MSS system in the L-band (1525-1559 MHz (space-to-Earth) and 1626.5-1660.5

¹ *Amendment of the Commission’s Rules to Facilitate the Use of Cellular Telephones and other Wireless Devices Aboard Airborne Aircraft, Notice of Proposed Rulemaking, FCC 04-288, WT Docket No. 04-435 (rel. February 15, 2005) (“NPRM”).*

MHz (Earth-to-space)). MSV's licensed satellite ("AMSC-1") was launched in 1995, and MSV began offering service in 1996. MSV is also the successor to TMI Communications and Company, Limited Partnership ("TMI") with respect to TMI's provision of L-band MSS in the United States and TMI's L-band mobile earth terminal licenses granted by the Commission. Today, MSV offers a full range of land, maritime, and aeronautical MSS, including voice and data, using both its own U.S.-licensed satellite and the Canadian-licensed L-band MSS satellite licensed to Mobile Satellite Ventures (Canada) Inc. In November 2004, the Commission authorized MSV to supplement its MSS with in-band terrestrial facilities, called an Ancillary Terrestrial Component ("ATC").² In January 2005, the Commission authorized MSV to launch and operate an L-band satellite to provide MSS in South America.³ On May 23, 2005, the Commission authorized MSV to launch and operate a next-generation L-band satellite to provide MSS in North America.⁴

Globalstar. Globalstar owns and operates the international 1.6/2.4 GHz MSS business offered through the Globalstar™ non-geostationary satellite constellation. Globalstar's predecessor-in-interest, Loral/Qualcomm Partnership, L.P., was authorized by the Commission in 1995 to construct, launch, and operate an MSS system in the L-band (1610-1621.35 MHz (Earth-to-space)) and S-band (2483.5-2500 MHz (space-to-Earth)). In January 2005, Globalstar entered its fifth year of providing MSS voice and data services in the U.S., and Globalstar's service is currently available in all major population centers of the world except central and

² See *Mobile Satellite Ventures Subsidiary LLC, Order and Authorization*, DA 04-3553 (Chief, International Bureau, November 8, 2004) ("*MSV ATC Licensing Decision*").

³ See *Mobile Satellite Ventures Subsidiary LLC, Order and Authorization*, DA 05-50 (Chief, International Bureau, January 10, 2005).

⁴ See *Mobile Satellite Ventures Subsidiary LLC, Order and Authorization*, DA 05-1492 (Chief, International Bureau, May 23, 2005).

southern Africa, Southeast Asia, and the Indian subcontinent. Globalstar currently has pending before the Commission applications seeking authority to incorporate an ATC into its existing MSS system.⁵

NPRM. In the above-captioned proceeding, the Commission is considering ways to facilitate the use of wireless handsets and devices on airborne aircraft. The Commission explains that facilitating such use will benefit consumers as well as promote homeland security by increasing communications options available for public safety personnel. *NPRM* ¶¶ 2, 10.

The Commission's rules currently prohibit the use of 800 MHz cellular telephones on airborne aircraft due to concerns with interference to other cellular operators. 47 C.F.R. § 25.925. Standard cellular handsets used on board an aircraft transmit at full power, producing a signal strong enough to cause interference to multiple base stations within view of the aircraft. *NPRM* ¶ 6. The Commission explains that these interference concerns could be mitigated if on-board handsets were controlled by an airborne "pico cell." *Id.* ¶ 13. The pico cell is a low power base station installed in the aircraft which communicates with on-board handsets. *Id.* The pico cell would instruct handsets to operate at their lowest power setting. *Id.* ¶ 14. Interference to cellular base stations would be eliminated because frequencies other than cellular frequencies, such as satellite frequencies, would provide the air-ground link between the pico cell and the public switched telephone network or the Internet. *Id.* The Commission proposes to permit 800 MHz cellular handsets to be used in airborne aircraft provided they are operated under control of an on-board pico cell. *Id.* ¶ 4. The Commission asks whether a similar policy should extend to

⁵ See Globalstar LLC Request for Authority to Implement an Ancillary Terrestrial Component for the Globalstar above 1 GHz, or Big LEO, Mobile Satellite Service (MSS) System (Call Sign ES2115); Globalstar USA LLC Application for Modification of Blanket License Authorization for Mobile Earth Station Terminals (Call Sign E970381), FCC File Nos. SAT-MOD-20050301-00054 and SES-MOD-20050301-00261 (filed March 1, 2005) ("Globalstar ATC Applications").

Personal Communications Services (“PCS”), Specialized Mobile Radio (“SMR”), Wireless Communications Services (“WCS”), and other terrestrial wireless handsets. *Id.* ¶¶ 4, 20-21.

The Federal Aviation Administration (“FAA”) currently prohibits the use of all types of mobile telephones on aircraft unless the aircraft operator has determined that the use of the device will not interfere with the aircraft’s aviation navigation and communication systems. *NPRM* ¶ 1. If the Commission were to adopt rules in this proceeding to allow wireless devices to be used on board aircraft in conjunction with a pico cell, such use would not be permissible unless approved by the FAA. *Id.*

Discussion

I. THE COMMISSION SHOULD FACILITATE THE USE OF SATELLITES TO SERVE AS THE AIR-GROUND LINK FROM AN AIRBORNE PICO CELL

MSV and Globalstar support the Commission’s proposal to enable the use of cellular, PCS, SMR, WCS, and other wireless devices on airborne aircraft through the use of an on-board pico cell. MSV and Globalstar urge the Commission to facilitate the use of satellites to serve as the air-ground link in conjunction with the on-board pico cell. Given their ability to offer ubiquitous coverage, including over oceans and remote areas, MSS systems are particularly well-suited to facilitating the use of on-board pico cells. A pico cell on-board an aircraft may be configured to receive the low-power transmissions of wireless devices and relay such signals to a satellite using the satellite’s return service link frequencies. The satellite may then relay the signals to a satellite gateway earth station to be passed-on to the destination device(s). On the forward link, signals intended for the wireless devices on-board the aircraft may be transported to the satellite via a satellite gateway earth station and then transmitted to the pico cell using the satellite’s forward service link frequencies. The pico cell may then retransmit the signals locally, within the aircraft, at low power levels, to serve the wireless devices on-board the aircraft.

Globalstar's and MSV's Commission licenses include authority to provide Aeronautical Mobile Satellite Service ("AMSS") for the air-to-ground link for communications to and from the aircraft and earth stations.⁶ In the event that the Commission concludes that additional licensing authority is required for the satellite component of pico cell base stations on board the aircraft, it should establish a blanket licensing regime for such equipment, similar to the current regime for blanket mobile earth terminal licenses. Such a regime would enable multiple technically identical aircraft pico cell stations to operate under a single system-wide license rather than requiring an individual license for each station.

Because MSS operators have exclusive use of their frequencies throughout their nationwide coverage area and beyond, the interference concerns which motivated the Commission to ban the use of 800 MHz cellular phones on board aircraft are not applicable to the use of satellite frequencies for the air-ground link. Moreover, the use of satellite frequencies for the air-ground link does not present interference concerns for other satellite operators using the same frequencies in geographic areas beyond the coverage area of the satellite providing the air-ground link.

II. THE COMMISSION SHOULD AMEND ITS RULES TO ALLOW MSS HANDSETS OPERATING IN TERRESTRIAL MODE TO BE USED ON BOARD AIRCRAFT IN CONJUNCTION WITH A PICO CELL

While the *NPRM* addresses potential airborne use of terrestrial cellular, PCS, SMR, and WCS handsets, the Commission should also allow the use of MSS handsets operating in terrestrial mode on aircraft through the use of an on-board pico cell. The Commission rules

⁶ See, e.g., *Order and Authorization*, 4 FCC Rcd 6041 (1989); *remanded by Aeronautical Radio, Inc. v. FCC*, 928 F.2d 428 (D.C. Cir. 1991); *Final Decision on Remand*, 7 FCC Rcd 266 (1992); *aff'd*, *Aeronautical Radio, Inc. v. FCC*, 983 F.2d 275 (D.C. Cir. 1993); see also *AMSC Subsidiary Corporation, Memorandum Opinion and Order*, 8 FCC Rcd 4040 (1993).

currently forbid portable and hand-held MSS mobile terminals from use on board aircraft.⁷ This restriction is related to concerns regarding inference to on-board aircraft navigation and communication systems.⁸ The use of an on-board pico cell in conjunction with MSS handsets operating in terrestrial mode will mitigate the potential for interference to aircraft navigation and communication systems. As noted above, because MSS operators have exclusive use of their frequencies, the primary risk of interference resulting from the use of MSS handsets operating in terrestrial mode would be to an MSS operators' own satellite service (which MSS providers have a strong incentive to avoid) -- not to aircraft navigation and communications systems. In any event, through the use of a pico cell, an airborne MSS handset operating in terrestrial mode will transmit at the lowest power possible, thereby reducing any potential for interference. MSV's and Globalstar's next-generation MSS handsets operating in terrestrial mode will be particularly well-suited for use on board aircraft based on the stringent out-of-band emission limits they will meet to protect the Radionavigation Satellite Service ("RNSS"). MSV's MSS handsets when

⁷ See 47 C.F.R. § 25.136(h) ("All portable or hand-held transceiver units (including transceiver units installed in other devices that are themselves portable or hand-held) having operating capabilities in the 1626.5-1660.5 MHz and 1525-1559 MHz bands shall bear the following statement in a conspicuous location on the device: 'This device may not be operated while on board aircraft. It must be turned off at all times while on board aircraft.'"); see also 47 C.F.R. § 25.136(a) ("User transceiver units associated with the 1.6/2.4 GHz Mobile-Satellite Service or 2 GHz Mobile-Satellite Service may not be operated on civil aircraft unless the earth station has a direct physical connection to the aircraft or cockpit cabin communication system."); 47 C.F.R. § 25.135(b) ("Transceiver units associated with the non-voice, non-geostationary mobile-satellite service may not be operated on civil aircraft."); 47 C.F.R. § 25.143(k) ("All portable or hand-held transceiver units (including transceiver units installed in other devices that are themselves portable or hand-held) having operating capabilities in the 2000-2020/2180-2200 MHz or 1610-1626.5 MHz/2483.5-2500 MHz bands shall bear the following statement in a conspicuous location on the device: 'This device may not be operated while on board aircraft. It must be turned off at all times while on board aircraft.'").

⁸ *Amendment of the Commission's Rules to Establish Rules and Policies Pertaining to a Non-Voice, Non-Geostationary Mobile-Satellite Service, Report and Order*, 8 FCC Rcd 8450, ¶ 12 ("[C]ertain transceivers will be required to bear a label prohibiting their use aboard commercial aircraft. This prohibition has been included to preclude potential interference of NVNG transceivers with navigation and other aircraft functions.").

operating in terrestrial mode are required to meet certain out-of-band emission limits into the RNSS band (1559-1610 MHz).⁹ These same out-of-band emission limits will apply when an airborne MSS handset is communicating with an on-board pico cell. As Globalstar has demonstrated in its application seeking ATC authority, its MSS handsets operating in terrestrial mode also will comply with out-of-band emission limits into the RNSS band when communicating with ATC base stations.¹⁰ Moreover, because MSS operators have exclusive use of their frequencies throughout their nationwide coverage area and beyond, MSS handsets operating in terrestrial mode on board an aircraft do not present interference concerns for other satellite operators providing service in the same coverage area.¹¹

MSV and Globalstar look forward to working with the FAA for approval for use of their MSS handsets operating in terrestrial mode on board aircraft. In the interim, the Commission

⁹ See, e.g., *MSV ATC Licensing Order* ¶ 95(c). MSV's MSS/ATC handsets are required to meet the following out-of-band emission limits when operating in terrestrial mode:

Into the 1559 - 1605 MHz band:

- Wide band emissions: -90 dBW/MHz initially, improving to -95 dBW/MHz five years after MSV commences commercial operations
- Narrow band emissions (bandwidth \leq 700 Hz): -100 dBW initially, improving to -105 dBW five years after MSV commences commercial operations

Into the 1605 - 1610 MHz band: Limit is derived by linear interpolation between value specified at 1605 MHz and the following value at 1610 MHz:

- Wide band emissions: -66 dBW/MHz initially, improving to -71 dBW/MHz five years after MSV commences commercial operations
- Narrow band emissions: -76 dBW initially, improving to -81 dBW five years after MSV commences commercial operations.

¹⁰ See *Globalstar ATC Applications* at Exhibit B-6 ("Protection of Radio-Navigation-Satellite/Aeronautical Radio-Navigation Services").

¹¹ In addition, the nationwide licensing of satellite spectrum avoids the issue of what entity is the proper licensee of spectrum used on board an aircraft. See *NPRM* ¶ 18 (noting that geographic-area licensing for cellular and other terrestrial wireless services complicates licensing of airborne operations – "pico cell operations would be airborne and transitory, rather than permanently located in any particular licensee's terrestrial service area, and in principle would access a wide range of cellular frequencies").

can facilitate the use of wireless devices on airborne aircraft by lifting the ban on portable and hand-held MSS mobile terminals on board aircraft provided they are used in conjunction with an on-board pico cell.

Conclusion

MSV and Globalstar request that the Commission act consistently with the views expressed herein.

Respectfully submitted,

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