

Before The
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of)	
)	
Revision of the Commission's Rules to)	CC Docket No. 94-102
Ensure Compatibility with Enhanced 911)	
Emergency Calling Systems)	
)	
Amendment of Parts 2 and 25 to Implement)	IB Docket No. 99-67
the Global Mobile Personal Communications)	
by Satellite (GMPCS) Memorandum of)	
Understanding and Arrangements; Petition)	
of the National Telecommunications and)	
Information Administration to Amend)	
Part 25 of the Commission's Rules to)	
Establish Emissions Limits for Mobile and)	
Portable Earth Stations Operating in the)	
1610-1660.5 MHz Band)	
)	

**COMMENTS OF
GLOBALSTAR USA, LLC and GLOBALSTAR, L.P.**

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SUMMARY

Globalstar USA, LLC (“GUSA”) and Globalstar, L.P., support the Commission’s proposal to require Mobile-Satellite Service (“MSS”) carriers that provide real-time, two-way voice services connected to the PSTN to establish emergency call assistance service centers that will respond to 911 calls and route the call to the appropriate PSAP. GUSA has already established such a call center, although there are relatively few 911 calls on the Globalstar system.

The success of emergency call assistance service centers depends in part upon accurate information on PSAPs. The Commission should establish a centralized means for MSS carriers to obtain accurate information on PSAPs in the United States, Puerto Rico and the U.S. Virgin Islands. For those areas without PSAPs, MSS carriers should relay 911 calls to offices designated by the appropriate local, state or federal authority.

Providing Automatic Location Information (“ALI”) and Automatic Number Information (“ANI”) to PSAPs over an MSS system is not technically feasible at this time and is cost prohibitive. The Globalstar MSS system uses satellite triangulation to determine a 911 caller’s geographic coordinates. Such information is not available in real time from the Globalstar gateway earth station to provide it automatically to a PSAP. The architecture of the Globalstar MSS system with three earth stations serving all calls from the continental United States does not readily support the connections that would be need to route ALI.

Implementation of ANI would require MSS carriers to connect to the PSTN with the American National Standards Institute ISDN User Part signaling. This could be accomplished if it were available through a local exchange carrier near the gateway earth station at reasonable cost. Above those costs, GUSA would have to install intrastate, interstate and international trunking connections from the gateway, which could be cost prohibitive particularly given the small MSS subscriber base.

Incorporating GPS receivers into MSS handsets to improve location accuracy may be feasible with MSS at 2 GHz. However, the proximity of Globalstar's transmit frequency in the 1610-1626.5 MHz band to the GPS frequencies at 1575-1577 MHz would constrain the positioning capability during a call. Filtering to use GPS may increase not only the cost of the phone, but also the size of the phone, making it less attractive to potential subscribers.

Currently, Globalstar call centers will receive calls dialed at 911 for U.S. emergency calls and 112, a common international emergency call number. The Commission should not adopt any requirements for global MSS carriers that would impair their ability to incorporate international emergency call requirements.

The ability of an MSS carrier to implement emergency call services for the MSS mode is not affected by implementation of an ancillary terrestrial component ("ATC") service. A terrestrial ground system using MSS frequencies would relay any 911 call, rather than the satellite space stations. An emergency call assistance service center could handle calls from either the MSS or ATC mode. However, the

position location mechanism may be different in each mode. Therefore, emergency call service for ATC may require different procedures than those for the satellite service.

With respect to subscriber notification, Globalstar has been able to adequately communicate emergency call service capabilities through service manuals, subscriber agreements and customer care representatives.

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GLOBALSTAR USA, LLC and GLOBALSTAR, L.P.**

Pursuant to Section 1.415 of the Commission's Rules, Globalstar USA, LLC ("GUSA") and Globalstar, L.P. ("GLP") file these "Comments" on the Commission's proposals to require certain emergency calling services for Mobile-Satellite Service ("MSS") providers.¹

GLP is the manager of the Globalstar™ 1.6/2.4 GHz MSS system. GLP owns and operates the global MSS business provided over a constellation of 48 non-

¹ Further Notice of Proposed Rulemaking, FCC 02-326 (released Dec. 20, 2002).

geostationary satellites. GLP contracts for space segment capacity with service providers who are authorized to offer voice, data and other telecommunications services to end users in individual countries. In certain territories, including North America, subsidiaries of GLP offer MSS directly to consumers. GUSA is the service provider for Globalstar in the United States and Caribbean region, and holds a blanket license for 500,000 mobile earth-station terminals ("METs") operating in the 1610-1621.35 MHz and 2483.5-2500 MHz bands.²

As the Commission notes in the Further NPRM, the Globalstar system currently offers subscribers in the United States an emergency call assistance service ("ECAS"). When a caller dials "911" in the United States, he or she will be connected to an operator at the ECAS center, who will assist the caller in using the satellite phone to find the caller's geographic coordinates. The call is then routed by the operator to the Public Safety Answering Point ("PSAP") nearest those coordinates. The Globalstar ECAS center handles about 12 emergency calls per month.

In the Further NPRM, the Commission has asked whether all MSS carriers connected to the Public Switched Telephone Network ("PSTN") should be required to implement ECAS centers. The Commission has also sought comment on whether

² See AirTouch Satellite Services US, Inc., 14 FCC Rcd 17328 (Int'l Bur. 1999) ("GUSA Blanket License"). The AirTouch licensee was subsequently renamed Globalstar USA, LLC, and has now been acquired by Globalstar Corporation, a subsidiary of GLP. See Vodafone Americas Asia Inc. and Globalstar Corporation, 17 FCC Rcd 12849 (Int'l Bur. 2002).

MSS systems can now or will be able in the future to meet the more stringent E911 requirements imposed upon terrestrial Commercial Mobile Radio Service (“CMRS”) systems.

As current MSS providers, GLP and GUSA support adoption of an ECAS requirement for all MSS providers in the United States. However, the costs to an MSS system, both in financial terms and in spectrum resources, of implementing Automatic Location Identification (“ALI”) and Automatic Number Identification (“ANI”) are enormous and far outweigh the revenues that the subscriber base could support. GLP’s and GUSA’s specific responses to the Commission’s inquiries are set forth below.³

1. Should all MSS carriers that provide real-time, two-way voice services connected to the PSTN be required to establish emergency call assistance service centers, to which 911 calls would be routed for connection to the closest PSAP?

If the Commission mandates that MSS carriers provide emergency call assistance, GLP and GUSA support the use of the ECAS model. GUSA has already implemented such a service in the United States, and it has proven an effective format for routing emergency calls.

That being said, the Commission should recognize that MSS by its very nature offers service coverage in rural and remote areas that alone is invaluable in emergencies. The ability to call for help, even in areas where there are no PSAPs,

³ GLP and GUSA provided information on many of these same questions in “Joint Supplemental Comments” filed in this docket on February 20, 2001. The information provided in those comments remains substantially the same.

can make a critical difference in health emergencies and rescue efforts. Callers can be directed to emergency service personnel for advice and information, and they can assist rescue workers in pinpointing their location. On the other hand, in most urban situations, it is unlikely that a subscriber would use the MSS mode of an MSS phone for emergency calls, unless all terrestrial services were unavailable. Wireless E911 capabilities are designed to replicate the capabilities of the wireline network because mobile telephones generally provide an overlay to the wireless network and are used by many as a substitute for a landline connection. Given the limited markets for MSS, and the much smaller subscriber base, there is no reason to apply to MSS a model developed for wireline service.

If it adopts the ECAS center proposal, the Commission should also recognize that MSS carriers may be limited in the information that can be available to PSAPs (e.g., subscriber's phone number or position). In addition, automatic information delivery to PSAPs could impose unreasonable costs on the MSS industry that would drive the cost of business beyond what is currently sustainable, thereby losing the valuable service coverage that MSS can provide for emergencies.

Other requirements can also increase costs. For example, multiple language capabilities at the call center would be expensive. Accordingly, the Commission should establish appropriate limits on the languages available at the ECAS centers (e.g., English and Spanish only). Finally, as the Commission has recognized, the financial exposure for emergency-related claims can make it difficult to provide

these services.⁴ Therefore, before imposing requirements on MSS systems, the Commission should be assured that MSS carriers have the same limitations from liability that offering 911 services may introduce as have terrestrial wireless and wireline carriers.⁵

2. Should the Commission require MSS carriers to deliver 911 calls from the United States, Puerto Rico and the U.S. Virgin Islands to the appropriate PSAP?

GLP and GUSA support the proposal to have the ECAS center relay 911 calls to the appropriate PSAP in the United States. However, PSAP information for Puerto Rico, the Virgin Islands and some U.S. locations is currently not available. Any requirement to relay a call to emergency personnel should take into account that federal, state and local governments must identify PSAPs and make those designations available to the MSS industry.

3. Should and, if so, how would the Commission regulate the accuracy of the PSAP database used by MSS call centers?

It would be overly burdensome and impractical to require MSS carriers to search out and obtain all relevant information on PSAPs on their own. Some information is readily available, other information is within the knowledge of the relevant governmental jurisdiction. The Commission should establish a central database for PSAP information, which would be the responsibility of the

⁴ See Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems, 11 FCC Rcd 18676, 18727-28 (1996).

⁵ See Wireless Communications and Public Safety Act of 1999, Pub. L. No. 106-81, § 4, 113 Stat. 1286, 1288 (Oct. 26, 1999).

jurisdictions to update so as to facilitate its use by MSS and other carriers. Such a central database could also be handled by the National Emergency Number Association (“NENA”). Requirements to update the PSAP database at the ECAS center should be consistent with updates that are readily available from the central database source and should not impose unreasonably burdensome administration on the MSS carrier or its ECAS center.

4. For regions where there is no established PSAP, should the Commission require the MSS carrier to comply with the same requirements as terrestrial carriers, that is, to route the call to a statewide established default point, or an appropriate local emergency authority selected by the state, or an appropriate local emergency authority using the MSS carrier’s reasonable judgment?

As long as the identity of the emergency contact point is clear (e.g., state police for calls on land, U.S. Coast Guard for calls off shore), this proposal is reasonable.

5. Is it technically feasible for an MSS system to implement transmission of automatic location information (ALI) to the PSAP? If so, what accuracy standard should be established for ALI?

It is not currently feasible for all MSS systems to provide ALI. Not all MSS systems have inherent position location capability; therefore, an accuracy standard should not be established.

Globalstar uses satellite triangulation and ranging to determine position for caller registration purposes within its 1.6/2.4 GHz system. To conserve spectrum resources for actual call traffic, the position location procedure is limited in duration. Nominally, the user’s position is determined to within 10 kilometers;

however, the accuracy can vary based on the user's behavior and view of the sky, the user's latitude, and the user's proximity to the gateway earth station that connects the call to the PSTN. To the extent that the Commission imposes a more stringent accuracy standard, the system will require more time to relay call information to the PSAP and may limit the caller's access to spectrum resources.

Although the position information is available on the user's phone, and ultimately is recorded on the user's call record, it is not available real-time from the Globalstar gateway in order to provide it automatically to a PSAP. For this reason, the Globalstar ECAS center helps the caller determine his or her position, and then relays that information to the appropriate PSAP.

Implementing ALI is not feasible at this time. Unlike locally-deployed fixed cellular and PCS base stations, which generally provide the carrier's switch with sufficient data to ensure reliable call routing, MSS carriers have no fixed point of presence near a caller's location. Moreover, there are only three earth stations serving Globalstar's continental U.S. calls, and no earth station serves Hawaii or far northern and western Alaska. Therefore, unlike cellular systems, the MSS system cannot determine the appropriate PSAP based on the location of the base station handling a call. Establishing hundreds or thousands of PSAP trunk-line connections in the current system architecture would be cost prohibitive, particularly if such connections needed to remain open at all times. Thus, for the Globalstar Big LEO system, it would be prohibitively costly to implement an

automatic location identification feature as a substantial system redesign would be necessary.

6. Is it feasible and, if so, in what time frame would MSS carriers be capable of meeting the same E911 requirements imposed on terrestrial carriers, including delivery of Automatic Numbering Information (ANI) and ALI? How can local-exchange-carrier interconnection and PSAP routing be improved for MSS?

In the near term, it is unlikely that the MSS carriers will be capable of meeting the same E911 requirements imposed on terrestrial carriers, including delivery of ANI and ALI. ANI would require that MSS carriers, at a minimum, connect to the PSTN with the American National Standards Institute ("ANSI") ISDN User Part ("ISUP") signaling. This could be accomplished if it were available through a local exchange carrier near the gateway at reasonable cost. Above those costs, GUSA would have to install intrastate, interstate and international trunking connections from the earth station. The cost of these arrangements would be prohibitive, particularly given the small subscriber base in the United States. And, it is not clear that PSAP or LEC trunking facilities, including those in Canada, are capable of transporting this enhanced call information.

ALI implementation would be more difficult and much more costly. Particularly, the terrestrial ALI accuracy requirement could not be achieved by Globalstar without expending vast amounts of the space segment resource reserved for calls. (Better positioning would require longer measurement times for the satellites to change position significantly.)

One way to achieve better positioning is by incorporating Global Positioning Satellite (GPS) receivers in the phone. While this solution may work for MSS at 2 GHz, implementing GPS receivers into satellite phones in the 1610-1626.5 MHz band is extremely challenging, since this MSS transmit band is so near the GPS receive band at 1574-1577 MHz, constraining positioning capability while in a call. Besides increasing the phone cost, the filtering required for a GPS solution may increase the size of the phone and make it unattractive to potential subscribers. Even with GPS receivers in satellite phones, a mechanism would have to be designed to pass this information to the gateway and then to the PSAP, a significant, lengthy and costly development effort. Also, since MSS systems have a single switch to cover a great amount of the United States geography (as noted above, three gateways earth stations serve the entire continental United States), PSAP routing is much more complex than for terrestrial wireless carriers that have localized switches. If the Commission required MSS carriers to replace ECAS centers with automatic PSAP routing, then local exchange carrier interconnections and PSAP routing could be improved by requiring local exchange carriers to accept position information from an MSS carrier and to select the PSAP routing translations for the MSS emergency calls.

Implementation of ALI and ANI may also significantly and adversely affect market demand for and the commercial viability of MSS. Unlike in cellular/PCS systems, the costs for implementing these systems cannot be spread over a large population of subscribers. Moreover, there has not been demonstrated a compelling

need for these features. Given the small number of emergency calls handled by Globalstar, the costs of implementing these features clearly offset any limited public safety benefit that would accrue over the use of ECAS centers.

7. What would be the cost and or difficulties to require transmission of ANI to the PSAP?

As mentioned above, ANI would require that MSS carriers, at a minimum, connect to the PSTN with ISUP signaling. This can be accomplished, if available through the local exchange carrier near the gateway at reasonable cost. Then, additional development would be required to pass the ANI to the PSAP. For Globalstar, these expenses could total over \$1 million. But, it is not feasible to expend this amount on these improvements based on the current subscriber base while maintaining reasonable subscriber rates for MSS.

8. Should the Commission require all MSS handsets to incorporate GPS to provide ALI? Or, in the alternative, should it require that each MSS system meet some accuracy standard for its inherent location capabilities? Are there interference issues with respect to GPS? What would be the impact on handsets and call set up time?

Incorporating GPS receivers into satellite phones in the 1610-1626.5 MHz band is probably not feasible with existing technology because the MSS transmit band is so near the GPS receive band at 1574-1577 MHz. The proximity of the handset transmit band to the GPS band would constrain the positioning capability during a call. Besides increasing the phone cost, the filtering required may increase the size of the phone substantially and render it unattractive to potential subscribers. Even with GPS receivers in satellite phones, a mechanism would have

to be designed to pass this information to the gateway and then to the PSAP, a significant, lengthy and costly development effort.⁶

9. If ANI and ALI are required, what is the timing required to implement each one? Can they be implemented together? Should implementation of E911 requirements be tied to a certain level of subscribership to facilitate cost recovery?

For Globalstar, ANI and ALI are independent. ANI could be implemented in a shorter time frame than ALI, depending upon the local interconnection to the gateway. ALI implementation may not be feasible. Any emergency call handling mandates imposed upon MSS must consider cost, particularly given the industry's current financial straits. In any event, there is no evidence of a substantial demand for 911 services from MSS phones, and the existing procedures for handling emergency calls seem to be satisfactory and relatively inexpensive.

10. Should existing MSS terminals be grandfathered after the new emergency call service rules take effect?

A rule that went no further than adopting an ECAS center requirement for MSS would not affect the existing phone requirements, and, therefore, grandfathering would not be required. However, other new emergency call service rules can greatly affect phone hardware and/or software. In that case, MSS terminals already in inventory or operation should be grandfathered under any new rules.

11. Should satellite carriers other than GMPCS providers be required to provide 911/E911? Should MSS aeronautical and

⁶ See Joint Supplemental Comments, at 18-22.

maritime services be exempted from mandatory 911/E911 requirements?

In order to avoid inequities among MSS competitors, all satellite carriers offering CMRS services should be included under any new MSS emergency call service rules applied to CMRS services. The PSAP model is not necessarily relevant in the maritime and aviation environment, and there are existing methods for handling emergency calls for vessels en route.

12. How should the resolution of international emergency call services affect the resolution of these issues in the United States?

GMPCS carriers will need to address any international emergency call service rules. To minimize system complexity and associated costs, a universal standard is desirable. The more flexible and non-prescriptive the U.S. standard, such as the establishment of MSS ECAS centers, the more likely it will be compatible with a subsequent international standard.

13. Does the 911 requirement in the United States preclude the availability of international emergency call signals on GMPCS phones roaming into the U.S.?

A limited number of desired emergency dialing codes should be defined (e.g., 911, *911, 112, etc.). Once established in the switch routing tables, dialing the emergency number will designate the call to be treated as an emergency call for home subscribers and roamers alike. Besides 911, the Globalstar system includes 112, a common international emergency dialing code, for those roaming into the U.S. who may not be familiar with dialing 911.

14. How would the implementation of an ancillary terrestrial component using MSS frequencies affect the ability of an MSS carrier to implement E911 over the satellite service?

The ability of an MSS carrier to implement emergency call services for the MSS mode is not affected by implementation of an ancillary terrestrial component (“ATC”) using MSS frequencies, unless as discussed above, an integrated GPS requirement is mandated. A terrestrial ground system using MSS frequencies would utilize terrestrial base stations to relay the call, instead of the satellite space stations. The phone would operate in only one of the complementary modes for any single call, similar to dual-mode satellite phones that contain a terrestrial cellular phone as well. Since the position location mechanism may be different for each mode, the rules pertaining to emergency call services on a terrestrial ground system using MSS frequencies should be different from the emergency call service rules governing satellite system use of MSS frequencies, with perhaps the exception of an ECAS center requirement.

An ECAS center could handle calls in either MSS or ATC mode, but the position information available for the caller might be obtained from different sources. Due to the nature of the information to be delivered to the PSAP and the amount of information available in either mode, an ATC system may be more constrained in offering emergency services than a typical terrestrial wireless carrier. On the other hand, because an ATC base station would be fixed in a geographic location, the base station could be directly interconnected with the local PSAP as in the cellular/PCS model.

With respect to meeting E911 requirements, both MSS and ATC modes will be hampered by the same issues. The manufacturers of E911 technology have a substantial market of cellular/PCS providers, and the cellular/PCS providers can shop around among equipment manufactures and spread the costs over millions of subscribers. For MSS and ATC, each operational MSS system is unique in both system design and the frequencies it uses. Moreover, there are at most a few hundred thousand MSS subscribers total in the United States. Imposition of the existing E911 rules on MSS and ATC would require each operator to accommodate the rules individually, and pass those increased costs directly on to a very small subscriber base, undermining the financial health of these systems and their ability to meet the critical needs recognized by the Commission.

GLP and GUSA note that the Commission has mandated that ATC must remain “ancillary” to MSS, and provide essentially the same capabilities.⁷ ATC in the 1.6/2.4 GHz band will have some of the same network limitations as MSS, including limitations on development of equipment arising from the use of a frequency assignment that is not shared by any other operational system. Further studies of ATC system architecture will be required before its emergency call capabilities can be determined.

⁷ Flexibility for Delivery of Communications by Mobile Satellite Service Providers, Report and Order, FCC 03-15, ¶ 67 (Feb. 10, 2003).

15. Should 911 be accessible to non-initialized MSS handsets?

Non-service initialized handsets cannot be identified by the Globalstar network due to the absence of a valid international mobile subscriber identity (“IMSI”). Therefore, emergency calls cannot be completed, absent additional software development in the handsets and gateways. Completion of such calls, even to the ECAS center, would require support for Electronic Serial Number (“ESN”) addressing, requiring additional significant technical development for gateway capabilities. The technical and other considerations underlying the requirement to transmit “all calls” for terrestrial wireless carriers are simply not applicable to MSS,⁸ and should not be extended to MSS providers.

⁸ See Revisions of the Commission’s Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems, 12 FCC Rcd 22665, 22682-83 (1997).

16. How should emergency call features be communicated to subscribers?

Currently, Globalstar has been able to adequately communicate emergency call capabilities through service manuals, subscriber agreements and customer care representatives. GLP and GUSA generally would not oppose use of a subscriber notification requirement, providing there is significant flexibility in its implementation. Stickers on the handset themselves, billing inserts, and/or disclosures in customer service agreements should be allowed for compliance purposes, depending upon the individual MSS provider's circumstances. For handsets already in the field, a billing insert should be sufficient.

Respectfully submitted,

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