

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

In the Matter of	)	
	)	
<b>GLOBALSTAR LICENSEE LLC, GUSA LICENSEE LLC, AND GCL LICENSEE LLC</b>	)	
	)	
Application for Modification of	)	File No. SAT-MOD-20080904-00165
Nongeostationary Mobile Satellite Service	)	
System License (S2115) To Launch a Second-	)	
Generation System	)	
	)	
Application for Modification of Mobile	)	File No. _____
Satellite Service Earth Station Licenses and	)	
Mobile Earth Terminal Licenses To Authorize	)	
Communications with Second-Generation	)	
System and To Incorporate Previously-Granted	)	
Ancillary Terrestrial Component Authority	)	

**AMENDMENT TO APPLICATION FOR MODIFICATION OF MOBILE  
SATELLITE SERVICE SPACE STATION LICENSE**

**AND**

**APPLICATION FOR MODIFICATION OF MOBILE SATELLITE SERVICE  
EARTH STATION AND MOBILE EARTH TERMINAL LICENSES**

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**AND**

**APPLICATION FOR MODIFICATION OF MOBILE SATELLITE SERVICE  
EARTH STATION AND MOBILE EARTH TERMINAL LICENSES**

Pursuant to sections 25.114 and 25.143 of the Commission's rules, Globalstar Licensee LLC, GUSA Licensee LLC, and GCL Licensee LLC<sup>1/</sup> hereby seek authority to transition from

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<sup>1/</sup> Globalstar Licensee LLC is the authorized licensee of the Globalstar satellite constellation (call sign S2115). An affiliated company, GUSA Licensee LLC, holds licenses for Globalstar's earth station gateways located in the continental United States and Alaska and a blanket license for the operation of Globalstar mobile earth station terminals in the United States, and is responsible for the provision of Globalstar MSS services to end users in the United States. Another affiliated company, GCL Licensee LLC, holds licenses for Globalstar's earth station

the Globalstar first-generation nongeostationary Big LEO Mobile Satellite Service (“MSS”) system constellation (FCC Call Sign S2115) to the Globalstar second-generation MSS system constellation (“Globalstar 2.0”). As set forth below, Globalstar has now decided that its second-generation satellite constellation, the first satellites of which are now scheduled to be launched beginning in the third quarter of 2010, will be registered with the International Telecommunications Union (“ITU”) by the Republic of France, and not the United States as previously planned. As a result, Globalstar is filing multiple applications, accompanied by this consolidated filing, seeking the following approvals to authorize the launch and operation of its second-generation space station constellation, as well as corresponding modifications to the continued operation of its mobile earth stations and mobile earth terminals:<sup>2/</sup>

**1. Amendment to Pending Space Station Modification Application.** Globalstar respectfully withdraws those portions of the Space Station Modification Application that requested authority for the launch and operation of U.S.-licensed second-generation space stations and requests that the Commission instead modify its license for its first-generation MSS

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gateway located in Puerto Rico. For purposes of this filing, Globalstar Licensee LLC, GUSA Licensee LLC, and GCL Licensee LLC are referred to collectively as “Globalstar.”

<sup>2/</sup> In connection with this consolidated filing, Globalstar is submitting multiple applications on FCC Form 312 via IBFS: one amending its pending application for modification of its space station license, *see* Modification Application of Globalstar Licensee, FCC File No. SAT-MOD-20080904-00165 (filed Sept. 4, 2008) (“*Space Station Modification Application*”), thirteen requesting modification of the earth station and mobile earth terminal licenses held by GUSA Licensee LLC, four requesting modification of the earth station licenses held by GCL Licensee LLC, and one requesting amendment of GUSA’s pending application for an in-orbit test antenna. A complete list of the licenses and pending applications affected by these filings is attached as Attachment 1. Globalstar respectfully requests that the Commission process all of these applications simultaneously via a single Public Notice.

satellite constellation in the manner specified herein to authorize Globalstar to complete the transition between the Globalstar first- and second-generation satellite constellations.

**2. *Application for Modification of Fixed Earth Station and Mobile Earth Terminal Licenses (referred to below as “Earth Station Modification Application”).*** In addition, Globalstar requests that the Commission modify its sixteen earth station licenses and its mobile earth terminal license to authorize communication with Globalstar’s French-registered second-generation constellation as well as its existing constellation. Finally, as a ministerial matter, Globalstar requests that the Commission modify Globalstar’s mobile earth terminal license to reflect the authority previously granted to Globalstar to offer ancillary terrestrial component (“ATC”) services in conjunction with its MSS services.

Grant of Globalstar’s pending Space Station Modification Application, as amended herein, and of the Earth Station Modification Application, which collectively will authorize Globalstar to complete the transition from its first-generation to its second-generation MSS system, will serve the public interest, convenience, and necessity by ensuring that Globalstar is able to provide reliable, affordable global MSS services to its customers in the U.S. and around the world for the long term.

## **I. BACKGROUND AND SUMMARY**

***Status Before Space Station Modification Application.*** Globalstar’s current satellite authorization specifies 40 operational satellites in 8 planes of 5 each; 9 additional satellites within the operational orbit as in-plane spares; and 1 satellite in the 920 km parking orbit (since

raised to the operational orbit), for a total of 50 satellites.<sup>3/</sup> On July 13, 2007, Globalstar requested special temporary authority to make ongoing adjustments to its first-generation constellation that it demonstrated were necessary to address the continuing degradation of the S-band forward link signal of certain of its satellites pending the replenishment of its constellation.<sup>4/</sup> Specifically, Globalstar requested special temporary authority to transition from its authorized 40-operating-satellite constellation to a 48-satellite constellation in connection with the placement into service of eight spare replacement satellites that were launched in 2007, and to make continual adjustments to the in-plane positions of its older satellites with fully or partially functioning S-band subsystems.<sup>5/</sup> Globalstar has subsequently filed renewed requests for Special Temporary Authority seeking the same relief, but the Commission has yet to act on any of the requests.<sup>6/</sup>

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<sup>3/</sup> See S2115, File No. SAT-MOD-20030606-00098 (“*Globalstar 2005 Authorization*”); Public Notice, DA No. 05-316 (Feb. 4, 2005). See also Loral/Qualcomm Partnership, L.P. Application for Authority to Construct, Launch and Operate Globalstar, a Low Earth Orbit Satellite System to Provide Mobile Satellite Services in the 1610-1626.5 MHz/2483.5-2500 MHz Bands, File Nos. 19-DSS-P-91(48), CSS-91-014 and 21-SAT-MISC-95, *Order and Authorization*, 10 FCC Rcd 2333 (1999), Erratum, 10 FCC Rcd 3926 (1999) (“*Globalstar 1999 Authorization*”).

<sup>4/</sup> See Globalstar Licensee LLC Request for Interim Operating Authority – Call Sign S2115 – FCC File No. SAT-STA-20070713-00098 (filed July 13, 2007) (“*July 13<sup>th</sup> STA Request*”).

<sup>5/</sup> See *id.* The eight spare replacement satellites were launched in two groups of four on May 29, 2007, and October 22, 2007, respectively. As of July 8, 2008, all eight replacement satellites had been brought into service. See Globalstar Licensee LLC – Notification Pursuant to 47 C.F.R. § 25.113(h) (filed Nov. 20, 2007); Globalstar Licensee LLC – Notification Pursuant to 47 C.F.R. § 25.113(h) (filed July 8, 2008).

<sup>6/</sup> See Globalstar Licensee LLC Request for Interim Operating Authority – Call Sign S2115 – FCC File No. SAT-STA-20080104-00003 (filed Jan. 4, 2008) (“*January 4<sup>th</sup> STA Request*”); Globalstar Licensee LLC Request for Interim Operating Authority – Call Sign S2115 – FCC File No. SAT-STA-20080707-00142 (filed Jul. 7, 2008) (“*July 7<sup>th</sup> STA Request*”); Globalstar

***The Space Station Modification Application.*** In its Space Station Modification Application, which was filed on September 4, 2008, Globalstar requested authority from the Commission to launch and operate up to 48 second-generation satellites to replenish, and ultimately replace, its first-generation Big LEO constellation. As Globalstar demonstrated in the Space Station Modification Application, the replacement satellites meet the requirements of 47 C.F.R. § 25.165(e) in that they will be operated at the same orbital altitude and in the same frequency bands as Globalstar’s existing constellation and will have the same service footprint.<sup>7/</sup> The new satellites are functionally identical to those that comprise Globalstar’s first-generation constellation, except that the shielding and componentry of the replacement satellites have been improved to guard against radiation, which appears to have led to the S-band anomaly in the first-generation satellites; the solar panels and power bus have been enlarged; provision has been made for faster data speeds; and other minor improvements have been made to reflect advances in technology.<sup>8/</sup> As Globalstar also explained in its Application, the transition from its first-generation to its second-generation systems will take place gradually, as its first-generation satellites reach their end of life and are retired and the second-generation satellites are launched

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Licensee LLC Request for Interim Operating Authority – Call Sign S2115 – FCC File No. SAT-STA-20081205-00221 (filed Dec. 5, 2008) (“*December 5<sup>th</sup> STA Request*”); Globalstar Licensee LLC Request for Interim Operating Authority – Call Sign S2115 – FCC File No. SAT-STA-20090527-00058 (filed May 27, 2009) (“*May 27<sup>th</sup> STA Request*”); Globalstar Licensee LLC Request for Interim Operating Authority – Call Sign S2115 – FCC File No. SAT-STA-20091130-00131 (filed Nov. 30, 2009) (“*November 30<sup>th</sup> STA Request*”)

<sup>7/</sup> See, e.g., Space Station Modification Application at 2-3.

<sup>8/</sup> *Id.* at 4-5.



and moved into their permanent orbital locations.<sup>9/</sup> The Space Station Modification Application accordingly also requested the same authority sought in Globalstar's STA requests to make appropriate in-orbit adjustments to Globalstar's first-generation satellites as needed to continue to provide service.<sup>10/</sup>

***Globalstar's Decision to Register Its Second-Generation System with France.*** Since filing its Space Station Modification Application, Globalstar has determined for business reasons to register its second-generation Globalstar 2.0 constellation through France, and not the United States as previously planned. One reason for this decision is the fact that, if its second-generation constellation operations outside of the United States were limited to the L-band spectrum authorized in its U.S.-issued space station license, as modified by the *October 15<sup>th</sup> Modification Order*,<sup>11/</sup> Globalstar would not have enough global L-band capacity through 2025 – the anticipated lifespan of the second-generation constellation. In addition, as Globalstar has explained in other proceedings, in certain countries outside of the U.S. its Independent Gateway Operators are not authorized to use sufficient L-band spectrum within the smaller frequency

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<sup>9/</sup> *Id.* at 3-4.

<sup>10/</sup> *Id.*

<sup>11/</sup> See Globalstar Licensee LLC, Call Sign S2115, Modification of Authority to Operate a Mobile Satellite Service System in the 1.6/2.4 GHz Frequency Band, *Order of Modifications*, 23 FCC Rcd 15207 (2008) (“*October 15<sup>th</sup> Modification Order*”) (*Petition for Reconsideration pending*). That order limited Globalstar's U.S.-authorized space station operations in the L-band to the spectrum between 1610-1618.725 MHz for earth-to-space transmissions. In contrast, Globalstar expects that its French space station registration will authorize operations on Globalstar 2.0 throughout the entire portion of the L-band spectrum allocated for Code Division Multiple Access (“CDMA”) MSS operations throughout the rest of the world, subject to national licensing.

assignment now authorized under Globalstar's U.S.-issued space station license to provide a viable level of service over the life of the second-generation.<sup>12/</sup>

After months of analysis and deliberation by working groups, the European Communications Office of the CEPT ("ECO," formerly European Communications Committee, or "ECC")<sup>13/</sup> on June 26, 2009, adopted decision ECC/DEC(09)(02), *Harmonisation of the Bands 1610-1626.5 MHz and 2483.5-2500 MHz Used by Systems in the Mobile-Satellite Service*. This decision replaces the 1997 decision, ERC/DEC/(07)(03), that was generally consistent with the FCC's 1995 *Big LEO Report and Order* segmenting the Big LEO bands between CDMA and TDMA systems. Although well-aware of the FCC's *October 15<sup>th</sup> Modification Order*, the CEPT decided to eliminate all band segmentation in the Big LEO bands, leaving it to the operators to coordinate their use of the band between themselves. The ECO designated December 31, 2009, as the preferred implementation date of the new decision and June 29, 2011, as the date that the current band harmonisation decision is withdrawn. Accordingly, the 48 CEPT member administrations, including, importantly for Globalstar, the Russian Federation, can be expected to implement the new band plan by or about the end of this year.<sup>14/</sup>

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<sup>12/</sup> See, e.g., Globalstar Licensee LLC and GUSA Licensee LLC – Request for Waiver and Request for Special Temporary Authority, FCC File No. SAT-STA-20081215-00231 (filed Dec. 15, 2008) ("*Waiver Request*") (requesting a waiver of the *October 15<sup>th</sup> Modification Order* to use its channels 8 and 9 outside the U.S.). Globalstar has narrowed its Waiver Request to encompass only its three gateways in Russia. See Letter from William F. Adler, Globalstar, Inc. to Marlene Dortch, FCC (August 17 2009). As of this date, the Waiver Request remains pending.

<sup>13/</sup> The ECO is a unit of the European Conference of Postal and Telecommunications Administrations ("CEPT") responsible for, among other things, developing CEPT spectrum policies.

<sup>14/</sup> Although the decision would theoretically allow Globalstar to operate above 1621.35 MHz in the CEPT countries, subject to coordination with Iridium, Globalstar has no present

Finally, Globalstar has significant business ties to France. Globalstar's subsidiary, Globalstar Europe SARL, holds licenses in France for the service link and feeder link spectrum and operates a gateway covering Western Europe and parts of Northern Africa and the North Atlantic. In addition, French companies have been awarded in excess of \$1.2 billion in contracts to build and launch Globalstar's second-generation system. Finally, the French export finance agency, Coface, has provided a \$586 million credit facility through a consortium of French banks to fund Globalstar's second-generation constellation. Thus, while Globalstar's operational base and corporate headquarters will remain in the U.S.,<sup>15/</sup> Globalstar has concluded that its business interests, and those of its service distributors and customers, will be better served by registering its second-generation constellation through France.<sup>16/</sup>

***Current Launch and Operational Plans.*** The Commission is well-aware that the economics of the MSS industry are challenging, to say the least. Unlike its principal competitor, Globalstar has secured funding for, and is constructing, its second generation constellation, which represents a commitment to service through 2025. Given the cost of building and launching a LEO constellation, prudence requires Globalstar to plan and manage deployment

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intention of doing so or of requesting Iridium to coordinate the use of that spectrum. The companies must coordinate their joint use of the part of the band between 1617.775 MHz and 1621.35 MHz, assuming that Iridium chooses to operate in the additional spectrum granted to it by the *October 15<sup>th</sup> Modification Order*.

<sup>15/</sup> We note that TerreStar Networks and ICO Global Communications, both of whose satellites are foreign-licensed, maintain corporate headquarters in Reston, Virginia.

<sup>16/</sup> The French frequency regulatory body, ANFR, submitted Globalstar's second generation constellation registration to the ITU on July 1, 2009. The constellation is designated HIBLEO-X and is assigned ID No. 109540513 in the ITU Radiocommunication Bureau's database.

sensibly and carefully. Investors and lenders would have it no other way. The deployment plan is described in the following paragraphs.

Globalstar will begin its second generation with a 32-satellite L- and S-band Walker configuration, consisting of 24 new satellites and the 8 satellites launched in 2007, and a 16-satellite Walker configuration that will provide Simplex services and possibly some Duplex services. In addition, Globalstar expects there to be two or three first-generation L- and S-band in-orbit spares and several L-band only in-orbit spares. Because the launch campaign will take some ten months beginning in the third quarter of 2010, it is impossible to predict at this time how many functioning spares will remain.

Transitioning from a first generation 48-satellite LEO constellation to a second generation 48-satellite LEO constellation is an incredibly complex undertaking. No satellite operator has ever attempted it. The primary objective is, of course, to maintain customer communications at an optimal level during each day of this multi-year process while remaining compliant with FCC and other regulations, orbit-raising 24 satellites from 920 km to 1414 km, and moving retired satellites out of orbital slots and positioning new satellites into their ideal slots while avoiding in-orbit collisions. Literally, hundreds of orbital maneuvers will need to be performed during, and in the three months after, each launch of six new satellites. There is no software or program that will do this automatically as orbital conditions change minute by minute.

The transition is conducted in four broad phases. Phase 1 is the “critical deorbit phase” when malfunctioning satellites are removed from their slots. Phase 2 is the “surplus deorbit phase” when the next non-malfunctioning satellites are removed from each plane based on the

relative health of the satellites. Phase 3 is the “repositioning phase” when the operational satellites that will remain in the operating constellation are repositioned to make room for the newly-launched satellites. Phases 2 and 3 must be undertaken simultaneously so as to minimize any service disruption to Globalstar’s customers. After the completion of Phases 2 and 3, the second-generation satellites may be launched. Phase 4 is the “new constellation establishment phase” when there is a one-to-one replacement of first generation satellites with second-generation satellites – all while maintaining the proper Walker orbital configuration.

Globalstar will initially launch 24 of its second generation satellites (licensed through France) in four launches of six satellites each; the other 24 new satellites will be on-ground spares. As the eight satellites launched in 2007 reach their end of life, Globalstar will launch on-ground spares to replace them so that there will always be at least 32 operational L- and S-band satellites. If the 2007 satellites continue to exhibit robust L-band functionality, Globalstar will substitute them for the older L-band satellites in the 16-Walker Simplex configuration. Then, as the second generation satellites age or malfunction, Globalstar will launch additional ground spares just as it did in the first generation. This is the only way to manage a LEO system in an economically responsible manner.

Through at least 2015 or 2016 (beyond the current 2013 expiration date of its FCC authorization), Globalstar will be operating satellites registered through two different administrations. In the United States, both the first-generation and the second-generation satellites will operate on the authorized frequencies, as modified by the Commission’s *October 15<sup>th</sup> Modification Order* – specifically, the 1610-1618.725 MHz band in the L-band and the

2483.5-2500 MHz band in the S-band.<sup>17/</sup> In addition, they will use the same emission designators (along with some additional ones for which approval has been sought in the Space Station Modification Application) and will operate at the same power levels.

Globalstar's ground station network will be upgraded to take advantage of the enhanced performance of the new satellites while remaining backward compatible with the first-generation satellites. It is currently anticipated that the transition period from first-generation ground network technology, to a combination of first- and second-generation technology, to entirely second-generation ground network technology will take approximately three years. When all first generation satellites have been retired, Globalstar will move them out of their orbital locations in accordance with the orbital debris mitigation plan approved by the Commission in 2005.<sup>18/</sup>

***Requested Authorizations.*** In light of its decision to register its second-generation satellites with France, Globalstar is no longer requesting authority from the Commission for the launch and operation of those satellites. Instead, it requests the following authorizations:

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<sup>17/</sup> See *October 15<sup>th</sup> Modification Order*. With respect to locations outside the United States, as noted above (*see* note 12, *supra*), Globalstar has filed a request for waiver of the Commission's frequency assignments to use the spectrum between 1618.725 and 1621.35 MHz from its gateways in Russia. As Globalstar noted in its filings in connection with the waiver proceeding, at some point in the future once its second-generation ground network becomes operational, Globalstar may require the ability to operate above 1618.725 MHz from one or more additional gateways outside of the U.S.. See, e.g., Waiver Request at 8; Opposition of Globalstar Licensee LLC to Petition to Deny of Iridium Satellite LLC (filed Feb. 2, 2009) at 6-7. Because the timing and scope of any such need is uncertain at this point – and it is not clear how many (if any) FCC-registered, first-generation satellites will remain part of Globalstar's core constellation at the time it needs to operate above 1618.725 MHz – Globalstar is not seeking any further waiver of the *Modification Order* at this time.

<sup>18/</sup> See *Globalstar 2005 Authorization* at Exhibit B.

*First*, in anticipation of the launch of the 24 second-generation satellites currently scheduled for the third quarter 2010 to the middle of 2011, Globalstar seeks authority to undertake the ongoing modifications to the operations of its U.S.–licensed satellites that are necessary to provide for the transition to its second-generation constellation. In particular, it seeks to make the necessary in-plane adjustments to almost all of its still functioning first-generation satellites as described herein and in its pending STA Requests as long as those first-generation satellites remain operational. Further, Globalstar requests authority to modify the operations of the eight replacement satellites it launched in 2007 in order to integrate them with the first 24 French-registered satellites, so that together those 32 satellites will form the core of Globalstar’s second-generation constellation as described above.

*Second*, consistent with how the Commission has treated other foreign-licensed satellite operators, Globalstar requests that the Commission modify the conditions set forth in its U.S. gateway earth station and mobile earth terminal licenses to authorize communication with the second-generation satellites that will be registered by France.

*Third*, Globalstar requests that the Commission modify its blanket mobile earth terminal license to reflect the authority previously granted to Globalstar to deploy ATC services in conjunction with its MSS services. That authority is currently reflected in Globalstar’s license for its first-generation satellites, which will become moot as Globalstar makes the transition to its second generation. Transferring the authority to Globalstar’s mobile earth terminal license will place it in the same position as the other foreign-licensed MSS provider that has received ATC authority.

## **II. SECTION 304 WAIVER**

Pursuant to section 304 of the Communications Act, 47 U.S.C. § 304, Globalstar hereby waives any claim to the use of any particular frequency or of the electromagnetic spectrum as against the regulatory power of the United States because of the previous use of the same, whether by license or otherwise.

## **III. INFORMATION REQUIRED BY THE COMMISSION'S RULES**

Globalstar provided the information required by sections 25.114(d) and 25.143 of the Commission's rules in the Space Station Modification Application. The provided information – and in particular the Form 312 Schedule S submission – remains largely unchanged. Globalstar nevertheless is providing the information required by sections 25.114(d) and 25.143 here (updated as needed, while incorporating the prior Schedule S by reference) because, although Globalstar is registering its second-generation system with France rather than the U.S., the Commission has previously indicated that foreign-registered satellite operators must provide the information required by those in order to obtain authority for U.S.-based earth stations and mobile terminals to communicate with the foreign-registered satellites.<sup>19/</sup>

### **Section 25.114(d) Information**

#### **§ 25.114(d)(1) General description of overall system facilities, operations and services.**

Globalstar's second-generation replacement satellites will be registered by the French government and ultimately will include 48 low-earth-orbit satellites having an anticipated design

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<sup>19/</sup> See Amendment of the Commission's Regulatory Policies to Allow Non-U.S. Licensed Space Stations to Provide Domestic and International Satellite Service in the United States, *Report and Order*, 12 FCC Rcd 24094 (1997) at ¶¶ 189-192; Amendment of the Commission's Space Station Licensing Rules and Policies, *First Report and Order and Further Notice of Proposed Rulemaking in IB Docket No. 02-34*, and *First Report and Order in IB Docket No. 02-54*, 18 FCC Rcd 10760 (2003) at ¶¶ 300-302.



life of 15 years, compared with 7.5 years for the first generation, and in-orbit spares from the first generation. The general configuration of the constellation is described in Part I, above. The second-generation satellites will have the same configuration as the first-generation satellites, with 16 forward and 16 return service link beams and directional earth coverage for the forward and return feeder links. The Form 312 Schedule S submission that accompanied Globalstar's pending Space Station Modification Application described the technical design and orbital parameters of the second-generation satellites in greater detail. Those technical showings remain unchanged. As noted above, Globalstar's ground station network within the U.S. and in other parts of the world is being upgraded to take advantage of the enhanced performance of the new satellites and to be backward compatible with the first-generation satellites. It is currently anticipated that the transition period from first-generation technology to a combination of first- and second-generation technology, to entirely second-generation technology will take approximately three years. As also noted above, a limited number of first-generation satellites will be retained as in-orbit spares until they are no longer useful for that purpose, then de-orbited in accordance with the approved plan.

**§ 25.114(d)(2) Feeder link and inter-satellite service frequencies requested for the satellites.**

The second-generation satellites will communicate with Globalstar's gateway earth stations and mobile earth terminals located in the United States over the same service links authorized for Globalstar's first-generation satellites, as modified by the Commission's *October 15<sup>th</sup> Modification Order*,<sup>20/</sup> – specifically, in the bands 1610-1618.725 MHz earth-to-space and

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<sup>20/</sup> See *October 15<sup>th</sup> Modification Order*.

2483.5-2500 MHz space-to-earth. In addition, the satellites will operate feeder links in the bands 5091-5250 MHz earth-to-space and 6875-7055 MHz space-to-earth. The feeder link channelization for the second-generation replacement satellites will be the same as for the first-generation satellites, since the number of forward and return link beams will be the same as the first-generation satellites.<sup>21/</sup> There are no inter-satellite service frequencies.

**§ 25.114(d)(3) Predicted space station antenna gain contour(s) for each transmit and each receive antenna beam and nominal orbital location requested.**

Globalstar will deploy its second-generation replacement satellites in low-Earth orbit and therefore is not requesting a nominal orbital location. Instead, the satellites will be deployed into a constellation of constantly moving satellites relative to the Earth's surface. Exhibits 1-2 to the Space Station Modification Application depict, for the L-band and S-band respectively, the beam assignments, feeder link subband assignments, and contour plots for each beam. In addition, Exhibit 3 to the Space Station Modification Application depicts the C-band transmit and receive contour plots for the second-generation constellation. Finally, Exhibit 4 to the Space Station Modification Application depicts the second-generation satellite constellation "footprint" at one point in time to demonstrate typical service coverage for the constellation as a whole.

**§ 25.114(d)(4) Description of the types of service to be provided and the areas to be served.**

As is the case with Globalstar's first-generation constellation, Globalstar's second-generation replacement constellation will offer voice, two-way data, and messaging services, albeit with greater capacity and higher data rate transmissions. Broadband carriers that are well-

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<sup>21/</sup> See L/Q Licensee, Inc., Application for Modification of License To Construct, Launch, and Operate Low-Earth-Orbit Satellites and Request for Waiver of Table of Allocations, File Nos. 88-SAT-WAIV-96 and 90-SAT-ML-96, *Order and Authorization*, 11 FCC Rcd 16410 (1996).

complemented by potential ATC offerings will also be provided. Just as is the case with Globalstar's first-generation constellation, these services will be offered on a global basis, subject to national regulatory approvals and the availability of gateway facilities. Globalstar's services will continue to be available in all locations as far north as 70° North latitude and as far south as 55° South latitude for at least 75 percent of every 24-hour period, and on a continuous basis throughout the fifty states, Puerto Rico, and the US Virgin Islands, in accordance with the requirements of sections 25.143 and 25.149 of the Commission's rules.<sup>22/</sup>

**§ 25.114(d)(5) Calculation of the power flux density levels within each coverage area and of the energy dispersal, if any, needed for compliance with § 25.208.**

Globalstar's second-generation replacement constellation will comply with the same power flux density ("pfd") levels within each geographic coverage area as its first-generation constellation.<sup>23/</sup> Specifically, power into the individual S-band beams of the Globalstar system will be controlled to be consistent with the S-band pfd requirements at the Earth's surface. The S-band pfd at the Earth's surface will be generally below the approved coordination threshold levels approved at WRC-95 (Res. 46 (Rev. WRC-95) A2.1.2.3.1). The 7 GHz C-band feeder downlink pfd at the Earth's surface for each sub-band will be nominally -155 dBW/m<sup>2</sup>/4 kHz for high elevation angles and will decrease linearly as the elevation angle decreases, consistent with the limits specified by the ITU and section 25.208(n) of the Commission's rules, 47 C.F.R. § 25.208(n), with substantial margins.

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<sup>22/</sup> See 47 C.F.R. §§ 25.143(b)(2); 25.149(b)(1)(iii).

<sup>23/</sup> See Loral/Qualcomm Licensee, Inc., Application for Modification to Order and Authorization for Globalstar, FCC File Nos. 19-DSS-P-91(48) and CSS-91-014 (filed Mar. 7, 1996) at Section 3 "WRC-95 p.f.d. Levels."

**§ 25.114(d)(6) Public interest considerations in support of grant.**

The public interest considerations supporting the grant of the application are set forth below in **Section VI – PUBLIC INTEREST SHOWING**.

**§ 25.114(d)(10) Information required by section 25.143 of the Commission’s rules.**

The information required pursuant to section 25.143 of the Commission’s rules is set forth below at pages 20-21.

**§ 25.114(d)(14) A description of the design and operational strategies that will be included to mitigate orbital debris.**

Globalstar’s orbital debris mitigation plan for its second-generation replacement constellation is fully consistent with its existing, approved orbital debris mitigation plan,<sup>24/</sup> which was attached as Exhibit 5 to the Space Station Modification Application. Following the release of its six-satellite payload, the upper stage Fregat of the Soyuz launcher will be returned to earth as quickly as possible but in no event later than 25 years after the launch. Upon decommissioning satellites, Globalstar will drain the batteries and any remaining propellant and depressurize the spacecraft. Spacecraft will be raised above the operating altitude and as close to 2000 km as the remaining fuel permits, consistent with the US government’s orbital debris mitigation practices.<sup>25/</sup>

Globalstar’s operational orbit for its second-generation replacement satellites will be the same as its current operating altitude: 1414 km. Globalstar will use a minimum altitude of 1535

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<sup>24/</sup> See Exhibit B Amendment, File Nos. SAT-MOD-20030606-00098 and SAT-AMD-20050105-00003, granted January 28, 2005, Public Notice DA No. 05-316 (Feb. 4, 2005).

<sup>25/</sup> See U.S. Government Orbital Debris Mitigation Standard Practices, available at [http://orbitaldebris.jsc.nasa.gov/library/USG\\_OD\\_Standard\\_Practices.pdf](http://orbitaldebris.jsc.nasa.gov/library/USG_OD_Standard_Practices.pdf).

km as a graveyard orbit and a maximum altitude of up to 2000 km depending upon fuel reserves for the replacement satellites. The fuel reserves depend on the amount of fuel required for orbit-raising following launch and the amount of fuel expended in station-keeping over the 15-year life of the satellites. Globalstar will ensure that there will be at least enough fuel at end-of-mission to put each satellite into the minimum orbit of altitude 1535 km +/- 2 km and will hold at minimum 23.6 kg of fuel in reserve for post-mission disposal maneuvers.

All of Globalstar's 48 second-generation satellites will have the same fuel tank, and the tank will be filled as much as possible prior to launch. As a result of different launch scenarios and different amounts of fuel used over the life of each satellite, the fuel available at the end-of-life will vary from satellite to satellite. As such, Globalstar will raise each satellite to the highest altitude possible up to 2000 km depending upon fuel reserves at end-of-mission. Globalstar has used this method of disposal for its first-generation satellites. The following Table describes the status and orbit altitude for the first-generation satellites that have thus far been removed from operational service.<sup>26/</sup>

<b>Flight Model Number</b>	<b>Operational Status</b>	<b>Altitude (km) (→In Transition)</b>
01	Decommissioned	1827
02	Decommissioned	1859
04	Decommissioned*	1410
08	Decommissioned	1445 → 1900 est.
14	Decommissioned	1545 → 1900 est.
22	In-orbit test bed	1514
23	Decommissioned*	1414

<sup>26/</sup> In its Annual Report pursuant to 47 C.F.R. § 25.143(e)(1), filed October 15, 2009, Globalstar reported 13, rather than 15, decommissioned satellites. As noted in the Table, two additional satellites have been decommissioned since the Report was filed.

35	Decommissioned	2139
40	Decommissioned*	1416
44	In-orbit test bed	1514
50	Decommissioned	1649
54	Decommissioned	1580 → 2000 est.
55	In-orbit test bed	1514
61	Decommissioned	1787
62	Decommissioned	1465 → 1700 est.
	* Unable to raise due to failure	

Although it might be technically possible to lower some of the second-generation satellites at end-of-mission if fuel reserves allow, the ground control system and the satellites themselves are not designed to manage re-entry properly. In any event, we do not expect to have sufficient fuel reserves to return satellites to earth.

Because of the significant utility of the first-generation in-orbit test beds, Globalstar intends to do the same with its second-generation satellites. Accordingly, as second-generation satellites fail on orbit and on-ground spares are launched, Globalstar plans to place some that are capable of becoming test beds at an interim altitude of 1514 km to minimize the radiation exposure while testing is conducted. Final end-of-life disposition, where feasible, would then occur at a higher altitude between 1535 km and 2000 km. Globalstar will maintain no more than six satellites as on-orbit test beds at a minimum graveyard orbit of 1514 km. There is no propellant penalty for this interim scenario, as orbit station-keeping via thrusters will not be required and the satellite can operate on reaction wheels and torque rods (desaturation of wheels) for attitude control.

A decision to dispose of a satellite to a graveyard orbit for end-of-life is primarily determined by the following criteria: (1) an irrecoverable in-orbit anomaly making the satellite

incapable of carrying any type of revenue service; or (2) observed degradation to satellite health functions (*e.g.*, solar arrays, reaction wheels, batteries); or (less likely) (3) depletion of consumables (*e.g.*, propellant).

The first decision point is reached when Globalstar determines that a satellite is no longer capable of revenue service. The satellite will then be raised to a minimum graveyard orbit of 1514 km, if it is to be used for in-orbit testing, or 1535 km.

The second decision point is reached when the satellite is not required for test bed purposes or when there is a risk of losing control of the satellite. In either of these cases, the satellite will be raised to the highest achievable graveyard orbit altitude between 1535 km and 2000 km.

The remaining propellant on-board each satellite will determine the theoretical upper bound of the orbit raising maneuvers. The propellant remaining at the time of the graveyard orbit decision point will allow for some satellites to achieve higher graveyard orbit altitudes than others. As noted above, the propellant remaining is a function of the original launch altitude/orbit-raising history primarily, any abnormal thruster firing that occurred during the mission life (*e.g.*, safe-mode entry), and routine station-keeping propellant usage.

### **Section 25.143 Information**

#### **§ 25.143(b)(1) Information required by section 25.114 of the Commission's rules.**

The information required pursuant to section 25.114 of the Commission's rules is set forth above at pages 13-20.

In addition, Globalstar hereby certifies that, for purposes of the effective competitive opportunities showing otherwise required under section 25.137 of the Commission's rules, 47

C.F.R. § 25.137, the second-generation satellites are to be licensed by the Republic of France, which is a member of the World Trade Organization, for services covered under the World Trade Organization Basic Telecommunications Agreement. As a result, no such showing is required in connection with the instant application.

**§ 25.143(b)(2) Technical Qualifications.**

As demonstrated herein, Globalstar's second-generation system will employ a non-geostationary constellation of satellites, as required by section 25.143(b)(2)(i) of the Commission's rules.<sup>27/</sup>

As set forth above at pages 15-16 and depicted at Exhibit 4 to Globalstar's Space Station Modification Application, Globalstar's services will continue to be available to all locations as far north as 70° North latitude and as far south as 55° South latitude for at least 75 percent of every 24 hour period, and on a continuous basis throughout the fifty states, Puerto Rico, and the U.S. Virgin Islands, in accordance with the requirements of sections 25.143 and 25.149 of the Commission's rules.<sup>28/</sup>

In addition, consistent with section 25.143(b)(2)(v) of the Commission's rules, Globalstar's second-generation satellites will operate within the U.S. on the same frequencies and subject to the same technical parameters as Globalstar's first-generation satellites, as modified by the Commission's *October 15<sup>th</sup> Modification Order*, and therefore will not cause interference to other authorized users of the spectrum.

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<sup>27/</sup> See 47 C.F.R. § 25.143(b)(2)(i).

<sup>28/</sup> See 47 C.F.R. §§ 25.143(b)(2); 25.149(b)(1)(iii).



#### **IV. REQUEST FOR MODIFICATION OF MOBILE EARTH STATION AND MOBILE EARTH TERMINAL LICENSES**

With respect to both MSS and other services, the Commission has confirmed that the appropriate licensing procedure in cases where U.S.-licensed earth stations seek authority to access a foreign-licensed satellite system is to grant (or, in the case of an existing licensee, modify) an earth station authorization to authorize communication with the foreign-licensed satellite.<sup>29/</sup> More recently, the Commission has confirmed that in cases where a non-U.S.-licensed satellite operator seeks access to the U.S. market through an in-orbit satellite, and has initiated international coordination negotiations for that satellite network pursuant to the ITU's International Radio Regulations, the appropriate procedure is to file an application for a new or modified earth station license to list the non-U.S.-licensed space station as a "point of communication" and to demonstrate that the space station meets all applicable Commission requirements.<sup>30/</sup> Globalstar accordingly requests that the Commission modify its existing U.S. earth station and blanket mobile earth terminal licenses to authorize access to the French-registered satellites that (in combination with the eight replacement satellites that Globalstar launched in 2007 pursuant to the authority granted in its U.S. space station license) will comprise Globalstar's second-generation MSS constellation.

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<sup>29/</sup> See, e.g., Comsat Corporation d/b/a Comsat Mobile Communications, *Memorandum Opinion, Order and Authorization*, 16 FCC Rcd 21661 (2001) at ¶¶ 82-89; Application of SatCom Systems Inc. and TMI Communications and Company, LP, *Order and Authorization*, 14 FCC Rcd 20798 (1999) at ¶¶ 63-75 (authorizing earth stations in the U.S. to access the Inmarsat and SatCom/TMI Communications and Company foreign-licensed MSS satellites, respectively).

<sup>30/</sup> See Amendment of the Commission's Space Station Licensing Rules and Policies, *First Report and Order and Further Notice of Proposed Rulemaking in IB Docket No. 02-34 and First Report and Order in IB Docket No. 02-54*, 18 FCC Rcd 10760 (2003) at ¶¶ 287-289.

The Commission has concluded that, just like U.S.-licensed satellite operators, foreign-registered satellite operators must provide the information required by sections 25.114(d) and 25.143 of the Commission's rules in order to obtain authority for U.S.-based earth stations and mobile terminals to communicate with the foreign-registered satellites.<sup>31/</sup> This information is provided above in **SECTION III – INFORMATION REQUIRED BY THE COMMISSION'S RULES.**

## **V. ANCILLARY TERRESTRIAL COMPONENT AUTHORITY**

As noted above, Globalstar previously has applied for and been granted authority to deploy ancillary terrestrial component ("ATC") services in conjunction with its MSS services.<sup>32/</sup> In accordance with the Commission's ATC licensing policies, this authority was granted in the form of a minor amendment to Globalstar's U.S.-issued MSS space station license (call sign S2115).<sup>33/</sup> In contrast to this licensing approach, the Commission has concluded that foreign-licensed MSS licensees' ATC authority will be effected through a minor modification to the

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<sup>31/</sup> See Amendment of the Commission's Regulatory Policies to Allow Non-U.S. Licensed Space Stations to Provide Domestic and International Satellite Service in the United States, *Report and Order*, 12 FCC Rcd 24094 (1997) at ¶¶ 189-192; Amendment of the Commission's Space Station Licensing Rules and Policies, *First Report and Order and Further Notice of Proposed Rulemaking in IB Docket No. 02-34*, and *First Report and Order in IB Docket No. 02-54*, 18 FCC Rcd 10760 (2003) at ¶¶ 300-302.

<sup>32/</sup> See Globalstar LLC – Request for Authority to Implement an Ancillary Terrestrial Component for the Globalstar Big LEO Mobile Satellite Service (MSS) System, *Order and Authorization*, 21 FCC Rcd 398 (2006) ("*Globalstar 2006 ATC Order*"); Globalstar Licensee LLC – Application for Modification of License for Operation of Ancillary Terrestrial Component Facilities, 23 FCC Rcd 15975 (2008).

<sup>33/</sup> 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, *Report and Order and Notice of Proposed Rulemaking*, 18 FCC Rcd 1962 (2003) ("*2003 ATC Report and Order*") at ¶¶ 237-241; *Globalstar 2006 ATC Order*.

licensees' *mobile earth terminal* authorization.<sup>34/</sup> Because Globalstar's second-generation satellite constellation will be licensed by France and not the U.S., once the first-generation constellation is no longer functioning and its second-generation constellation becomes operational, Globalstar's ATC authority will no longer, as a technical matter, be linked to any Commission-issued authority. Accordingly, Globalstar requests that the Commission take the ministerial action of modifying its blanket mobile earth terminal license (call sign E970381) to reflect Globalstar's previously-granted authority to offer ATC services. This action will ensure uniformity in the Commission's ATC licensing policies and will place Globalstar on equal footing with the other foreign-licensed MSS provider that has obtained ATC authority.<sup>35/</sup>

## **VI. PUBLIC INTEREST SHOWING**

Globalstar submits that grant of (1) its Space Station Modification Application, as amended herein, and (2) the Earth Station Modification Application will serve the public interest by enabling it to provide robust, affordable MSS services for the benefit of its current and future customers for the long term. When the Commission first authorized the deployment of Big LEO MSS systems, it recognized that Big LEO services would promote a number of public interest goals. Among other benefits, the Commission anticipated that MSS licensees would "serve areas of the country that are too remote or sparsely populated to be served by terrestrial land mobile systems" and would "generate a host of new services by providing communication between

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<sup>34/</sup> 2003 ATC Report and Order at ¶ 245.

<sup>35/</sup> See New ICO Satellite Services G.P. – Application for Blanket Authority To Operate Ancillary Terrestrial Component Base Stations and Dual-Mode MSS-ATC Mobile Terminals in the 2 GHz MSS Bands, *Order and Authorization*, 24 FCC Rcd. 171 (2009) (amending the licensee's Mobile Earth Terminal license to authorize the provision of ATC services).

virtually any point in the country, irrespective of distance.”<sup>36/</sup> The Commission further recognized that Big LEO services would “meet rural public safety needs and provide emergency communications to any area in times of emergencies and natural disasters” and also would be “uniquely suited for meeting the needs of the transportation, petroleum, and other vital industries.”<sup>37/</sup>

Since being authorized by the Commission in 1996 to construct, launch, and operate its first-generation MSS constellation and commencing commercial operations in 2000,<sup>38/</sup> Globalstar has grown to become the largest MSS provider in the United States, and one of the leading MSS providers abroad. As of September 30, 2009, Globalstar had approximately 382,000 subscribers worldwide. Globalstar’s services are currently available in all populated areas of the world, except eastern, central, and southern Africa and the Indian subcontinent, areas in which Globalstar is in the process of negotiating to expand coverage. In October 2008, Globalstar began service in parts of Southeast Asia, via a gateway that has been installed in Singapore. On November 5, 2009, Globalstar began providing service in parts of western central Africa via a gateway that has been installed in Nigeria.<sup>39/</sup> The steady growth in Globalstar’s

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<sup>36/</sup> Establishing Rules And Policies For The Use Of Spectrum For Mobile Satellite Service In The Upper And Lower L-Band, *Notice of Proposed Rulemaking*, 11 FCC Rcd 11675 (1996) at ¶ 12.

<sup>37/</sup> *Id.*

<sup>38/</sup> See *Loral/Qualcomm Partnership, L.P.*, Order and Authorization, DA 95-128, 10 FCC Rcd 2333 (Int’l Bur. 1995), erratum, 10 FCC Rcd 3926 (1995) (“*Globalstar Authorization*”), *recon. denied*, 11 FCC Rcd 18502 (1996), *modification granted*, 11 FCC Rcd 16410 (1996).

<sup>39/</sup> See *Globalstar Opens New Gateway Expanding Coverage Into Oil Rich Nigeria And Western Africa – Service Provider Globaltouch West Africa To Launch Spot Satellite GPS*

customer base over the last nine years provides ample marketplace evidence that Globalstar's services, even hobbled as they are by degraded S-band subsystems, are highly valued, and that Globalstar has helped to fulfill the Commission's vision when it created the Big LEO service of fostering a variety of commercial and public safety MSS services that are available virtually anywhere in the world, including in rural and remote areas.<sup>40/</sup> As is the case with its first-generation constellation, Globalstar's second-generation constellation will enable Globalstar to provide service on a global basis, including throughout the fifty states, Puerto Rico, and the US Virgin Islands, in accordance with the requirements of sections 25.143 and 25.149 of the Commission's rules.<sup>41/</sup>

Globalstar has deployed a variety of affordable, reliable MSS services for the benefit of its customers. Globalstar currently provides one- and two-way portable, mobile, and fixed voice and data communications services, satellite data modem services, Simplex personal asset tracking, and remote monitoring services. Its customers include individuals and commercial and industrial entities, as well as a variety of governmental agencies and public safety organizations. In particular, Globalstar has an established and growing customer base of first responders and other public safety officials who have come to depend on Globalstar's reliable, cost-effective products and services to meet their communications needs on a day-to-day basis and during

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Messenger and Simplex Asset-Tracking Services (Nov. 5, 2009), available at [http://www.globalstar.com/en/news/pressreleases/press\\_display.php?pressId=571](http://www.globalstar.com/en/news/pressreleases/press_display.php?pressId=571).

<sup>40/</sup> See Amendment of Section 2.106 of the Commission's Rules to Allocate the 1610-1626.5 MHz and the 2483.5-2500 MHz Bands for Use by the Mobile-Satellite Service, Including Non-Geostationary Satellites, *Report and Order*, 9 FCC Rcd 536 (1994) at ¶ 1.

<sup>41/</sup> See 47 C.F.R. §§ 25.143(b)(2); 25.149(b)(1)(iii).

times of emergency. Finally, in order to address the temporary decline in Duplex service quality resulting from the aging first-generation constellation, in late 2007 Globalstar's subsidiary, Spot LLC, introduced its SPOT Satellite Personal Tracker™ (also marketed as the SPOT Satellite GPS Messenger) – an innovative personal tracking Simplex device that has proven to be extremely popular and has enabled Globalstar for the first time to enter the mass consumer marketplace. All of these products and services have positioned Globalstar as a leading MSS provider with a bright future ahead of it.

Globalstar also has made substantial progress in the deployment of an ancillary terrestrial component (“ATC”) to augment and enhance its MSS service. Presently, Globalstar is one of only three MSS carriers to have been authorized by the Commission to provide ATC,<sup>42/</sup> and in April 2008 the Commission found that it would serve the public interest to expand the spectrum on which Globalstar may provide such services to include all of the spectrum that it does not share with other licensed services.<sup>43/</sup> As Globalstar demonstrated in these ATC licensing proceedings,<sup>44/</sup> Globalstar has been at the forefront in the development of ATC applications since

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<sup>42/</sup> The Commission granted Globalstar's application for authority to deploy ATC services in January 2006. *See* Globalstar LLC, Request for Authority to Implement an Ancillary Terrestrial Component for the Globalstar Big LEO Mobile Satellite Service (MSS) System, *Order and Authorization*, 21 FCC Rcd 398 (2006) (“*Globalstar ATC Authorization*”).

<sup>43/</sup> *See* Spectrum and Service Rules for Ancillary Terrestrial Components in the 1.6/2.4 GHz Big LEO Bands, *Report and Order and Order Proposing Modification*, 23 FCC Rcd 7210 (2008).

<sup>44/</sup> *See, e.g.*, Globalstar Petition for Expedited Rulemaking For Authorization To Provide Ancillary Terrestrial Component Services in Its Entire Spectrum Allocation, IB RM No. 11339 (filed June 20, 2006) at 6-12; Comments of Globalstar, Inc. in IB Docket No. 07-253 (filed Dec. 19, 2007) at 3-5.

the ATC concept first came into being and is actively working to be the first MSS licensee to deploy ATC in the marketplace.

Globalstar's MSS/ATC services will prove to be of enormous value to its customers while at the same time enabling Globalstar to make the most efficient use of its assigned spectrum. In 2008, Globalstar entered into an MSS/ATC partnership with Open Range Communications, Inc. ("Open Range"), to construct a terrestrial broadband network in rural and underserved areas of the United States as a complement to Globalstar's MSS services. On October 31, 2008, the Commission granted Globalstar's application seeking modification of its ATC Authorization to allow it to provide WiMAX ATC services in partnership with Open Range.<sup>45/</sup> Under the planned partnership, the two companies will work together to provide broadband service to more than 500 rural communities where such services currently do not exist. Specifically, Globalstar will use its satellite constellation and ground stations and Open Range will construct a terrestrial broadband network that will enable the companies to jointly provide rural broadband/MSS and related services pursuant to Globalstar's MSS/ATC authority. Globalstar also is in active discussions with other potential partners to expand the array of MSS/ATC offerings. With a loan from the Agriculture Department's Rural Utilities Service and private equity financing in hand, Open Range is deploying ATC base stations even as this is written.

In order to continue providing these and additional services to its customers throughout the United States and the world, Globalstar needs to transition to its second-generation

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<sup>45/</sup> See Globalstar Licensee LLC, Application for Modification of License for Operation of Ancillary Terrestrial Component Facilities, *Order and Authorization*, 23 FCC Rcd 15975 (2008).

constellation. The contractual design life for Globalstar's first-generation satellites, which were launched from 1998 to 2000, was 7.5 years.<sup>46/</sup> As Globalstar discussed in its requests for interim operating authority,<sup>47/</sup> through adjustments to the placement of satellites within its constellation, upgrades to its ground station infrastructure, and other measures, including the launch of the eight replacement satellites in 2007, it has been able to ensure continuity of service to its customers despite the aging of its first-generation constellation. However, as Globalstar has reported,<sup>48/</sup> the degradation of the first-generation constellation caused by the S-band subsystem antenna anomalies in most of its first-generation satellites has resulted in its inability, at certain times of day, to provide voice and Duplex data services throughout its coverage area. As a result, the only means by which Globalstar can ensure robust, reliable MSS service for the long term is by replenishing its constellation with replacement satellites. By replenishing the constellation, Globalstar can ensure that it will once again be able to provide the type of reliable voice and data services throughout its coverage area that helped make it the leading MSS provider in the United States in terms of number of subscribers.

To this end, Globalstar has made and continues to make significant investments in its constellation. As discussed above, in May and October 2007, at a cost of \$120 million Globalstar successfully launched eight spare satellites that were constructed at the same time as the satellites that comprise Globalstar's first-generation constellation and had remained in

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<sup>46/</sup> See *July 13<sup>th</sup> STA Request* at 1 (citing Preamble, Contract between Globalstar, L.P. and Space Systems/Loral, Inc. for Design and Delivery of the Globalstar Satellite System, dated February 16, 1994).

<sup>47/</sup> See, e.g., *July 13<sup>th</sup> STA Request* at 3-7.

<sup>48/</sup> See, e.g., *January 4<sup>th</sup> STA Request* at 4.



storage.<sup>49/</sup> These eight satellites, which, as noted, have helped to maintain service quality as Globalstar's first-generation constellation continues to age, will be part of Globalstar's second-generation constellation.

In December 2006, Globalstar executed a \$940 million (at the current Euro/Dollar conversion rate) contract with Thales Alenia Space ("Thales Alenia") for the design, manufacture, and delivery of the second-generation replacement satellites.<sup>50/</sup> Since October 2007, approximately 200 employees at Thales Alenia have been employed full time on the project and substantial progress has been made. When Globalstar filed its pending Space Station Modification Application, the satellite Bus and Payload designs were substantially complete, the antenna subsystems were undergoing testing, and Thales had begun production assembly, integration, and testing of the first two flight model satellites. As of early December 2009, the qualification model satellite and one flight model have been mated, five additional payloads are being integrated at the Thales facility in Toulouse, and the buses and structures for the first six flight model satellites are being completed in Rome. The contract is currently on schedule to deliver production spacecraft in May 2010. Globalstar also has entered into a \$216 million

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<sup>49/</sup> See "Globalstar Announces Successful Launch Of Four Satellites – Final First-Generation Satellites Will Augment The Current Constellation And Transition To The Globalstar Second-Generation Satellite Constellation" (Oct. 22, 2007), available at [http://www.globalstar.com/en/news/pressreleases/press\\_display.php?pressId=461](http://www.globalstar.com/en/news/pressreleases/press_display.php?pressId=461). As Globalstar has discussed, because it was restructuring under Chapter 11 of the U.S. Bankruptcy Code, it was not until late 2005 that it was in a position to finance the launch of its eight spare replacement satellites, and not until 2006, after the infusion of additional capital, that it could afford to finance the construction of the remaining replacement satellites that will comprise its second-generation constellation. See *July 13<sup>th</sup> STA Request* at 2.

<sup>50/</sup> See "Globalstar, Inc. Signs Contract with Alcatel Alenia Space for Second-Generation LEO Satellite Constellation" (Dec. 4, 2006), available at [http://www.globalstar.com/en/news/pressreleases/press\\_display.php?pressId=426](http://www.globalstar.com/en/news/pressreleases/press_display.php?pressId=426).

contract with Arianespace for the first four launches of the second-generation replacement satellites, with the first launch scheduled to occur in the third quarter of 2010.<sup>51/</sup> In addition, Globalstar has executed a \$13 million contract with Thales Alenia for the design and construction of its second-generation ground network infrastructure, including satellite operations control centers, telemetry command units, and in-orbit test equipment that will function in conjunction with the replacement constellation.<sup>52/</sup> Globalstar also has executed a \$100 million contract with Hughes Network Systems to design, supply, and implement the second-generation Radio Access Network and to design and supply satellite interface chips for the next-generation user terminals,<sup>53/</sup> and a \$23 million contract with Ericsson Federal Systems to supply the ground interface/core network that will be installed at Globalstar's gateways.<sup>54/</sup>

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<sup>51/</sup> A force majeure event – the devastating earthquake in central Italy in April 2009 that killed more than 300 people – has affected Thales Alenia Space's satellite delivery schedule, which in turn will delay the date upon which Globalstar can comply with certain of the milestones in its ATC license. On December 14, 2009, Globalstar submitted a "Request for Modification of Waiver Conditions" explaining the problem in detail and requesting an extension of those milestone deadlines. *See* Globalstar Licensee LLC – Request for Modification of Waiver Conditions, FCC File No. SAT-MOD-20080516-00106 (filed Dec. 14, 2009).

<sup>52/</sup> *See* "Globalstar Signs Contract With Alcatel Alenia Space To Upgrade Satellite Operations And Control Center – Agreement Assures Globalstar Capability To Monitor And Control Second-Generation Satellite Constellation And Provide Mission Operations Support For Satellites Until At Least 2025" (April 3, 2007), *available at* [http://www.globalstar.com/en/news/pressreleases/press\\_display.php?pressId=438.Id](http://www.globalstar.com/en/news/pressreleases/press_display.php?pressId=438.Id).

<sup>53/</sup> *See* "Globalstar Signs Contract with Hughes To Pave Way for Next Generation Advanced Satellite Services – New Internet Protocol (IP) Based Ground Network Will Provide Ability To Continuously Refine And Update Satellite Voice And High-Speed Data Offerings As Standards Evolve For Developing Technologies" (May 19, 2008), *available at* [http://www.globalstar.com/en/news/pressreleases/press\\_display.php?pressId=487](http://www.globalstar.com/en/news/pressreleases/press_display.php?pressId=487).

<sup>54/</sup> *See* Globalstar Signs Second-Generation Ground Core Network System Agreement with Ericsson – Contract Provides Globalstar With Telephony And Internet Access For Next-Generation Of Advanced Satellite Services (October 16, 2008), *available at* [http://www.globalstar.com/en/news/pressreleases/press\\_display.php?pressId=512](http://www.globalstar.com/en/news/pressreleases/press_display.php?pressId=512).

Finally, on July 1, 2009, Globalstar completed a financing of approximately \$738 million which will fund the manufacture, delivery, and launch of its second-generation, Globalstar 2.0 network and ground facilities.<sup>55/</sup>

As noted above, Globalstar's second-generation satellites are being designed for a 15-year lifespan. The new constellation thus will enable Globalstar to offer its customers reliable, high quality satellite voice and data services for the long-term future. In addition to supporting all of the services originally offered over Globalstar's first-generation constellation, once operational, the second-generation constellation also will make possible a number of additional, state-of-the-art advanced MSS services. These services, which will include, for example, wireless broadband, will benefit Globalstar's current and future customers and enhance competition in the global market for MSS services.

These benefits will accrue, and the public interest will be served, regardless of where Globalstar's second-generation constellation is licensed. The Commission has made clear that foreign-licensed MSS providers will be granted access to the U.S. market and that the U.S.'s interest in fostering the development and deployment of advanced MSS services can be well-served by non-U.S.-licensed MSS systems. Of the six MSS providers licensed to provide voice and data services in the U.S., four – Inmarsat plc, SkyTerra Communications, Inc., TerreStar Networks, Inc., and ICO Global Communications – have been granted authority to use, in whole or in part, satellites that have been licensed by foreign administrations. In granting these carriers authority to access the U.S. market, the Commission has never drawn a distinction between the

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<sup>55/</sup> See "Globalstar Completes \$738 Million Financing – Financing Fully Funds Globalstar 2.0 Second-Generation Satellite Constellation and IP-Based Ground Segment" (July 1, 2009), available at [http://www.globalstar.com/en/news/pressreleases/press\\_display.php?pressId=549](http://www.globalstar.com/en/news/pressreleases/press_display.php?pressId=549).

public interest benefits of authorizing the provision of MSS in the United States via a foreign-licensed, as compared to U.S.-licensed, MSS satellite. Moreover, the Commission has made clear that its “regulatory policies for licensing providers of domestic service using non-U.S.-licensed satellite systems are based on the goals of promoting competition in the United States and in foreign markets.”<sup>56/</sup> There can be no doubt that approval of Globalstar’s Space Station Modification and Earth Station Modification Applications will advance both of these goals. As one of only two Big LEO MSS providers in the world (with Iridium), Globalstar is uniquely positioned to help ensure that Big LEO MSS services will be available both in the U.S. and abroad well into the future.

For all of these reasons, Globalstar submits that the grant of the pending Space Station Modification Application, as amended herein, and the Earth Station Modification Application will serve the public interest.

## **VII. WAIVERS REQUESTED**

No waivers are being requested in connection with this amendment to the Space Station Modification Application or this Earth Station Modification Application.

## **CONCLUSION**

Globalstar respectfully requests that the Commission grant its Space Station Modification Application, as amended herein, as well as the instant Earth Station Modification Application. As demonstrated above, grant of the requested authority is in the public interest because it will

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<sup>56/</sup> See, e.g., Amendment of the Commission's Regulatory Policies to Allow Non-U.S. Licensed Space Stations to Provide Domestic and International Service in the United States, *Report and Order*, 12 FCC Rcd 24094 (1997).

ensure that Globalstar is able to continue to provide reliable, cost-effective MSS services to its customers for the long-term future.

Respectfully submitted,

/s/ Anthony J. Navarra

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December 21, 2009

### **Engineering Certification**

I hereby certify under penalty of perjury that I am the technically qualified person responsible for preparation of the engineering information contained in the foregoing “Amendment to Application for Modification of Mobile Satellite Service Space Station License and Application for Modification of Mobile Satellite Service Earth Station and Mobile Earth Terminal Licenses” (“Amendment”); that I am familiar with the relevant sections of the FCC’s rules referred to in the Amendment; and that the technical information set forth in the Amendment is true and correct to the best of my knowledge and belief.

Signed this 21st day of December, 2009

/s/ Paul A. Monte

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Paul A. Monte,  
Vice President, Engineering & Product Development  
Globalstar, Inc.

## ATTACHMENT 1

### AFFECTED LICENSES/APPLICATIONS

<b>LICENSEE</b>	<b>CALL SIGN</b>
Globalstar Licensee LLC	S2115 (Application pending)
GUSA Licensee LLC	E000342
GUSA Licensee LLC	E000343
GUSA Licensee LLC	E000344
GUSA Licensee LLC	E000345
GUSA Licensee LLC	E970199 (Modification application pending)
GUSA Licensee LLC	E970381
GUSA Licensee LLC	E030266 (Application pending)
GUSA Licensee LLC	E050097
GUSA Licensee LLC	E050098
GUSA Licensee LLC	E050099
GUSA Licensee LLC	E050100
GUSA Licensee LLC	E050345
GUSA Licensee LLC	E050346
GUSA Licensee LLC	E050347
GCL Licensee LLC	E990335
GCL Licensee LLC	E990336
GCL Licensee LLC	E990337
GCL Licensee LLC	E050237