Before the
Federal Communications Commission
Washington, D.C.

In the Matter of	)	
	)	
Effects on Broadband Communications Networks	)	PS Docket No. 10-92
Of Damage to or Failure of Network Equipment	)	
Or Severe Overload	)	

COMMENTS OF THE MSS/ATC COALITION

DBSD North America, Inc., Globalstar, Inc., Inmarsat, Inc., SkyTerra Subsidiary LLC and TerreStar Networks, Inc. (collectively the "MSS/ATC Coalition") submit these comments to explain how making available access to dual-mode mobile broadband devices – devices that are capable of communicating with terrestrial and mobile satellite service ("MSS") networks – would provide enhanced levels of disaster survivability that cannot be achieved by exclusive reliance on terrestrial network facilities. If the FCC proposes to adopt regulations addressing survivability of mobile broadband networks, it should also propose to give operators flexibility to meet those requirements, in whole or in part, by making dual-mode devices available for use on those networks.

I. Background

Notice of Inquiry. The NOI focuses on three profiles of risk that could cause networks to be unavailable to consumers, businesses, emergency responders and government agencies for critical communications in emergencies. First, the NOI asks about the ability of networks to withstand physical damage with a particular emphasis on single and dual point failures and the risks of co-location of the facilities supporting multiple networks.[1] Second, it expresses concern that "the level of redundancy and the effectiveness of that redundancy in routing around failures

[1] *NOI* at ¶¶ 10-12.

may be inadequate in broadband communications networks."[2] Third, the NOI asks about the ability of broadband networks to maintain effective operation during severe network congestion or overload.[3]

MSS/ATC Coalition. The MSS/ATC Coalition is comprised of MSS operators that have invested hundreds of millions of dollars in planning, designing, and constructing state-of-the-art, advanced communications satellites. Some of the members are also developing, or have already deployed, integrated satellite-terrestrial networks ("MSS/ATC Networks"). Now that the substantial nonrecurring design and development costs have been invested, MSS capability can be included, at a low marginal cost, in devices that access *any* terrestrial mobile data network.[4] As explained below, such low cost, small form-factor dual-mode devices can bring fundamental improvements to the reliability of mobile communications by providing alternative links when terrestrial networks are unavailable.

DBSD. DBSD North America, Inc. is a mobile satellite services company developing an advanced next-generation hybrid network, combining both satellite and terrestrial communications capabilities. DBSD's satellite, G1, is capable of supporting wireless voice, data, and/or Internet services on mobile and portable devices throughout the entire United States.

Launched in April, 2008, G1 is the world's first satellite to utilize an innovative two-way Ground Based Beam Forming ("GBBF") system, which delivers unprecedented flexibility to support a wide range of mobile technology standards. With a 12 meter antenna reflector, G1 is

---

[2] *NOI* at ¶¶ 10, 13.

[3] *NOI* at ¶¶ 15-16.

[4] *See, e.g.,* Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band, PS Docket 06-229, *Comments of Mobile Satellite Ventures Subsidiary LLC* (filed June 20, 2008) at 14.

able to provide connectivity to a new generation of smaller satellite-capable mobile and portable devices.

DBSD's development efforts for its MSS/ATC system have showcased cellular, broadband and broadcast service offerings, including testing of handsets and mobile devices which could offer traditional wireless calling services in conjunction with current cellular networks and devices. DBSD is also actively involved in a mobile satellite industry consortium which built on a DBSD initiative to develop mass market dual-mode chipsets to bring a powerful combination of satellite communications with terrestrial networks to millions of Americans.

Globalstar. Globalstar was authorized by the Commission in 1995 to construct, launch, and operate the Globalstar "Big LEO" MSS system,[5] which provides service in the United States and abroad via non-geostationary-orbit satellites, using the 1610-1618.725 MHz band for transmissions from mobile earth stations to satellites and the 2483.5-2500 MHz band for transmissions from satellites to mobile earth stations. An indirect, wholly-owned subsidiary company, GUSA Licensee LLC, holds an FCC blanket license for operation of Globalstar mobile earth-station terminals and is responsible for provision of Globalstar MSS services to end users in the United States.[6] Globalstar is now in its eleventh year of providing MSS voice and data services. Globalstar's services are currently available in all areas of the world, except central and southern Africa, Southeast Asia, and the Indian subcontinent, areas in which Globalstar is in the process of negotiating to expand coverage.

---

[5] *See Application of Loral/Qualcomm Partnership, L.P. 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*, DA 95-128, 10 FCC Rcd 2333 (1995). The term "Big LEO MSS" denotes MSS systems that use assigned frequencies in the 1610-1626.5 MHz band for transmission from mobile earth stations to satellites.

[6] *See AirTouch Satellite Services US, Inc., Application for Blanket Authorization to Construct and Operate up to 500,000 Mobile Satellite Earth Terminals Through the GLOBALSTAR Mobile Satellite System*, Order and Authorization, DA 99-2010, 14 FCC Rcd 17328 (1999).

In December of 2006 Globalstar executed a contract with Alcatel Alenia Space, now Thales Alenia Space ("Thales Alenia",) under which Thales Alenia is designing, manufacturing and delivering the Globalstar second-generation constellation of 48 LEO satellites.[7] The first batch of new satellites will be delivered in the Summer of 2010 with the first launch of six satellites schedule for late-September or early-October. These satellites will be backward compatible with Globalstar's existing satellite constellation and with its global gateways, will have a lifespan through at least 2025, and will ensure that Globalstar is positioned to provide reliable, efficient, and effective voice and data services for the long term.

Globalstar is the first MSS licensee to have implemented ATC authority, having entered into a spectrum lease agreement with Open Range Communications, Inc. in 2007. By the end of June, Open Range expects to have its WiMAX/Globalstar ATC service available in 44 small communities in six states.

Inmarsat. Over the last several years, Inmarsat has invested well over $1.5 billion in the deployment of its fourth-generation, Inmarsat 4 ("I-4") satellite network, which is today providing innovative broadband satellite services to the United States and globally on one of the most advanced mobile commercial communications satellites now in orbit. Inmarsat's Broadband Global Area Network (BGAN) traffic is landed at a Satellite Access Station in Paumalu, Hawaii, which then routes user terminal traffic to the public switched network and the Internet.[8] Using highly portable and easily deployed "notebook sized" antennas that are one-third the size, weight, and price of traditional Inmarsat terminals, BGAN provides voice and broadband service at speeds of almost half a megabit per second. Inmarsat has also launched

---

[7] *See* "Globalstar Announces Operational Milestones And Timetable For Launch Of New Satellites" (May 6, 2010) *available at http://www.globalstar.com/en/news/pressreleases/press_display.php?pressId=610*

[8] *See* File No. SES-LIC-20080306-00242, Call Sign E080059 (granted Dec.18, 2008); File No. SES-MFS-20080228-00207, Call Sign KA 25 (granted Dec. 18, 2008).

companion BGAN services for aeronautical and maritime customers, known as SwiftBroadband and FleetBroadband, and has just launched world-wide Global Satellite Phone Service (GSPS) over its I-4 geostationary fleet with a modernized handset.

SkyTerra. SkyTerra is the licensee of U.S. satellites authorized to provide MSS in the L band and has provided service since 1996.[9] Using its U.S.-licensed satellite and the Canadian L-band satellite licensed to SkyTerra (Canada) Inc., SkyTerra's joint venture partner, SkyTerra currently offers a full range of mobile services, including voice, data, facsimile, two-way radio, fleet management and asset tracking services. SkyTerra is a leader in providing interoperable communications service in the North American market to public safety and government users. SkyTerra's next-generation satellites will support communications in a variety of market segments by providing a platform for advanced voice and data services.[10] Each satellite's primary antenna will be significantly larger than any antenna on a currently operational commercial satellite, and each satellite will be one of the most powerful operational MSS satellites serving the U.S. These technical innovations will allow the provision of advanced mobile voice and broadband services to devices that are virtually identical to cell phone handsets in terms of aesthetics, cost, and functionality.

TerreStar. TerreStar holds a letter of intent ("LOI") authorization[11] to provide MSS in the United States using spectrum in the 2 GHz MSS band (2180-2200 MHz (space-to-Earth) and

---

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

[10] SkyTerra 1 is expected to be launched in the August to October 2010 period, and SkyTerra 2 is expected to be launched in December 2010 or the first quarter 2011.

[11] *See* File Nos. SAT-ASG-20021211-00238 and SAT-AMD-20061127-00143.

2000-2020 MHz (Earth-to-space)) via TerreStar-1, a geostationary orbit satellite.[12] The LOI authorization permits the use of 10 MHz of this 2 GHz MSS spectrum in each direction.[13] TerreStar plans to offer reliable and secure satellite-terrestrial mobile voice and data services dedicated to helping solve the critical communication and business continuity challenges faced by government, emergency responders, enterprise businesses and rural communities. This will be achieved through next-generation communication networks that will provide universal access and tailored applications throughout North America on a chipset that can be incorporated in a wide range of wireless devices. TerreStar expects to be the first to offer customer-designed products and applications over a fully optimized 4G Internet protocol network.

II. Discussion

The MSS/ATC Coalition urges the Commission to recognize and acknowledge that adding MSS access capability to terrestrial mobile broadband devices can bring substantial qualitative improvements to the reliability of mobile communications services, mitigating all three risks to terrestrial communications networks identified in the NOI (i.e. physical damage to network facilities, network redundancy, and traffic overload).[14] If the FCC proposes to adopt rules or policies intended to enhance the survivability of mobile broadband networks, it should also propose to give network operators flexibility in meeting any such requirements, in whole or in part, by providing dual-mode devices. The FCC should also recognize in this proceeding that satellite-delivered services in general provide significant, cost effective redundancy capability for terrestrial networks in other contexts as well (*e.g.*, backhaul).

---

[12] *See TMI Communications and Company, Limited Partnership*, Order, 16 FCC Rcd 13808 (Int'l Bur. 2001); *TMI Communications and Company, Limited Partnership, and TerreStar Networks, Inc. Application for Review and Request for Stay*, Memorandum Opinion and Order, 19 FCC Rcd 12603 (2004).

[13] *See Use of Returned Spectrum in the 2 GHz Mobile Satellite Service Frequency Bands*, Order, FCC 05-204 (December 9, 2005).

[14] *See supra* notes 1-3 and accompanying text.

Every network operator has a substantial interest in assuring that its network is reliable and every operator considers reliability to be an important element of network design and operation. However, there are practical limits to the level of hardening, redundancy and surge capacity that can be built into any single system. Whatever policies or rules the FCC may adopt, real world tradeoffs in network reliability, performance and cost are inevitable. For example, redundant critical facilities, such as backhaul links, may be unavailable at some sites, and in other cases, further improvements in redundancy or hardening may be cost-prohibitive.

As the NOI recognizes, facilities of different networks are sometimes collocated in "carrier hotels" or "SuperNodes."[15] Wireless networks often share common antenna sites. Any form of collocation involves a mix of tradeoffs, reducing some risks while increasing others. Collocation can improve network resiliency, because it enables multiple networks and service providers, in effect, to share the costs of superior backup systems and location hardening. On the other hand, no site can be made invulnerable, and disasters that do interrupt operations at a collocation facility can affect all networks that are hosted there.

Dual-mode mobile devices can provide a critically important backstop, allowing users to establish and maintain communications links when terrestrial networks are unavailable. Rather than relying solely on hardening and redundancy of individual network components to improve survivability of the network, dual-mode devices provide users with access to a completely redundant network.

The National Broadband Plan appropriately recommends that satellite service should be a part of any emergency preparedness program.[16] Permitting network operators to meet survivability requirements, in part by making dual-mode devices available, is consistent with this

---

[15] *NOI* at ¶¶ 12.

[16] Omnibus Broadband Initiative, Federal Communications Commission, Connecting America: The National Broadband Plan (2010) at § 16.1, page 320.

recommendation, and with the National Broadband Plan's recognition that using existing mobile and fixed satellite services in an affected area in the event of a disaster or crisis can provide "a critical source of redundancy, particularly when terrestrial infrastructure is unavailable."[17]

A user device that can access an MSS satellite network is far more resilient and reliable than a device that relies exclusively on terrestrial network facilities, because satellite and terrestrial networks face almost entirely different risk profiles. Disasters that impair or destroy terrestrial wireless networks are extremely unlikely to have any adverse impact on satellite networks. The Independent Panel Reviewing the Impact of Hurricane Katrina on Communications Networks reported:

> Satellite networks appeared to be the communications service least disrupted by Hurricane Katrina. As these networks do not heavily depend upon terrestrial-based infrastructure, they are typically not affected by wind, rain, flooding or power outages. As a result, both fixed and mobile satellite systems provided a functional, alternative communications path for those in the storm-ravaged region.[18]

The panel cited satellite networks as "resiliency successes" in the aftermath of Katrina, noting that they "remained available and usable throughout the affected region."[19] Likewise, the FCC's Haiti assessment team found that most satellite earth stations were unaffected by the Haiti earthquake in January of this year.[20] The FCC's assessment team also reported that, post-

---

[17] *Id.*

[18] *Independent Panel Reviewing the Impact of Hurricane Katrina on Communications Networks, Report and Recommendations to the Federal Communications Commission*, June 12, 2006 at 10-11, available at http://www.fcc.gov/pshs/docs/advisory/hkip/karrp.pdf ("*Katrina Panel Report*").

[19] *Id.* at 6.

[20] *See*, Haiti Update, Federal Communications Commission Open Meeting, International Bureau and Public Safety and Homeland Security Bureau, February 18, 2010 (slide presentation) at 21 (available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-296380A1.pdf).

earthquake, "utilization of mobile satellite facilities in Haiti skyrocketed" and that one FCC-licensed MSS provider had an 18,000% increase in utilization.[21]

Similarly, in considering rules for the deployment of a nationwide public safety broadband network the FCC agreed with commenters "that non-terrestrial capabilities can serve the interests of public safety by increasing the survivability of the system."[22] In that case the FCC proposed to give the D Block and public safety broadband licensees flexibility "to agree on other methods to improve network resiliency in lieu of designating critical cell sites" and noted that such methods might include satellite capability.[23] The Commission also sought comment on "whether it would serve the public interest to provide additional flexibility to a D Block licensee in meeting its licensing obligations if it integrates a satellite component or other non-terrestrial technology with the shared wireless broadband network."[24]

A terrestrial-only network, almost without regard to the extent of hardening, is not immune to damage or destruction. The same events that damage or destroy terrestrial networks often create emergency conditions for people served by those networks, so that service is unavailable just when it is needed most. Multi-network devices that provide access to two or more terrestrial networks provide some redundancy, but as Katrina and Haiti showed, catastrophic events or widespread emergencies can affect many or all terrestrial networks in a given area because, to a degree, they are all subject to the same location-specific risks. Indeed, communications networks generally will be more vulnerable to disasters if they all rely on the same failsafe approaches.

---

[21] *Id.*

[22] *See* Service Rules for the 698-746, 747-762 and 777-792 Bands; Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band, WT Docket No. 06-150, PS Docket No. 06-229, *Third Further Notice of Proposed Rulemaking*, 23 FCC Rcd 14301 ¶¶ 118 (2008).

[23] *Id.* at ¶ 119.

[24] *Id.*

III. Conclusion

For the reasons stated above, the Commission should recognize and acknowledge that adding MSS access capability to terrestrial mobile broadband devices can bring substantial qualitative improvements to the reliability of mobile communications services. If the FCC proposes to adopt rules or policies intended to enhance the survivability of mobile broadband networks, it should also propose to give network operators flexibility to meet any such requirements by relying on satellite capabilities, including in whole or in part by providing dual-mode devices.

Respectfully submitted,

THE MSS ATC COALITION

Peter Corea
Vice President, Regulatory Affairs
DBSD NORTH AMERICA, INC.
11700 Plaza America Drive, Suite 1010
Reston, VA 20190
(202) 577-1491

William F. Adler
Of Counsel
GLOBALSTAR, INC.
461 S. Milpitas Blvd.
Milpitas, CA 95035
(408) 933-4401

Diane J. Cornell
Vice President, Government Affairs
INMARSAT, INC.
1101 Connecticut Avenue, N.W.
Suite 1200
Washington, D.C. 20036
Telephone: (202) 248-5155

Jeffrey J. Carlisle
Vice President, Regulatory Affairs
SKYTERRA SUBSIDIARY LLC
10802 Parkridge Boulevard
Reston, VA 20191
(703) 390-2700

Sasha Field
Senior Vice President, Law & Public Policy
TERRESTAR NETWORKS, INC.
12010 Sunset Hills Road
6th Floor
Reston, VA 20190
(703) 483−7800

25 June 2010