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April 12, 2000

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Ms. Magalie Roman Salas
Secretary
Federal Communications Commission
445 12th Street SW
Washington, DC 20554

RE: IB Docket No. 99-81; RM-9328 **EX PARTE PRESENTATION**

Dear Ms. Salas:

Today, David Weinreich and the undersigned, representing Globalstar, L.P., participated in an *ex parte* meeting with Thomas Tycz, Howard Griboff, Karl Kensinger, Christopher Murphy, and Alexander Roytblat of the International Bureau regarding the above-referenced docket.

This meeting concerned policies and procedures proposed for Mobile-Satellite Service ("MSS") systems operating at 2 GHz. We discussed the information set forth in the attached letter, which was previously submitted to this docket on April 5, 2000, and Globalstar's Supplemental Comments filed on February 17, 2000, in response to the International Bureau's request for comments (DA 00-222, released Feb. 7, 2000).

We recommended that the Commission adopt the "all shared band plan" proposed by Globalstar for licensing applicants in the 2 GHz MSS spectrum. Pursuant to this plan, all eligible systems would be licensed to operate across the available 2 GHz spectrum subject to negotiating a sharing arrangement with all licensed systems. We explained that adoption of the all shared band plan would enable 2 GHz MSS systems to implement the broadband standards necessary to provide Third Generation services, as outlined in Globalstar's Supplemental Comments in this docket.

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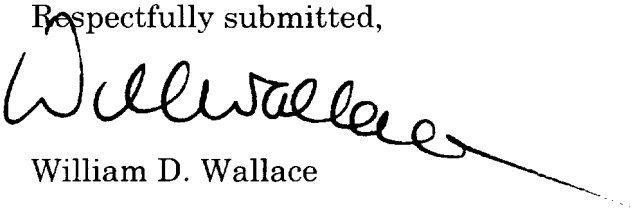
Pursuant to Section 1.1206(b)(2) of the Commission's Rules, I am submitting two copies of this letter for the above-referenced file. If you have any questions regarding this matter, please communicate with the undersigned.

Respectfully submitted,



William D. Wallace

Enclosure

cc: Mr. Thomas Tycz
Mr. Howard Griboff
Mr. Karl Kensinger
Mr. Christopher Murphy
Mr. Alexander Roytblat

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April 3, 2000

Mr. Ari Fitzgerald, Legal Advisor
Office of the Chairman
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Re: IB Docket No. 99-81; RM-9328
Written Ex Parte Presentation

Dear Mr. Fitzgerald:

Thank you again for taking the time to meet with John Stern, Dave Weinreich and me on February 24. At the end of our meeting, you asked whether Globalstar could provide additional specific information regarding the operational and cost impact of the proposal in the Commission's February 7, 2000, Public Notice in this proceeding. We provide that information below.

We must again emphasize that the stakes in this proceeding are exceedingly high. The Commission's spectrum assignment policy for the 2 GHz band will effectively determine whether or not global mobile satellite system operators can offer timely, viable third generation wireless ("3G") services, not only in the U.S., but in all areas of the world not reached, or not served economically, by terrestrial systems.

The tentative plan, reflected in the February 7 Public Notice, for allocating the 2 GHz MSS spectrum in slices of 3.88 MHz to service providers initially, with the possible option of further non-contiguous 3.88 MHz allocations at a later date, is not optimum. The allocation of 10 - 15 MHz of contiguous spectrum is crucial if the Commission desires to foster (a) the provision of new, enhanced services, (b) system viability, and (c) spectrum utilization efficacy. The three critical issues suggested by the Public Notice are:

(1) The total amount of spectrum allocated;
(2) Whether the total allocated spectrum is contiguous; and
(3) Whether early knowledge of the precise allocation frequency is needed for spacecraft design.

Although the allocation of non-contiguous bands could add to both satellite and handset costs, the real issue is business viability. Enhanced services will require data rates and, therefore, channel bandwidths that exceed those used for current voice-oriented MSS systems. Currently, the terrestrial wireless industry is gearing up to provide handheld Internet access by making use of 3G technologies that were recently standardized by the ITU and regional Standards Development Organizations (SDOs). In order to be viable, next generation MSS systems must adapt these 3G technologies to allow the provision of handheld Internet and data services via satellite.

If the 35 MHz spectrum were divided into 3.88 MHz slices, each service provider would need to include guard bands for its system. These guard bands amount to wasted spectrum, a poor and unnecessary use of a precious resource. Shared use of 10 - 15 MHz band segments would be a more enlightened and conservation-minded use of this spectrum. Further, interspersing Code Division Multiple Access (CDMA) carriers, such as Globalstar's, with non-CDMA carriers could lead to out-of-band emission requirements which would restrict CDMA power levels. Such restrictions would reduce capacity because the out-of-band emission limits in band edge channels may require substantially reduced down link power. If TDMA systems are deployed on either side of a CDMA system in a 3.88 MHz block, the guardband requirements to protect the TDMA carriers could make this spectrum assignment unusable.

International regulations in the form of Power Flux Density (PFD) limits restrict the amount of power that MSS systems can utilize to serve user terminals. Enhanced services, which next generation MSS systems <u>must</u> provide, require data rates much higher than those used for voice transmission. Higher data rate services can only be provided with wider spectrum allocations. Viable next generation MSS systems will, therefore, require allocations of 10 - 15 MHz. The only efficient way to provide these allocations in the encumbered 2 GHz MSS band is to require several applicants to share the use of spectrum, preferably by using CDMA, as the Commission did in its <u>Big LEO Proceeding</u>. Allocations to each applicant of 3.88 MHz will effectively preclude economical, versatile, wide-band 3G services in the 2 GHz band for every MSS service provider using the band.

Next generation MSS systems are expected to be introduced by the year 2005. Taking into account required development, construction and deployment schedules, next generation MSS system designs must begin by 2001. It is unlikely that the marketplace will have chosen a dominant 3G technology by that time; indeed, multiple standards may well persist. One of the leading 3G technologies presently being developed for use worldwide is Direct Spread (DS)-CDMA. This technology allows backward compatible, multiple re-use of any contiguous band of the service spectrum. Furthermore, the widest allocation does not preclude the sharing of the same frequencies by different service providers, including other CDMA technologies. DS-CDMA uses a minimum bandwidth of 5 MHz with 10 - 15 MHz required for higher data rate applications.

The bandwidth of the widest contiguous allocation determines directly the maximum Direct Spread rate, and the highest data rate service that can be provided. Allocation of the widest possible contiguous spectrum is preferred. This allows a substantial growth path, and financial incentive, for any service provider. Although using multiple carriers in disjoint bands for wide band services is theoretically possible, this as-yet unproven technology may not accommodate the multiple terrestrial standards that must be anticipated. The Commission would want to avoid having its allocation of 2 GHz MSS spectrum handicap the development and evolution of U.S.-based satellite systems.

For a DS-CDMA system, the use of a number of 3.88 MHz portions is not as spectrally efficient as using a contiguous band of equal width. One contiguous band allows a blend of traffic using the same spreading bandwidth but with different throughput rates. The use of Multi-Carrier (MC)-CDMA in a non-contiguous allocation would necessitate traffic being split between different 3.88 MHz portions and different discrete carriers. Enhanced services, which are key to next generation MSS systems, require higher throughput rates. They would utilize one portion of the allocation while voice and other low bit-rate applications would utilize three carriers in another portion of the allocation. It is likely that the portion used for voice would reach capacity faster than the portion used for the enhanced services. Additional requests for voice carriers would then have to be rejected while the portion supporting the enhanced services was underutilized. The use of DS-CDMA over the bandwidth of multiple contiguous spectrum portions would thus be more spectrally efficient.

To illustrate the cost impact, Globalstar compared the scenario of a single contiguous allocation of 3x 3.88 MHz = 11.6 MHz, versus three non-contiguous 3.88 MHz allocations. A dual bent-pipe architecture is assumed for the satellite design. The system is similar to the existing Globalstar spacecraft, except upgraded for enhanced services. It is estimated that for this scenario the increase in satellite costs would be in the range of five (5) percent for a non-contiguous allocation versus a contiguous allocation. The impact is a particular concern because of the large number of spacecraft in a global non-geostationary system constellation (52 in Globalstar's first generation). A comparable second generation satellite constellation, equipped to operate in both the L-band and the 2 GHz band, is expected to cost in the range of $1.5 billion, exclusive of development costs. A five percent increase would raise the cost by $75 million or more, again exclusive of additional development costs. There would be associated Gateway hardware and software costs as well.

The increased cost of user terminals for a system with non-contiguous frequency assignments would be in the range of ten (10) percent. This increase is very problematic in a market in which the price of terminals is steadily, and in some cases dramatically, decreasing; in which a large proportion of the target customers are the rural and less affluent; and in which MSS terminals are not sold in sufficient volume to maximize economies of scale in the production process.

In conclusion, Globalstar urges the Commission to adopt an imaginative, yet workable, approach to the 2 GHz spectrum allocation that will help assure attainment of the Commission's goals for global universal service in the first decade of the 21st Century. Such an approach is offered in Globalstar's comments in this proceeding.

If you require any additional information, please contact me(408-933-4401) or Mr. David Weinreich in Globalstar's Washington Technical Office (301-607-4165).

Respectfully submitted,

William F. Adler
Vice President - Legal & Regulatory Affairs

cc: Mr. Mark Schneider
Mr. Bryan Tramont
Mr. Peter Tenhula
Mr. Adam Krinsky
Mr. Donald Abelson
Mr. Tom Tycz
Mr. Howard Griboff