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**FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY**

) File Nos. 4682-EX-PL-95
) 4680-EX-PL-95
) 4683-EX-PL-95

For Authority to Establish a Low-Earth Orbit Satellite, to Modify a Fixed Ground Station, and to Establish 9,240 Remote Mobile Terminals in the Experimental Radio Services

**COMMENTS OF STARSYS GLOBAL POSITIONING, INC. ON
AMENDED APPLICATION OF FINAL ANALYSIS, INC.**

At the outset, STARSYS wishes to reiterate that the stated desire of Final Analysis to examine the suitability of frequency bands between 100 and 500 MHz for prospective compatible use by systems in the Non-Voice, Non-Geostationary Mobile Satellite Service ("NVNG MSS") is legitimate, and should be encouraged. See STARSYS Comments, File Nos. 4682-EX-PL-95, at 2 (filed April 5, 1995). To a

greater extent now, Final Analysis's proposed experimental program seems to advance this objective. For example, the proposal to test bands at 455-456 MHz and 459-460 MHz is consistent with proposals being made in advance of the 1995 World Radiocommunication Conference. Nevertheless, the fact remains that Final Analysis's experimental program goes much farther than is necessary in at least one key respect, and it leaves unanswered the serious questions about its program that STARSYS and others levelled during the pleading cycle on Final Analysis's original submission.

First of all, while Final Analysis has reduced its required number of remote transmitters from 9,240 to 1,848, this number is still too high. STARSYS questioned Final Analysis's original request on several counts. It observed that Final Analysis provided no information as to how the terminals would be used, and that it failed to state the character of the terminals' use -- shortcomings which were neither addressed in Final Analysis's opposition pleading or in the recent amendment. See STARSYS Comments at 7-8; STARSYS Reply and Motion to Strike at 2-3 & n.2. Indeed, Final Analysis still has yet to state whether test messages only will be utilized, and if not, what entity or entities will be making use of the terminals, and it has not identified the terminals' manufacturer. STARSYS also observed that in order to conduct and record frequency band characterizations in the frequency bands to be studied, it is unnecessary for Final Analysis to have even one user terminal. STARSYS Comments at 7.

Although the evidence pointed (and still points) to a scenario whereby Final Analysis has impermissible commercial objectives for its supposed "experimental" system, STARSYS suggested that the Commission allow the applicant to employ a maximum of 100 user terminals with its system. STARSYS Comments at 8. Because the current request, though reduced from the original, is still both excessive and completely unexplained, STARSYS continues its objection to this aspect of the experimental program, and urges the Commission to cap at 100 the number of remote user terminals it may authorized Final Analysis to use. At the very least, the Commission should require Final Analysis to come clean on its intentions and justifications for the number of remote user terminals it proposes.

Next, STARSYS continues to object to Final Analysis's specification of downlink channels that overlap with STARSYS's proposed NVNG MSS downlink channels at 400.595-400.645 MHz, and in the 137-138 MHz band (where Final Analysis now proposes a 30 kHz channel proximate to the most sensitive portion of STARSYS's signal). The Commission stated last week that it intends to act on STARSYS's application shortly. See Orbital Communications Corp., FCC 95-135, slip op. at 1-2 & n.3 (released June 2, 1995). Nothing Final Analysis has filed to date in this proceeding addresses STARSYS's argument that the proposal of Final Analysis to operate directly on top of frequencies applied for by STARSYS violates the guideline from the Commission's Policy Statement on Experimental Applications, 7 FCC Rcd 4586 (1992) ("Policy Statement"), which specifies that the grant of an

experimental application "should be consistent with [the Commission's] general policy to protect against harmful interference to licensed stations." Id. As STARSYS noted, Final Analysis has essentially admitted that the co-channel downlink at 400.62 MHz would cause harmful interference to STARSYS. See STARSYS Reply Comments and Motion to Strike at 4 (citing Final Analysis Opposition at 8). Final Analysis must be precluded from using these interfering channels, or required to demonstrate that its proposed use will not interfere with the NVNG MSS use to be effected by STARSYS. If the Commission sees fit to authorize Final Analysis, STARSYS would be satisfied with a condition that requires Final Analysis to cease use of the overlapping frequencies upon the launch of the first STARSYS satellite. See, e.g., Mobile DataComm Corporation, DA 95-664 (Int'l. Bur., released April 3, 1995).

There are three additional areas where Final Analysis's amendment leaves unanswered serious questions raised by STARSYS and others as to the experimental program: Specifically, Final Analysis has not amended its application to delay the originally-proposed August 1995 launch date. Even for a company that professes to have the extraordinary abilities Final Analysis claims for itself (see Final Analysis Opposition at 9-10), 60 days is too short a time to construct a satellite. STARSYS renews its request for a Commission investigation into whether Final Analysis or its NVNG MSS applicant subsidiary have unlawfully commenced construction of the proposed experimental satellite, and if so, to determine the impact this unlawful activity has on the companies' character qualifications.

It also appears that Final Analysis's proposed satellite and mobile terminals are fully programmable, and capable of a broad range of commercial operations. Such a program is, as STARSYS has noted before, inconsistent with the Policy Statement. A more limited version could still accomplish the program objectives officially stated by Final Analysis, without being perceived as an effort to circumvent the Commission's rules and processes.

Lastly, Final Analysis has failed to respond to STARSYS's demonstration that the uses Final Analysis proposes for its requested master ground station in Logan, Utah, would violate the explicit condition that has been placed on that authorization. See STARSYS Reply Comments and Motion to Strike at 7 (citing Final Analysis License, Call Sign KE2XGU, at 2).

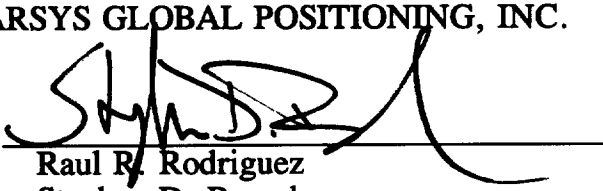
In sum, Final Analysis's amendment represents a nod in the right direction, but still leaves unanswered many serious questions. On balance, STARSYS

believes that the gravity and number of the unanswered questions preclude the grant of the application, as currently amended. Accordingly, STARSYS continues to urge the Commission to deny Final Analysis's above-captioned experimental applications.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I, Katharine B. Squalls, do hereby certify that a copy of the foregoing "Comments of STARSYS Global Positioning, Inc. on Amended Application of Final Analysis, Inc." was mailed by United States first-class postage prepaid this 7th day of June 1995, to the following:

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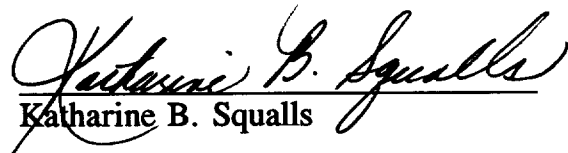
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Proposals for Agenda Items 2.1a) and 3.d)

Mobile-Satellite Services Below 1 GHz

Introduction:

The attached U.S. proposals address issues related to mobile-satellite services (MSS) operating below 1 GHz. WARC-92 allocated 3.45 MHz of primary spectrum to this service. Since that time, the United States has licensed one non-geostationary MSS system to operate in the U.S. in these new primary frequencies and has six pending system applications. Satellites from the first system have already been launched.

Experience with the use of the MSS bands below 1 GHz, as well as recent studies of the ITU-R that are reflected in the Report of the Conference Preparatory Meeting (CPM), indicate that several modifications could be made to existing MSS frequency allocations to facilitate their use. Proposals to facilitate the use of existing allocations for mobile-satellite services may be made pursuant to agenda item 2.1(a). Accordingly, the U.S. proposes to modify a number of footnotes to the 148-150.05 MHz band to improve coordination efforts in this band. In accordance with a suggestion from the Voluntary Group of Experts that allocations be made, where possible, to the broadest category of service, the U.S. further proposes to change the Land Mobile-Satellite allocation in the 149.9-150.05 MHz band to a more general Mobile-Satellite Service.

In addition to discussing the improvement of existing MSS allocations, the CPM Report states that additional spectrum will be necessary to meet the near-term requirements for MSS below 1 GHz. Because WRC-95 is empowered to make limited allocations to MSS pursuant to agenda item 3(d), if such allocations are necessary, the United States proposes to modify the international Table of Allocations to include 6.105 MHz of spectrum to be used by MSS, or associated feeder links. The bands suggested for allocation to MSS include 216-216.5 MHz (space-to-Earth) and 217.5-218 MHz (space-to-Earth), 399.9-400.05 MHz (Earth-to-space), 401-404 MHz ((space-to-Earth with the 401.2-401.7 MHz segment allocated to MSS on a secondary basis), 455-456 MHz (Earth-to-space) and 459-460 MHz (Earth-to-space).

Article 8 (S5)

USA/ /1
NOC 599A
(S5.208A)

Reason:

The Report of the Conference Preparatory Meeting confirms that the pfd trigger level of $-125\text{dB(W/m}^2/4\text{kHz)}$ for coordination with terrestrial services is appropriate at this time.

MHz
148-150.05

USA/ /2 MOD

Allocations to Service		
Region 1	Region 2	Region 3
148-149.9 FIXED MOBILE except aeronautical mobile (R) MOBILE-SATELLITE (Earth-to-space) MOD <u>599B</u> 608 MOD <u>608A</u> 608C	148-149.9 FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) MOD <u>599B</u> 608 MOD <u>608A</u> 608C	
149.9-150.05	RADIONAVIGATION-SATELLITE LAND MOBILE-SATELLITE (Earth-to-space) MOD <u>599B</u> MOD <u>609B</u> MOD <u>608B</u> 609 609A	

Reason:

To allow for maximum flexibility in system implementation, the land mobile-satellite allocation in the 149.9-150.05 MHz band is proposed for any mobile-satellite service. See also VGE Recommendations 1/7 and 1/8.

USA/ /3 MOD
599B WARC-92
(S5.209)

The use of the bands 137-138 MHz, ~~148-149.9 MHz, 150.05 MHz, 216-216.5 MHz; 217.5-218 MHz, 399.9-400.05 MHz, 400.15-401.404 MHz, 455-456 MHz and 459-460 MHz~~ by the mobile-satellite service and ~~the band 149.9-150.05 MHz by the land mobile-satellite service~~ is limited to non-geostationary-satellite systems.

Reason:

Modification to footnote 599B is required to reflect the allocation to the mobile satellite service of the 149.9-150.05 MHz, 216-216.5, 217-217.5, 399.9-400.05 MHz, 455-456 MHz and 459-460 MHz bands.

USA/ /4 MOD
608A WARC-92
(S5.219)

The use of the band 148-149.9 MHz by the mobile-satellite service is subject to the application of the coordination and notification procedures set fourth in MOD Resolution 46 ~~(WARC-92)~~. The mobile-satellite service shall not constrain the developement and use of fixed, mobile and space operation services in the band 148-149.9 MHz. Administrations using mobile earth stations in the mobile-satellite service shall ~~not produce power flux density in excess of -150 dB(W/m²/4kHz)~~ coordinate outside national boundaries through use of the coordination distance method in Recommendation ITU-R M. [Doc.8/46].

Reason:

Modification of RR 608A is required because the -150 dB(W/m²/4kHz) has proven to be operationally unusable. A coordination distance threshold is a more useful approach to facilitate coordination across national boundaries; this approach is supported in the report of the CPM.

USA/ /5 MOD
608B WARC-92
(S5.220)

The use of the bands 149.9-150.05 MHz and 399.9-400.05 MHz by the mobile-satellite service is subject to the application of the coordination and notification procedures set forth in MOD Resolution 46 (~~WARC-92~~). The ~~land~~ mobile-satellite service shall not constrain the development and use of the radionavigation-satellite service in the band 149.9-150.05 MHz and 399.9-400.05 MHz. ~~Land mobile earth stations of the land Mobile satellite service shall not produce power flux density in excess of -150 dB(W/m²/4 kHz) outside national boundaries.~~ Mobile earth stations in the mobile-satellite service shall coordinate outside of national boundaries through use of the coordination distance method in Recommendation ITU-R M. [Doc.8/46].

Reason:

Modification of RR 608B is required because the -150 dB(W/m²/4kHz) has proven to be operationally unusable. A coordination distance threshold is a more useful approach to facilitate coordination across national boundaries. This revision is supported in the report of the CPM. The removal of "land" in RR 608B reflects the proposed change in the allocation of the 149.9-150.05 MHz band to the mobile satellite service. Further modification of RR608B is also required to reflect the proposed allocation of the 399.9-400.05 MHz band to the mobile-satellite service.

USA/ /6 MOD
609B WARC-92
(S5.224)

In the bands 149.9-150.05 MHz and 399.9-400.05 MHz the allocation to the ~~land~~ mobile-satellite shall be on a secondary basis until 1 January 1997.

Reason:

The removal of "land" in RR 609B reflects the change proposed in the allocation table to the mobile-satellite service. Further modification to RR 609B is required to reflect the

proposed allocation of the 399.9-400.05 MHz band to the mobile-satellite service.

MHz
216-216.5

USA/ /7 MOD

Allocation to Services		
Region 1	Region 2	Region 3
216-216.5 BROADCASTING <u>MOBILE-SATELLITE</u> <u>(space-to-Earth)</u> MOD <u>599B</u>	216-216.5 FIXED MARITIME MOBILE <u>MOBILE-SATELLITE</u> <u>(space-to-Earth)</u> MOD <u>599B</u> Radiolocation 627	216-216.5 FIXED MOBILE BROADCASTING <u>MOBILE-SATELLITE</u> <u>(space-to-Earth)</u> MOD <u>599B</u>
621 623 628 629	627A	626

Reason:

To make available additional spectrum for MSS systems, in accordance with the Report of the CPM which notes that 7-10 MHz of additional spectrum will be required for MSS below 1 GHz.

MHz
217.5-218

USA/ /8 MOD

Allocation to Services		
Region 1	Region 2	Region 3
217.5-218 BROADCASTING <u>MOBILE-SATELLITE</u> <u>(space-to-Earth)</u> MOD <u>599B</u>	217.5-218 FIXED MARITIME MOBILE <u>MOBILE-SATELLITE</u> <u>(space-to-Earth)</u> MOD <u>599B</u> Radiolocation 627	217.5-218 FIXED MARITIME MOBILE <u>MOBILE-SATELLITE</u> <u>(space-to-Earth)</u> MOD <u>599B</u>
621 623 628 629	627A	626

Reason:

To make available additional spectrum for MSS systems, in accordance with the Report of the CPM which notes that 7-10 MHz of additional spectrum will be required for MSS below 1 Ghz.

MHz
399.9-400.05

USA/ /9 MOD

Allocation to Services		
Region 1	Region 2	Region 3
399.9-400.05	RADIONAVIGATION-SATELLITE	
	<u>MOBILE-SATELLITE (Earth-to-space)</u> MOD <u>599</u> MOD <u>609B</u>	
	MOD <u>608B</u> 609 645B	

Reason:

To provide spectrum for non-geostationary mobile-satellite services. See also VGE Recommendations 1/7 and 1/8. RR MOD 609B is included to protect existing radionavigation satellite operations until 1 January 1997.

MHz
335.4-402

USA/ /10 MOD

Allocation to Services		
Region 1	Region 2	Region 3
401-401.2	METEOROLOGICAL AIDS SPACE OPERATION (space-to-Earth) <u>MOBILE-SATELLITE</u> (space-to-Earth) MOD 599B <u>METEOROLOGICAL-SATELLITE (Earth-to-space)</u> <u>EARTH EXPLORATION-SATELLITE (Earth-to-space)</u> Earth Exploration Satellite (Earth to space) Fixed Meteorological Satellite (Earth to space) Mobile except aeronautical mobile <u>648A</u>	
401.2-401.7	METEOROLOGICAL AIDS SPACE OPERATION (space-to-Earth) <u>Mobile-Satellite</u> (space-to-Earth) MOD 599B <u>METEOROLOGICAL-SATELLITE (Earth-to-space)</u> <u>EARTH EXPLORATION-SATELLITE (Earth-to-space)</u> Earth Exploration Satellite (Earth to space) Fixed Meteorological Satellite (Earth to space) Mobile except aeronautical mobile <u>648A</u>	
401.7-402	METEOROLOGICAL AIDS SPACE OPERATION (space-to-Earth) <u>MOBILE-SATELLITE</u> (space-to-Earth) MOD 599B <u>METEOROLOGICAL-SATELLITE (Earth-to-space)</u> <u>EARTH EXPLORATION-SATELLITE (Earth-to-space)</u> Earth Exploration Satellite (Earth to space) Fixed Meteorological Satellite (Earth to space) Mobile except aeronautical mobile <u>648A</u> <u>648B</u>	

MHz
402-430

USA/ /11 MOD

Allocation to Services		
Region 1	Region 2	Region 3
402-403	METEOROLOGICAL AIDS <u>MOBILE-SATELLITE</u> (space-to-Earth) MOD 599B <u>METEOROLOGICAL-SATELLITE (Earth-to-space)</u> <u>EARTH EXPLORATION-SATELLITE (Earth-to-space)</u> Earth Exploration Satellite (Earth to space) Fixed Meteorological Satellite (Earth to space) Mobile except aeronautical mobile 648A 648C	
403- 406 404	METEOROLOGICAL AIDS <u>MOBILE-SATELLITE</u> (space-to-Earth) MOD 599B Fixed Mobile except aeronautical mobile 648A	
<u>404</u> -406	METEOROLOGICAL AIDS Fixed Mobile except aeronautical mobile 648	

Reason:

The Report of the CPM states that additional spectrum will be necessary to meet the near-term requirements for MSS below 1 GHz. As a consequential change of adding allocations for the mobile-satellite service in the 401-404 MHz bands, it is necessary to upgrade the allocations for the meteorological-satellite and Earth exploration-satellite services to primary (see also Resolution 710 (WARC-92)).

USA/ /12 ADD
648A (S5.265A)

The use of the bands 401-404 MHz by the mobile-satellite service is subject to the application of the coordination and notification

procedures set forth in MOD Resolution 46. Until sharing criteria are developed, in the band 401-404 MHz, stations in the mobile-satellite service shall not cause harmful interference to the meteorological aids, meteorological-satellite, Earth exploration-satellite, and Space Operations services. In accordance with Resolution YYY, sharing criteria to facilitate mobile satellite operations are to be developed as a matter of urgency by the ITU-R and reviewed by a future competent world radiocommunication conference. In making assignments to the space stations of the mobile-satellite service in the 401-404 MHz band, administrations shall take all practicable steps to protect the radio astronomy service in the 406.1-410 MHz band from harmful interference from unwanted emissions. Unwanted emissions from mobile-satellite service space stations operating in the 401-404 MHz band shall not cause harmful interference to the mobile-satellite service in the 406-406.1 MHz band (649A (S5.267) applies).

Reason:

RR 648A is necessary to ensure proper sharing criteria are developed by the ITU-R as outlined in Resolution YYY.

USA/ /13 ADD
648B (S5.265C)

In the bands 401.7-402.4 MHz, the aggregate power flux density produced at the geostationary satellite orbit by emissions from space stations in a mobile satellite service network shall not exceed -162 dBW/m² per 4 kHz. In accordance with Resolution YYY this limit is to be reviewed by the ITU-R and may be revised by a future competent world radiocommunication conference.

Reason:

RR 648B is necessary to ensure proper sharing criteria are developed by the ITU-R as outlined in Resolution YYY.

MHz
455-456

USA/ /14 MOD

Allocation to Services

Region 1	Region 2	Region 3
455-456	FIXED MOBILE <u>MOBILE-SATELLITE (Earth-to-space)</u> MOD <u>599B</u> <u>653A</u> 653 670	

Reason:

To make available additional spectrum for MSS systems, in accordance with the Report of the CPM which notes that 7-10 MHz of additional spectrum will be required for MSS below 1 GHz. RR MOD 599B has been added to clarify that use of this frequency band is limited to use by non-geostationary satellite orbit systems. RR 653A has been added to clarify that the coordination and notification procedures of MOD Res. 46 apply to this band.

MHz
459-460

USA/ /15 MOD

Allocation to Services		
Region 1	Region 2	Region 3
459-460	FIXED MOBILE <u>MOBILE-SATELLITE (Earth-to-space)</u> MOD <u>599B</u> <u>653A</u> 653 669 670	

Reason:

To make available additional spectrum for MSS systems, in accordance with the Report of the CPM which notes that 7-10 MHz of additional spectrum will be required for MSS below 1 GHz. RR MOD 599B has been added to clarify that use of this frequency band is limited to use by non-geostationary satellite orbit systems. RR 653A has been added to clarify that the coordination and notification procedures of MOD Res. 46 apply to this band.

USA/ /16 ADD
653A (S5.271A)

The use of the bands 455 - 456 MHz and 459 - 460 MHz by the mobile-satellite service is subject to the application of the coordination and

notification procedures set forth in MOD Resolution 46. Mobile earth stations in the mobile-satellite service shall coordinate outside of national boundaries through use of the coordination distance method in Recommendation ITU-R M. [Doc.8/46].

Reason:

Footnote 653A is necessary to establish the coordination methodology for mobile-satellite systems operating pursuant to new MSS allocations in the 455 - 456 MHz and 459 - 460 MHz bands.

RESOLUTION No. YYY (WRC-95)

Sharing Studies Concerning the Use of the Bands 401-404 MHz
by the Mobile-Satellite Service (space-to-Earth)

The World Radiocommunication Conference
(Geneva, 1995),

considering

- a) that agenda item 3(d) of this Conference requested the consideration, inter alia, of allocation of frequency bands to the mobile-satellite service;
- b) that this conference allocated spectrum in the 401-404 MHz band for non-geostationary mobile-satellite service;
- c) that the bands 401-403 MHz and 403-404 MHz are allocated to the meteorological-satellite, meteorological aids, space operation, and Earth exploration-satellite services;
- d) that there is a need to determine the operational and technical means to facilitate sharing between the mobile satellite service and the services mentioned in c above;
- e) that co-channel sharing between the mobile-satellite service and the meteorological aids service may be difficult;
- f) that RR ADD 648B (S5.265C) specifies a maximum pfd at the geostationary satellite orbit from stations in the mobile-satellite service;

resolves

- 1. that studies be undertaken as a matter of urgency by the ITU-R to develop the operational and technical measures that would facilitate sharing between the mobile satellite service and the services in considering c;
- 2. that the power flux density limit in RR ADD 648B (S5.265C) at the geostationary satellite orbit for networks of the mobile

satellite service in the 401.7-402.4 MHz band be reviewed and if necessary revised by the ITU-R;

3. that studies be undertaken to determine the amount of spectrum needed in the 401-406 MHz band for the meteorological aids service to perform its intended functions;

4. that the World Meteorological Organization (WMO) be invited to participate in these sharing studies;

invites

1. the ITU-R continue to study, as a matter of urgency, the technical and operational issues relating to the sharing of these bands between the services mentioned in c) above and the mobile-satellite service in the space-to-Earth direction;

2. administrations to participate actively in such studies by sending contributions to the ITU-R relating to the aforementioned studies;

3. the ITU-R to bring the results of these studies to the attention of the next competent world radiocommunication conference

instructs the Secretary-General

to bring this Resolution to the attention of WMO.

Reason:

To insure that necessary sharing studies are undertaken.
