Donald Abelson
Chief, International Bureau
Federal Communications Commission
445 12th Street S.W.
Washington, D.C. 20554

Dear Mr. Abelson:

The National Telecommunications and Information Administration (NTIA), on behalf of the Executive Branch Agencies, have approved the release of an additional draft Executive Branch proposal for WRC-07. This proposal considers the federal agency inputs toward the development of the U.S. Proposals for WRC-07.

The enclosed document contains a draft proposal for agenda item 1.17. This proposal is forwarded for your consideration and review by your WRC-07 Advisory Committee.
Jim Vorhies of my staff is the primary contact for NTIA.

Sincerely

(Original signed by Karl Nebbia February 17, 2006)
Fredrick R. Wentland
Associate Administrator
Office of Spectrum Management

Enclosure

United States of America

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 1.17: to consider the results of ITU-R studies on compatibility between the fixed-satellite service and other services around 1.4 GHz, in accordance with Resolution **745 (WRC-03);**

Background Information: WRC-03 made a conditional secondary allocation to the fixed-satellite service (FSS) for feeder links for non-geostationary-satellite (NGSO) networks in the mobile-satellite service (MSS) with service links below 1 GHz (NGSO-MSS) through RR **5.539A** in the bands 1 390 – 1 392 MHz (Earth-to-space) and 1 430 – 1 432 MHz (space-to-Earth). However, due to the fact that there were insufficient and/or incomplete studies and test measurements with regard to the protection of other services with allocations in these bands or in the nearby passive band 1 400 – 1 427 MHz, Resolution **745 (WRC-03)** resolves that these feederlink allocations shall not be used until the completion of all studies and the results of these studies reported to WRC-07.

The frequency band 1 350 – 1 400 MHz is allocated worldwide on a primary basis to the radiolocation service (RLS) and in Region 1 to the fixed and mobile services. The band 1 370 – 1 400 MHz is allocated worldwide on a secondary basis to the space research (SRS) (passive) and Earth exploration-satellite (EESS) (passive) services by RR **5.339**. The band 1 330 – 1 400 MHz is also used by the radio astronomy service (RAS) for observations of the red-shifted neutral hydrogen line and RR **5.149** urges administrations to take all practicable steps to protect it from harmful interference.

The band 1 400-1 427 MHz is allocated to the EESS (passive), the RAS and the SRS (passive) on a worldwide basis. For the RAS, this band is the most important band for studies of the hydrogen line and for continuum observations. This band is also used world-wide for the Very Long Baseline Interferometry (VLBI) technique which is utilized for radio astronomical studies requiring high angular resolution. For the EESS (passive), the band 1 400 – 1 427 MHz is a vital resource for measuring ocean salinity and soil moisture content of the Earth. This band is one of the select bands for which RR **5.340** prohibits all emissions, emphasizing its particular importance for the science community.

The band 1 427 – 1 452 MHz is allocated on a primary basis to the fixed and mobile services worldwide. The band 1 427 – 1 429 MHz is also allocated on a primary basis to the space operation service (Earth-to-space) in all three Regions. Additionally, RR **5.342** allocates the band 1 429 – 1 535 MHz on a primary basis in some administrations to the aeronautical mobile service exclusively for the purposes of aeronautical telemetry within their national territory.

A. Band 1 430 – 1 432 MHz (feederlink downlink)

Since the NGSO-MSS feederlinks are allocated on a secondary basis, they cannot cause harmful interference to nor claim protection from the fixed and mobile services in this band. ITU-R studies based on the fractional degradation of performance criterion used by the fixed service have concluded that a pfd limit of –164 dBW/m² in a 4 kHz bandwidth should be adequate to protect the fixed service, as well as the mobile service.

In addition, ITU-R studies have shown that the pfd limits are necessary to protect the aeronautical telemetry systems used under the mobile service in the territory of countries identified in RR **5.342:**

-181 dB(W/m^2)	$0 \leq \alpha \leq 4$
$-193 + 20 \log \alpha$ dB(W/m^2)	$4 < \alpha \leq 20$
$-213.3 + 35.6 \log \alpha$ dB(W/m^2)	$20 < \alpha \leq 60$
-150 dB(W/m^2)	$60 < \alpha \leq 90$

where α is the angle of arrival (degrees above the horizontal plane).

To protect the RAS operations in the band 1 400 – 1 427 MHz, studies in the ITU-R have resulted in Recommendation ITU-R M.[8/102 Rev. 1] which recommends the following epfd limits:

- an epfd of –259 dBW/m^2 in any 20 kHz bandwidth of the band 1 400 – 1 427 MHz for more than 98% of integration periods of 2,000 seconds for spectral line observations; and
- an epfd of –243 dBW/m^2 in the entire 1 400 – 1 427 MHz band for more than 98% of integration periods of 2,000 seconds for continuum (broadband) observations.

Studies in the ITU-R have resulted in Recommendation ITU-R M.[8/101 Rev. +1] which recommends that an unwanted emission power limit of -46 dBW in the passive band 1 400 – 1 427 MHz at the satellite antenna port would be sufficient to protect all EESS systems which are expected to use the band.

No studies have been done concerning the space operations service (Earth-to-space) operating in the 1 427 – 1 429 MHz band due to the lack of participation from service providers who would be using the NGSO-MSS allocation.

B. Band 1 390 – 1 392 MHz (feederlink uplink)

The protection of the fixed and mobile services within the band 1 390-1 392 MHz can be accomplished by requiring appropriate separation distances between the NGSO-MSS feederlink earth stations and the fixed and mobile stations. However, detailed information on these separation distances is not available in any ITU-R studies at this time.

The protection of the radiolocation service stations operating in the 1 350 – 1 400 MHz band has not been extensively studied. However, one ITU-R study on the compatibility of the NGSO-MSS feederlink uplinks that may operate in the 1 390 – 1 392 MHz band with aeronautical radiolocation receivers indicates that the interference from the NGSO-MSS feederlink uplinks exceeds the aeronautical radiolocation receivers interference criteria by anywhere from 37.9 dB to as much as 85.4 dB. The study concludes that sharing is not feasible between these two types of systems.

To protect the radioastronomy service operations in the 1 330 – 1 400 MHz band, Recommendation ITU-R M.[8/102 Rev. 1] recommends that the NGSO-MSS feederlink earth stations be separated from radio astronomy stations which conduct observations in the band 1 400 – 1 427 MHz, such that the total data loss due to feederlink uplink and downlink emissions does not exceed 2%.

To protect the EESS (passive) operations in the band 1 400 – 1 427 MHz, Recommendation ITU-R M. [8/101 Rev. 1] recommends that an unwanted emission power limit of –63 dBW in the passive band 1 400 – 1 427 MHz at the antenna port of the NGSO-MSS feederlink earth station would be sufficient to protect all EESS passive sensors which are expected to use the band.

One ITU-R study was done on the potential interference from NGSO-MSS feederlink uplinks that may operate in the 1 390 – 1 392 MHz band into passive sensors operating in the secondary allocation to EESS (passive) in the 1 370 – 1 400 MHz band. The results of this study indicate that the co-channel interference into the passive sensor would exceed the interference threshold by as much as 82 dB and as often as 42% of the time.

Summary

From these study results given in Resolution **745 (WRC-03)**, it is likely that the NGSO-MSS feederlinks will be able to use the allocated bands only with significant constraints required to protect the existing services. It is clear that some studies have indicated problems sharing the 1 390 – 1 392 MHz band with existing services. Furthermore, no service providers are continuing to pursue opportunities or participating in relevant studies to use this allocation. Their absence indicates a lack of need for the allocation. Therefore, suppression of the conditional allocation to the NGSO-MSS feederlink allocations in the 1 390 – 1 392 MHz and 1 430 – 1 432 MHz bands is proposed.

The absence of NGSO-MSS interests indicated the lack of need for the allocation.

Proposals

ARTICLE 5

USA/ /1 MOD

1 300-1 525 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
1 350-1 400 FIXED MOBILE RADIOLOCATION 5.149 5.338 5.339 ~~5.339A~~	**1 350-1 400** RADIOLOCATION 5.149 5.334 5.339 ~~5.339A~~	
1 400-1 427	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	
1 427-1 429	SPACE OPERATION (Earth-to-space) FIXED MOBILE except aeronautical mobile 5.341	
1 429-1 452 FIXED MOBILE except aeronautical mobile ~~5.339A~~ 5.341 5.342	**1 429-1 452** FIXED MOBILE 5.343 ~~5.339A~~ 5.341	

USA/ /2 SUP

5.339A

Reasons: Suppression of the conditional allocation to the FSS for NGSO-MSS feederlinks is warranted due to lack of need for such an allocation and the sharing and/or compatibility difficulties with existing services using the allocated bands or the nearby passive band.

USA/ /3 SUP

RESOLUTION 745 (WRC-03)

Protection of existing services in all Regions from non-geostationary-satellite networks in the fixed-satellite service using the frequency bands around 1.4 GHz on a secondary basis

Reasons: Consequential to the above proposals.

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