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Author: D. Weinreich
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WRC-2003 ADVISORY COMMITTEE

DRAFT PRELIMINARY VIEWS ON WRC-03

WRC-2003 Agenda Item: **1.4** - to consider the results of studies related to Resolution **114 (WRC-95)**, dealing with the use of the band 5091-5150 MHz by the fixed satellite service (Earth-to-space) (limited to non-GSO MSS feeder links), and review the allocation to the aeronautical radio-navigation service and the fixed satellite service in the band 5091-5150 MHz;

ISSUES: WRC-2003 will review the results of studies on the technical and operational issues related to sharing of the band 5 091-5 150 MHz between the aeronautical radionavigation service and the fixed-satellite service providing feeder links of the non-geostationary mobile-satellite service (Earth-to-space). Of primary concern is whether or not revisions are required to the current regulatory provisions (footnotes **S5.444** and **S5.444A** and Resolution **114 (WRC-95)** and if so, what revisions? In addition, consideration must be given to the following: Are there requirements for MLS to use spectrum above 5 091 MHz, if yes, in what time frame? To what extent have MSS feeder links used spectrum to-date in the range 5 091-5 150 MHz? Would the MSS feeder links coexist with ARNS on a secondary basis or is there transition of feeder link use expected to frequencies above 5 150 MHz? What is the experience with coordination between the Fixed Satellite Service and microwave landing system stations and the subsequent operation of FSS stations in the 5091-5150 MHz band?

BACKGROUND: As a result of WRC-95, the Fixed Satellite Service (FSS) was granted co-primary status along with the Aeronautical Radionavigation Service in the band 5150 – 5250 MHz for the use of feeder uplinks for Non-Geostationary Mobile Satellite Service systems (**RR S5.447A**). In addition, the band 5091-5150 MHz was allocated, on a co-primary basis, to the FSS for NGSO MSS feeder uplinks under **S5.444A** and Resolution 114 (WRC-95). Resolution **114 (WRC-95)** requested ITU-R to study issues concerning sharing between Aeronautical Radionavigation Service (ARNS) and feeder links to Mobile Satellite Service (MSS) (Earth-to-space) in the band 5 091-5 150 MHz and to report results of the studies to WRC-2003. The use of this band by Microwave Landing Systems (MLS) and MSS feeder links is subject to footnotes **S5.444** and **S5.444A,** in particular the following conditions apply:

1) prior to 1 January 2010, the use of the band 5 091-5 150 MHz by feeder links of non-geostationary-satellite systems in the mobile-satellite service shall be made in accordance with **Resolution 114 (WRC-95)**;

2) prior to 1 January 2010, the requirements of existing and planned international standard systems for the ARNS which cannot be met in the 5 000-5 091 MHz band, shall take precedence over other uses of this band;

3) after 1 January 2008, no new assignments shall be made to stations providing feeder links of non-geostationary mobile-satellite systems;

4) after 1 January 2010, the fixed-satellite service will become secondary to the ARNS.

In fulfillment of this allocation, three NGSO MSS systems announced plans to operate feeder uplinks in this band. Of the three systems planning use of this band, two systems have implemented spacecraft Tracking and Control operations and one system has begun commercial service using the 5091-5250 MHz band for transmitting communications traffic from Gateway earth stations to the NGSO spacecraft.

Sharing studies between NGSO/MSS feeder links and microwave landing systems resulted in ITU-R Recommendation S.1342 "Method for determining coordination distances, in the 5 GHz band, between the international standard microwave landing system in the aeronautical radionavigation service and non-geostationary mobile satellite service stations providing feeder uplink services." These studies showed that compatibility between MLS receivers and MSS feeder links (Earth-to-space) could exist if sufficient geographical separation exists between the two stations. As a result, Recommendation S.1342 was adopted to trigger coordination between the two operators to determine the acceptability of an MSS site, possibly with or without restrictions.

In the United States and several other countries, coordination of the gateway station with MLS stations has been accomplished using the methodology contained in Recommendation ITU-R S.1342.

Spacecraft Command and Control operations began in the 5091-5250 MHz band with the launch of the first Globalstar (or LEO-D, in ITU-R terminology) satellite on 14 February 1998. Six gateway stations in Argentina, Australia, France, Korea, South Africa and the USA also participated in these Command and Control operations. The ICO (or LEO-F system in ITU terminology) uses the 5150-5250 MHz band to support launch and service operations.

Revenue communications service for the LEO-D began on 6 January 2000. In addition to the gateway earth stations mentioned for Tracking and Control operations 13 other gateway stations have been added to the network as of the current date.

It is expected that if the two MSS systems currently operating gateway stations develop as planned that the number of gateway stations implemented worldwide will be approximately 65.

As of writing this document, no interference has yet been encountered by MLS stations. Based upon coordination using the methods contained in Recommendation ITU-R S.1342 it is expected that this situation will continue.

ITU-R Working Party 8B is the lead group responsible for developing CPM text on WRC-03 Agenda Item 1.4. WP 8B is currently studying the use of the 5091-5150 MHz band by the Aeronautical Radionavigation Service (ARNS) and the Fixed Satellite Service (FSS) for NGSO Mobile Satellite Service (MSS) feeder uplinks. These studies are expected to conclude no later than May 2002.

PRELIMINARY VIEW: Based upon the application of the coordination procedures in Recommendation ITU-R S.1342 and the operating experience gained to date, existing microwave landing system (MLS) and NGSO MSS feeder link stations are able to function without interference. Future deployment of both MLS and NGSO MSS facilities should be possible through coordination under ITU-R S.1342. Continued common use of the 5091-5150 MHz band by both MLS and NGSO MSS stations is dependent upon the extent of future deployment of these systems and the characteristics of new Aeronautical Radionavigation Service (ARNS) systems, if any. Further studies are needed to investigate and evaluate the continuing usage of the 5091-5150 MHz band by the ARNS and the FSS for NGSO MSS feeder uplinks to determine if changes in the existing Radio Regulations covering this band are necessary. (17 April 2001)