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INTERNATIONAL AND DOMESTIC MOBILE SATELLITE REGULATORY PROCEEDINGS: A COMPARISON OF OUTCOMES AND DISCUSSION OF IMPLICATIONS

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ABSTRACT

We are at the threshold of advancing one of the most important developments in Communications -- a satellite service offering land, aeronautical and maritime mobile communications. This milestone has been reached as a result of 25 years of studies, experiments and technology development and more than ten years of public proceedings. Worldwide primary allocations are in hand, a single U.S. consortium has been formed and licensing appears imminent. However, several serious barriers still remain.

The 1987 World Administrative Radio Conference (WARC) on Mobile Communications fell short of meeting U.S. Mobile Satellite Service allocation needs. The International allocations are different than the proposed domestic allocations creating potential coordination problems. Challenges to the FCC's proposed Rulemaking and anticipated licensing may continue to delay the culmination of this process.

INTRODUCTION

How will differences between international and domestic allocations be reconciled and what protection can U.S. systems expect from foreign systems operating in accordance with the international tables?

Where do we go from here with respect to licensing, competition, tariffs, network control and transborder operations?

What is the nature and impact of domestic opposition to FCC proposals?

What are the implications of a planned WARC in 1992 which would address many of the issues left unresolved in the 1987 WARC?

A similar change was proposed for the portion of the band currently allocated to the Maritime Mobile Satellite Service (1530-1544 MHz and 1626.5-1645.5 MHz) with appropriate priority provisions for marine safety.

Specific frequency proposals and support for a Land Mobile Satellite Service were also presented by Canada, Japan, Australia, India, Mexico, European Space Agency (ESA) and INMARSAT.

The U.S. also made it clear that a minimum of 10 MHz up and 10 MHz down was needed by LMSS to ensure economic viability. The outcome of the WARC fell short of these needs and consequently the U.S. and Canada took reservations on the WARC's LMSS provisions.

The specific WARC spectrum allocations for the LMSS worldwide are:

- Primary, exclusive 4 MHz down (1555-1559) and 3.5 MHz up (1656.5-1660.0 MHz) in currently allocated AMSS(R) band.
- Co-equal primary .5 MHz up (1660.0-1660.5 MHz) shared with radio astronomy.
- Co-equal primary 3 MHz down (1530-1533 MHz) and 3 MHz up (1631.5-1634.5 MHz) shared with Maritime Mobile Satellite Service (MMSS).
- Secondary 11 MHz down (1533-1544 MHz) and 16 MHz up (1626.5-1631.5 and 1634.5-1645.5 MHz) in current MMSS band and limited to non-speech low bit rate data.
- Public correspondence by satellite (aircraft to ground mobile telephone) is also authorized in the 1545-1555 MHz and 1646.5-1656.5 MHz bands with some constraints.
- In the bands 1555-1559 and 1656.5-1660.5 MHz, Administrations may also authorize aircraft earth stations and ship earth stations to communicate with space stations in the Land Mobile Satellite Service.

Efforts were made by Canada and the United States to introduce a country footnote for LMSS for 6 MHz on a secondary basis adjacent to the newly proposed 4 MHz LMSS primary allocation. The 6 MHz would be used within national boundaries. However, this was defeated in the Plenary session.

Considering that very few of the almost 100 countries attending supported the U.S. proposals at the beginning of the conference the amount of spectrum allocated to LMSS on a worldwide primary basis should be looked upon as a tremendous achievement. The door appeared to be left open for additional allocations in a proposed 1992 WARC. At that time those opposed to the U.S. proposals such as ICAO, Inmarsat, European CEPT countries and ARINC, will be in better positions to deal competitively with the MSS and the environment should be more conducive to cooperation.

These and other questions are the subject of this and other papers to be presented and discussed at this Mobile Satellite Conference.

We are dealing with the painful, costly, and time consuming process of change. The combination of vested interests, politics, regulation, fear of change and spectrum managers represent a formidable barrier to change. To illustrate: cellular mobile took 13 years to break through this barrier; Direct Broadcast Satellite, 15 years; Aeronautical Mobile Satellite, 20 years; Aircraft collision avoidance systems, 30 years; automatic altitude reporting, 25 years; and, the subject of this conference, Mobile Satellite Service, 12 years.

The barriers to change are not always readily apparent. For example, in preparation for the 1977 WARC on Broadcast Satellites, position papers written by NASA and the Department of Commerce/ITS to facilitate the implementation of small ground terminals were blocked within the FCC. An FCC document stated that it was not in the U.S. interest to facilitate the proliferation of small ground terminals. A direct confrontation of that policy by NASA's Administrator, Robert Frosch and others resulted in modifying the policy.

Policies and regulations to accommodate a Mobile Satellite Service also had to be changed. This process was initiated by NASA in 1975 as part of U.S. preparations for the 1979 WARC. NASA proposed allocations in the 800 MHz or 1500/1600 MHz (L) bands.

An 800 MHz proposal ultimately was included in U.S. positions after 8 public Notices of Inquiry. Allocations, almost worldwide, for domestic LMSS in the 800 MHz band were approved in the 1979 WARC. Subsequent inaction on the part of the FCC and other barriers were put in place causing NASA to petition the FCC for a Rulemaking on frequency allocations for a Mobile Satellite Service in the 800 MHz and 1500/1600 MHz bands.

REMAINING PROBLEMS

Allocations

For purposes of clarity and time we will go right to the "L" band allocation issue, bypassing the 800 MHz controversy

Figure I compares prior "L" band allocations with the FCC's proposed Rulemaking, the U.S. position at the WARC and the outcome of the WARC.

The U.S. proposed that the 14 MHz up and 14 MHz down, originally allocated to the Aeronautical Mobile Satellite Service (1545-1559 MHz) and (1646.5-1660.5 MHz) be reallocated to a generic Mobile Satellite Service (Aeronautical, Land and Maritime), with priority and pre-emptive access provisions for aviation safety.

Coordination & Interoperability

The cross hatched segments in Figure 2 conceptually illustrate potential coordination problem areas resulting from overlapping service areas and differences in international and domestic allocations.

Coordination and technical, operational and institutional interoperability agreements between systems will be difficult, at best, to resolve. However, they must and can be solved with cooperation on the part of all parties.

In reality much of the U.S. and Canada lie within potential areas of conflict since the patterns of Inmarsat and the Soviet Union's Volna overlay these countries. Coordination with the Soviet Union should not be too difficult since they are not competing for U.S. markets. Volna also uses very little spectrum.

Let's also presume that conflicts with Inmarsat can be worked out in the spirit of cooperation and self interest. The question of protection to U.S. entities is then raised with respect to other service providers that may enter the market 3-5 years later operating in accordance with the new international tables in the same service areas.

What protection, if any, would the U.S. "Reservation" provide in this case?

Here is where the importance of the proposed 1992 conference becomes quite evident.

U.S. Domestic Proceedings

The American Mobile Satellite Consortium (AMSC) has applied for 14 MHz (1545-1559 and 1646.5-1660.5 MHz) and 3 orbital positions. The legality of allocating spectrum for Land Mobile Satellite Service in L band has been challenged by ARINC in recent filings.

Another question is the extent of flexibility and protection available to the AMSC and the FCC as a result of the "Reservation" taken by the U.S. at the 1987 WARC.

Some contend that the "Reservation" may offer psychological comfort but no protection. Others argue that the Reservation may allow some flexibility and, somewhat, questionable protection consistent with existing treaties and in particular with certain provisions of the 1982 Nairobi Convention.

The question of who provides public correspondence (air to ground mobile telephone) is also the subject of debate within the current proceedings.

Perhaps, additional information on the status of these proceedings can be provided by the FCC.

Standards

Extensive joint effort by the Land, Aeronautical and Maritime interests is needed.

Feeder Links

To be addressed in the 1988 Space WARC.

Summary

We are on the threshold of implementing a new multibillion dollar industry which can enhance economic development, dramatically improve disaster assessment and relief operations, improve rural health care and solve many safety and security concerns of the transportation industry (Air, Land and Marine).

Further delays in resolving conflicts between the vested interests will be extremely costly to users, providers and equipment manufacturers.

I urge you all to move quickly and decisively.

Let's use the 1992 conference to document and legalize what we must and can do now, namely:

CONCILIATE

COOPERATE

COORDINATE.

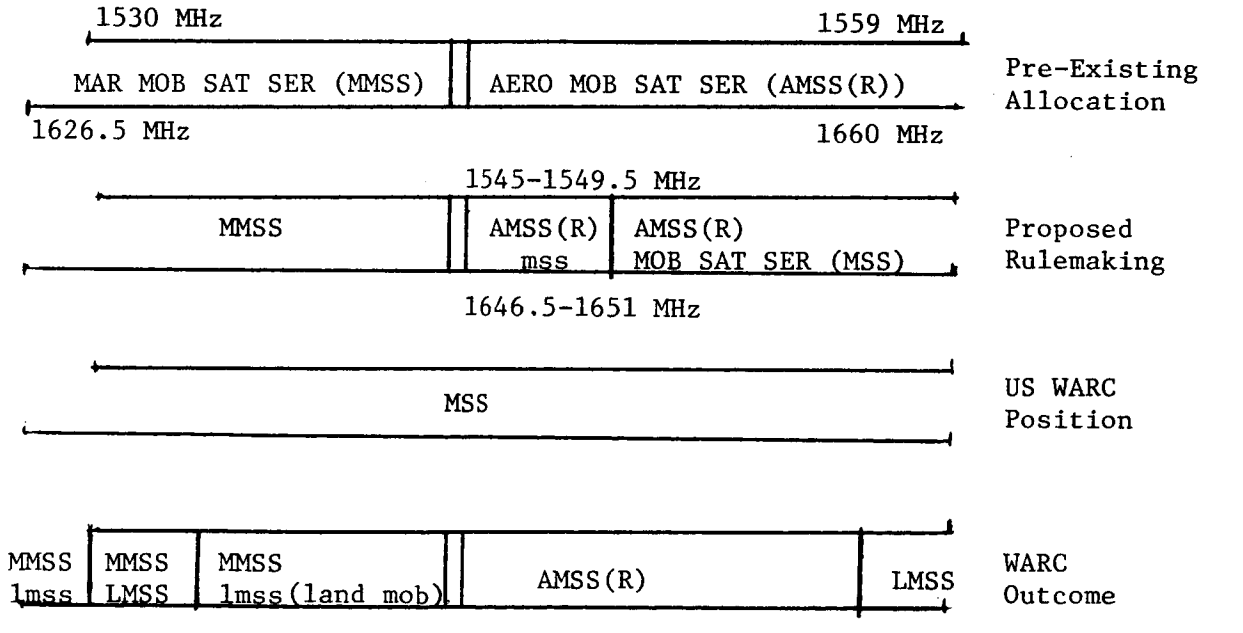

Fig. 1 Comparison of "L" Band Proposals

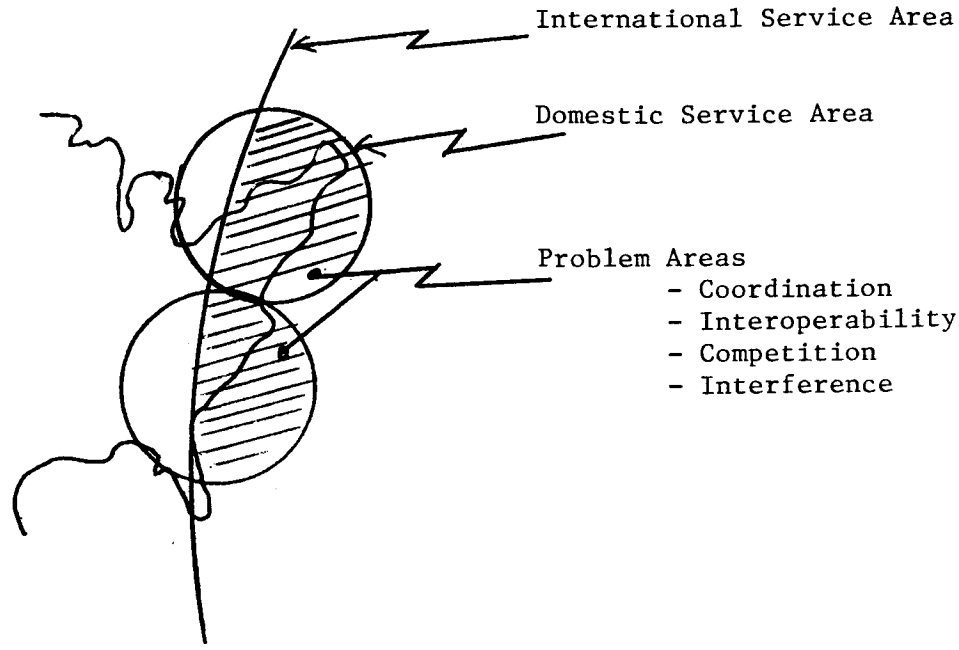

Fig. 2. Overlapping Service Areas

REFERENCES

NASA. 11/24/82 Petition for Rulemaking to Establish a Mobile Satellite Service and to Allocate Frequencies (Filed with the FCC November 29, 1982)

The Federal Communications Commission 7/24/86. General Docket #84-1234, a Report and Order allocating spectrum to the Mobile Satellite Service

ITU. Geneva, 1987 Final Acts of the World Administrative Radio Conference for the Mobile Services (MOB-87)

USA. MOB 9/18/87 Document 156-E Mobile-Satellite Service Implementation and Institutional Considerations (WARC 87 Information Paper)

USA. MOB 9/7/87 Document 79-E Economic and Operational Advantages to Users And Providers of Satellite Systems in the Mobile-Satellite (WARC 87 Information Paper)

American Mobile Satellite Consortium. 2/1/88 (Joint Amendment Filed with the FCC)