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INTERNATIONAL CIVIL AVIATION ORGANIZATION

FOURTEENTH MEETING ON THE IMPROVEMENT OF AIR TRAFFIC SERVICES OVER THE SOUTH ATLANTIC

Montevideo, Uruguay, 7 to 9 May 2008

Agenda Item 2: Communications, navigation, surveillance (CNS)

CAFSAT Network space segment re-allocation

(Presented by Spain)

SUMMARY

This paper present the necessity of an urgent study to analyze the satellite re-allocation of CAFSAT network and member actions required to permit the continuity of the service as a result of the end of life of present serving satellite: INTELSAT IS-801

1. INTRODUCTION

1.1 CAFSAT network was a result of SAT member states negotiation to solve common problems in telecommunication services. It started as a three node network linking Las Palmas, Dakar and Sal and has presently extended to up to ten nodes (the tree mentioned plus Santa Maria, Lisbon, Casablanca, Nouakchott, Johannesburg, Recife and Buenos Aires). The nodes are spread over two continents and a couple of them are even outside hemispheric coverage of relevant C-band satellites over the Atlantic. The first node was implemented in 1999 using IS-801 (328.5ºE), a satellite that has demonstrate to provide optimal coverage for the network topology because it permitted interhemispheric links and global links outside hemi coverage. Today's satellite life expectancy ranges between 15 to 20 years. In those days life expectancy extended to no more of 12 and IS-801 had consumed four. IS-801 end of life is expected by September 2008.

2. REQUIREMENTS OF A NEW SATELLITE

2.1 It is necessary to search for a new satellite to which CAFSAT services may be migrated. The basic desirable requirements of this satellite shall be:

1) Operate in standard C-Band.
2) Coverage over Europe, Africa and Central and South America, and not far in the geostationary arc to IS-801 to avoid re-allocations of antennas caused by unexpected obstacles in the visibility angles.
3) Include in the coverage the Northeast region of Brazil and the archipelagos of Canaries, Cape Verde, Açores and Madeira, preferably in hemispheric beams, but at least in global beam with

reasonable EIRP and G/T.

4) Permit beam interconnectivity to replicate present CAFSAT topology.
5) Permit commercial access to the capacity to the organisms owning and operating CAFSAT stations in member countries.
6) Permit contract of single carriers as requested.
7) Keep a reasonable price, equalling or improving the present amounts paid to INTELSAT, and offering same price to carriers in Hemi beam and global beam.

2.2 Conversation shall be initiated with INTELSAT to receive advice on which will be the "natural" substitute of IS-81 thus simplifying technical impact and administrative procedure. It is also advisable to receive comments from member states/organizations that may be operating

3. ACTIONS TO BE TAKEN IN THE STATIONS

3.1 It is also necessary to take into account the impact of a satellite change in all an every CAFSAT station. The parameters that shall be taken into account are:

1) Administrative and regulatory: All CAFSAT station owner shall contract its carrier in the new satellite and be regulatory enabled to do so
2) Physical location. It shall be checked that the new satellite selected is visible from the present antenna location without obstacles
3) Radiofrequency considerations: Radio devices may permit to tune to the new frequencies assigned (in the case of Dakar and Las Palmas diplexers have to be re-tuned), useful power available in the station shall be enough for the new link budget and station G/T shall also meet the reception needs

4. MIGRATION PLAN

4.1 A migration plan shall be taken into considerations to permit a rapid change to a new satellite with minimum or negligible operational impact. The migration plan is envisaged in three steps:

1st Step: Prepare a common study, which conclusions shall be agreed by member states/organizations that at least presents:

a) A proposal of a new satellite meeting all requested technical, administrative and commercial constraints
b) A detailed description, station by station of the technical and financial impact of station migration
c) A detailed schedule with a sequence of station modification/migration that minimizes the operational impact

2nd Step: Each member state organization shall procure all material and support required for the station modifications, if any, and execute those modification.

3rd step: following the predefined sequence, re-point antennas, bring up carriers and re-establish the links. This step will require a point to point test in all links

5. ACTION BY THE MEETING

5.1 The SAT/14 Meeting is invited to:

a) Take note of the information provided in this WP

b) Coordinate a common study with the logic presented in this WP, as a matter of urgency

c) Distribute the conclusions of the study to permit the member states/organizations to undertake possible minor stations upgrade to adequate to the new satellite and initiate administrative procedure to change space segment contracts

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