IWG 3- 042 r1
10/10/10

UNITED STATES OF AMERICA
DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

AGENDA ITEM 1.7:

Agenda Item 1.7: *to consider the results of ITU-R studies in accordance with Resolution **222** (Rev.WRC-07) in order to ensure long-term spectrum availability and access to spectrum necessary to meet requirements for the aeronautical mobile-satellite (R) service, and to take appropriate action on this subject, while retaining unchanged the generic allocation to the mobile-satellite service in the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz.*

BACKGROUND:

Prior to the 1997 World Radiocommunication Conference (WRC-97), the Radio Regulations contained an exclusive allocation to the aeronautical mobile-satellite (R) service (AMS(R)S) for the bands 1 545-1 555 MHz (space-to-Earth) and 1 646.5-1 656.5 MHz (Earth-to-space). To allow flexibility in frequency coordination and to achieve spectrum efficiency, WRC-97 changed this into a generic mobile-satellite service (MSS) allocation subject to the provision No. **5.357A** to prioritize access to the AMS(R)S spectrum with priority categories 1 to 6 of Article **44** of the Radio Regulations.

WRC-2000 adopted Resolution **222 (WRC-2000)** resolving that, in frequency coordination of MSS systems in the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz, administrations shall ensure that the spectrum needed for AMS(R)S communications within priority categories 1 to 6 of RR Article **44** in the bands where No. **5.357A** applies is accommodated. Also administrations shall ensure the use of the latest technical advances in order to achieve the most flexible and practical use of the generic allocations.

WRC-07 revised Resolution **222** to remove the request for studies to determine the feasibility and practicality of prioritization and real-time pre-emptive access issues, and invited ITU-R to carry out a number of additional studies towards ensuring long term spectrum availability for AMS(R)S.

In coordinating MSS systems under the procedure of Article **9**, the notifying administrations for MSS systems in the above bands have adopted two multilateral Memoranda of Understanding (MoU) to facilitate the coordination process: one MoU involves the administrations providing MSS over North America and a second MoU involves administrations providing MSS over ITU Regions 1 and 3. Usually on an annual basis under these MoUs, Operator Review Meetings (ORM) coordinate and review assignments across the bands 1 525-1 559/1 626.5-1 660.5 MHz so as to ensure fair and efficient use of the radio spectrum.

This multilateral process recognizes the communications needs of AMS(R)S and the resulting spectrum needed to accommodate the requirements of the systems offering this service, in accordance with the Radio Regulatory provisions. The current coordination process includes a validation process of requested spectrum assignments in order to justify the spectrum requirements and achieve efficient use of the spectrum. By adopting the MoUs, administrations have increased the efficiency of the coordination process. Additional coordination also takes place outside of the MoU process, where necessary.

WRC-12 is invited to consider the results of ITU-R studies and to take appropriate action on this subject, while retaining unchanged the generic allocation to the mobile-satellite service in the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz.

PROPOSALS:

NOC USA/1.7/1

ARTICLE 5

Frequency allocations
Section IV – Table of Frequency Allocations
(See No. 2.1)

Reasons: The current allocations to AMS(R)S pursuant to No 5.357A are sufficient to accommodate long term AMS(R)S spectrum requirements.

MOD USA/1.7/2

5.357A In applying the procedures of Section II of Article **9** to the mobile-satellite service in the bands 1 545-1 555 MHz and 1 646.5-1 656.5 MHz, priority shall be given to accommodating the spectrum requirements of the aeronautical mobile-satellite (R) service providing transmission of messages with priority 1 to 6 in Article **44**. Aeronautical mobile-satellite (R) service communications with priority 1 to 6 in Article **44** shall have priority access and immediate availability, by pre-emption if necessary, over all other mobile-satellite communications operating within a network. Mobile-satellite systems shall not cause unacceptable interference to, or claim protection from, aeronautical mobile-satellite (R) service communications with priority 1 to 6 in Article **44**. Account shall be taken of the priority of safety-related communications in the other mobile-satellite services. (The provisions of Resolution **222 (WRC-2012)** shall apply.) (WRC-2012)

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Reasons: Consequential to the proposed MOD to Resolution **222**

NOC USA/1.7/3

5.362A

Reasons: For the bands covered by agenda item 1.7, the 1 555-1 559 MHz and 1 656.5-1 660.5 MHz bands with the 2 x 10 MHz in No. **5.357A** are sufficient to accommodate AMS(R)S operations inside the United States. No additional spectrum is required to satisfy this agenda item.

NOC USA/1.7/4

ARTICLE 9

Procedure for effecting coordination with or obtaining agreement of other administrations[1, 2, 3, 4, 5, 6, 7, 8] (WRC-07)

Reasons: No changes to Article 9 are needed for Agenda Item 1.7. The Modified Resolution 222 (WRC-2012) provides adequate provisions to address the accommodation of the long term AMS(R)S requirements pursuant to RR 5.357A.

MOD USA/ 1.7/5

RESOLUTION 222 (Rev.WRC-12)

Use of the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz by the mobile-satellite service, and procedures to ensure long-term spectrum access for the aeronautical mobile-satellite (R) service

The World Radiocommunication Conference (Geneva, 2012),

considering

a) that prior to WRC-97, the bands 1 530-1 544 MHz (space-to-Earth) and 1 626.5-1 645.5 MHz (Earth-to-space) were allocated to the maritime mobile-satellite service and the bands 1 545-1 555 MHz (space-to-Earth) and 1 646.5-1 656.5 MHz (Earth-to-space) were allocated on an exclusive basis to the aeronautical mobile-satellite (R) service (AMS(R)S) in most countries;

b) that WRC-97 allocated the bands 1 525-1 559 MHz (space-to-Earth) and 1 626.5-1 660.5 MHz (Earth-to-space) to the mobile-satellite service (MSS) to facilitate the assignment of spectrum to multiple MSS systems in a flexible and efficient manner;

c) that WRC-97 adopted No. **5.353A** giving priority to accommodating spectrum requirements for and protecting from unacceptable interference distress, urgency and safety communications of the Global Maritime Distress and Safety System (GMDSS) in the bands 1 530-1 544 MHz and 1 626.5-1 645.5 MHz and No. **5.357A** giving priority to accommodating spectrum requirements for and protecting from unacceptable interference the AMS(R)S providing transmission of messages with priority categories 1 to 6 in Article **44** in the bands 1 545-1 555 MHz and 1 646.5-1 656.5 MHz;

d) that AMS(R)S is an essential element of ICAO CNS/ATM to provide safety and regularity of flight in the civil air transportation,

further considering

a) that coordination between satellite networks is required on a bilateral basis in accordance with the Radio Regulations, and, in the bands 1 525-1 559 MHz (space-to-Earth) and 1 626.5-1 660.5 MHz (Earth-to-space), coordination is partially assisted by regional multilateral meetings;

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b) that, in these bands, geostationary mobile-satellite system operators currently use a capacity-planning approach at multilateral coordination meetings, with the guidance and support of their administrations, to periodically coordinate access to the spectrum needed to accommodate their requirements;

c) that spectrum requirements for MSS networks, including the GMDSS and AMS(R)S, are currently accommodated through the capacity-planning approach and that, in the bands to which Nos. **5.353A** or **5.357A** apply, this approach, and other methods may assist in accommodating the expected increase of spectrum requirements for GMDSS and AMS(R)S;

d) that Report ITU-R M.2073 has concluded that prioritization and inter-system pre-emption between different mobile-satellite systems is not practical and, without a significant advance in technology, is unlikely to be feasible for technical, operational and economical reasons;

e) that there is existing and increasing demand for spectrum for AMS(R)S and non-AMS(R)S by several mobile satellite systems in the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz;

f) that future requirements for GMDSS spectrum may require additional allocations,

recognizing

a) that absolute priority to all telecommunications concerning safety of life at sea, on land, in air or in outer space is given by No. 191 of the ITU Constitution;

b) that the International Civil Aviation Organization (ICAO) has adopted Standards and Recommended Practices (SARPs) addressing satellite communications with aircraft in accordance with the Convention on International Civil Aviation;

c) that all air traffic communications as defined in Annex 10 to the Convention on International Civil Aviation fall within priority categories 1 to 6 of Article **44**;

d) that Table 15-2 of Appendix **15** identifies the bands 1 530-1 544 MHz (space-to-Earth) and 1 626.5-1 645.5 MHz (Earth-to-space) for distress and safety purposes in the maritime mobile-satellite service as well as for routine non-safety purposes,

e) that any administration having difficulty in applying the procedures of Articles **9** and **11** with respect to No. **5.357A** and this Resolution may at any time request assistance of the Radiocommunication Bureau and the Board under the relevant provisions of the Radio Regulations, including Article **7**, the relevant provisions of Articles **9** and **11**, as well as Articles **13** and **14**,

noting

that, since spectrum resources are limited, there is a need to use them in the most efficient manner within and amongst various MSS systems,

resolves

1 that, in frequency coordination of MSS in the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz, the notifying administrations of mobile-satellite networks shall ensure that the spectrum needed for distress, urgency and safety communications of GMDSS, as elaborated in Articles **32** and **33**, in the bands

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where No. **5.353A** applies, and for AMS(R)S communications within priority categories 1 to 6 of Article **44** in the bands where No. **5.357A** applies, is met;

2 that the notifying administrations of mobile-satellite networks shall ensure the use of the latest technical advances in mobile-satellite systems, in order to achieve the most flexible, efficient and practical use of the generic MSS allocations;

3 that the notifying administrations of mobile-satellite networks shall ensure that, if spectrum requirements of an MSS, including AMS(R)S, network is decreasing relative to the previous coordination meeting, the corresponding unused spectrum resources shall be released to facilitate efficient use of spectrum;

4 that the notifying administrations of mobile-satellite networks shall ensure that MSS operators carrying non-safety-related traffic yield capacity, as and when necessary, to accommodate the spectrum requirements for distress, urgency and safety communication of GMDSS communications, as elaborated in Articles 32 and 33, and for AMS(R)S communications within priority categories 1 to 6 of Article 44; *this* could be achieved in advance through the coordination process in *resolves 1* and the procedures contained in the Annex to this Resolution shall apply.

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i) . to study, as a matter of urgency, the existing and future spectrum requirements of the aeronautical mobile-satellite (R) service;¶
ii) . to assess whether the long-term requirements of the AMS(R)S can be met within the existing allocations with respect to No. **5.357A** while retaining unchanged the generic allocation for the mobile-satellite service in the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz, and without placing undue constraints on the existing systen ... [34]

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ANNEX

Procedures to implement No. 5.357A and Resolution 222 (Rev. WRC-12) to address AMS(R)S Spectrum Requirements

1) The notifying administrations of planned MSS, including AMS(R)S, networks shall submit the required technical characteristics and other relevant information of their MSS networks in accordance with Appendix **4**. Coordination of these MSS systems with other affected satellite systems operating in the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz shall proceed in accordance with Articles **9** and **11** and other relevant provisions of the Radio Regulations, as appropriate.

2) To further facilitate coordination under Articles **9** and **11**, the notifying administrations of MSS, including AMS(R)S, networks may authorize their respective MSS satellite operators, including AMS(R)S satellite operators, to enter into bilateral and multilateral coordination processes to secure operator agreements on access to spectrum for their satellite systems.

3) At frequency coordination meetings, including operator meetings referred to in 2), the notifying administration or its respective MSS satellite operator shall present the spectrum requirements of each AMS(R)S system developed in accordance with an agreed methodology and accompanied with the information justifying such requirements. The other notifying administrations or their respective MSS satellite operators then validate the requirements under agreed criteria. The notifying administrations and/or their MSS operators shall accommodate validated AMS(R)S spectrum requirements in accordance with priority categories 1 to 6 of Article **44**. In the event that spectrum requirements of an MSS, including AMS(R)S, network is decreasing relative to the previous coordination meeting, the notifying administration of the MSS network shall release the corresponding unused spectrum resources.

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4) The notifying administrations of MSS systems, including AMS(R)S, have responsibility to ensure that their respective assignments are compatible in the relevant bilateral or multilateral frequency coordination meetings (in particular when those systems span over various geographic area(s)). In the event an administration notifying an AMS(R)S system experiences difficulty in accommodating its validated AMS(R)S spectrum requirements at these meetings, it should invoke No. **5.357A** (as per the procedures described in Items 5, 6 and 7 below).

5) In the event that a notifying AMS(R)S administration invokes No. **5.357A** based on the results of a bilateral or multilateral coordination operators' meeting, that administration shall ensure that its designated operator does not accept the spectrum sharing arrangement developed at the operators' meeting, as acceptance indicates that the agreement satisfies requirements presented. That AMS(R)S administration shall inform the other administrations involved in the coordination process of its intention to invoke No. **5.357A**, with a copy to the Bureau. The concerned AMS(R)S administration then calls for an administrations' frequency coordination meeting of all affected notifying administrations, which should be convened within six months. That notifying AMS(R)S administration shall seek the assistance of the Radiocommunication Bureau in accordance with Articles **7** and **13,** if any of the affected notifying administrations do not agree to meet to resolve the raised issues.

6) At the administrations' frequency coordination meeting, all affected notifying administrations shall review and validate the AMS(R)S requirements of the notifying administration referred to in 5) above. All affected notifying administrations shall cooperate toward accommodating any validated

AMS(R)S requirements in accordance with No. **5.357A** and Resolution **222 (Rev.WRC-12)**. In this regard, notifying administrations shall ensure that MSS operators carrying non safety-related traffic yield capacity, as and when necessary, to accommodate the spectrum requirements for AMS(R)S communications with priority categories 1 to 6 of Article **44**.

7) If the matter remains unresolved at the administrations' frequency coordination meeting referred to in 6) above, the notifying AMS(R)S administration shall seek the assistance of the Radiocommunication Bureau pursuant to Articles **7** and **13** and notify the respective administrations indicating that its AMS(R)S requirements have not been satisfied. The Radiocommunication Bureau shall provide a report and assistance in accordance with No. **13.3**.

8) To facilitate the users' long term planning, each MSS operator providing AMS(R)S service or its notifying administration may decide to disclose information regarding its coordinated AMS(R)S spectrum resource (e.g. to AMS(R)S users of such service).

Reasons: It is necessary to explicitly identify the coordination process that should be used, highlighting the regulatory provisions in place describing administrations' rights and obligations when seeking priority access to AMS(R)S spectrum as well as the process to be followed when validated AMS(R)S spectrum needs of a system are not fulfilled.

ADD USA/1.7/6

RESOLUTION [SPECT.METHOD] (WRC-12)

Methodology to determine AMS(R)S Spectrum Requirements within the bands 1 545-1 555 MHz (space-to-Earth) and 1 646.5-1 656.5 MHz (Earth-to-space)

The World Radiocommunication Conference (Geneva, 2012),

Considering

a) that coordination between satellite networks is required on a bilateral basis in accordance with the Radio Regulations, and, in the bands 1 525-1 559 MHz (space-to-Earth) and 1 626.5-1 660.5 MHz (Earth-to-space), coordination is partially assisted by regional multilateral meetings;

b) that, in these bands, geostationary mobile-satellite system operators currently use a capacity-planning approach at multilateral coordination meetings, with the guidance and support of their administrations, to periodically coordinate access to the spectrum needed to accommodate their requirements, including AMS(R)S spectrum requirements;

c) that spectrum requirements for MSS networks, including the AMS(R)S, are currently accommodated through the capacity-planning approach in the bands to which No. **5.357A** applies;

d) that within the ITU-R there is no agreed methodology for computing AMS(R)S spectrum requirements;

e) that within the ITU-R, some administrations have expressed a desire to develop an agreed methodology for computing AMS(R)S spectrum requirements on an ongoing basis for purposes of bilateral and multilateral MSS coordinations conducted pursuant to Article 9 of the Radio Regulations;

f) that, since spectrum resources are limited, there is a need to use them in the most efficient manner within and amongst various MSS systems,

recognizing

a) that WRC-97 allocated the bands 1 525-1 559 MHz (space-to-Earth) and 1 626.5-1 660.5 MHz (Earth-to-space) to the mobile-satellite service (MSS) to facilitate the assignment of spectrum to multiple MSS systems in a flexible and efficient manner;

b) that WRC-97 adopted No. **5.357A** giving priority to accommodating spectrum requirements for and protecting from unacceptable interference the AMS(R)S providing transmission of messages with priority categories 1 to 6 in Article **44** in the bands 1 545-1 555 MHz and 1 646.5-1 656.5 MHz,

noting

that AMS(R)S is an essential element of ICAO CNS/ATM to provide safety and regularity of flight in the civil air transportation,

resolves

to invite the ITU-R to conduct studies on and develop in one or more ITU-R Recommendations a methodology to compute spectrum requirements for AMS(R)S related to the categories 1 to 6 of Article **44** and to take into account *considering c* in conducting these studies.

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Reasons: To have the ITU-R conduct studies on and develop in one or more ITU Recommendations, a methodology to compute the spectrum requirements for AMS(R)S related to categories 1 to 6 of Article 44 to assist notifying MSS and AMS(R)S administrations in satellite coordination in their efforts to satisfy AMS(R)S requirements in the bands 1545-1555MHz and 1646.5- 1656.6 MHz pursuant to Mod Resolution 222(WRC-12)

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, and that the application of this Resolution may impact the provision of services by non-AMS(R)S systems in the mobile satellite service

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to conduct, in time for consideration by WRC-11, the appropriate technical, operational and regulatory studies to ensure long-term spectrum availability for the aeronautical mobile-satellite (R) service (AMS(R)S) including:

i) to study, as a matter of urgency, the existing and future spectrum requirements of the aeronautical mobile-satellite (R) service;

ii) to assess whether the long-term requirements of the AMS(R)S can be met within the existing allocations with respect to No. **5.357A** while retaining unchanged the generic allocation for the mobile-satellite service in the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz, and without placing undue constraints on the existing systems operating in accordance with the Radio Regulations;

iii) to complete studies to determine the feasibility and practicality of technical or regulatory means, other than the coordination process referred to in *resolves* 1 or the means considered in Report ITU-R M.2073, in order to ensure adequate access to spectrum to accommodate the AMS(R)S requirements as referenced in *resolves* 3 above, while taking into account the latest technical advances in order to maximize spectral efficiency;

iv) if the assessment identified in *invites ITU-R* i) and ii) indicates that these requirements cannot be met, to study existing MSS allocations or possible new allocations only for satisfying the requirements of the aeronautical mobile satellite (R) service for communications with priority categories 1 to 6 of Article **44**, for global and seamless operation of civil aviation taking into account the need to avoid undue constraints on existing systems and other services,

invites WRC-11

to consider the results of the above ITU-R studies and to take appropriate action on this subject, while retaining unchanged the generic allocation to the mobile-satellite service in the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz,

invites

the International Civil Aviation Organization (ICAO), the International Maritime Organization (IMO), the International Air Transport Association (IATA), administrations and other organizations concerned to participate in the studies identified in *invites ITU-R* above.

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