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**AGENDA ITEM 1.10
PRELIMINARY VIEWS FOR WRC-19
(Item on the Agenda: 3.1 (SGT2A))
(Document submitted by the Rapporteur)**

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SGT2A – Radiolocation, Amateurs, Maritime & Aeronautical

Coordinator: Michael Razi (CAN)

Alternate Coordinator: Thomas vonDeak (USA)

Rapporteur Agenda Item: Luis Fernando (B)

Alternate Rapporteur Agenda Item: Sandra Wright (USA)

Agenda Item 1.10: *to consider spectrum needs and regulatory provisions for the introduction and use of the Global Aeronautical Distress and Safety System (GADSS), in accordance with Resolution 426 (WRC-15)*

BACKGROUND

While air travel in recent years has represented some of aviation's safest years in terms of the number of accidents, the tragedy of Malaysia Airlines flight 370 in March 2014 highlighted needed improvements in the global air navigation system requiring urgent attention. To address these improvements, the aviation community embarked on a global effort to develop GADSS, and International Civil Aviation Organization (ICAO) forged consensus among its Member States and the international air transport industry on the near-term priority for a more comprehensive method of tracking civilian airline flights, regardless of their global location or destination.

The International Civil Aviation Organization (ICAO) held a Special Meeting on Global Flight Tracking of Aircraft in Montreal May 2014, and formed an ICAO ad hoc Working Group to develop a concept of operations to support future development of GADSS. A draft version of a concept of operations for GADSS, was developed by the ICAO Ad-hoc WG on flight tracking and introduced at the 2nd ICAO High Level Safety Conference (2nd HLSC, 2 – 5 February 2015). The 2nd HLSC recommended that ICAO should expeditiously finalize and use the GADSS for the implementation of normal and abnormal aircraft tracking; autonomous distress flight tracking; search and rescue (SAR) activities; automatic retrieval of data from cockpit voice and flight data recorders; and related procedures including management of such information. In June 2015 the Ad-hoc WG delivered a final version of the GADSS concept of operations to ICAO, for consideration to publish as an ICAO document under the authority of the Secretary General.

As a result of expected developments in the implementation of various elements of GADSS, modifications to the Radio Regulations may be required to facilitate emerging needs of the aviation community and related distress and safety agencies. This agenda item was adopted at WRC-15 with sufficient flexibility to address potential modifications to the Radio Regulations required to allow implementation of the GADSS, taking into consideration the incumbent services that may be impacted as a consequence of these potential modifications. Specifically, Resolution 426 (WRC-15) invited the ITU-R to conduct relevant studies taking into account information provided by ICAO on the requirements for both the terrestrial and satellite components of GADSS.

During recent meetings, the Frequency Spectrum Management Panel (FSMP) of ICAO provided guidance on the type of spectrum required for each of the foreseen GADSS functions.

GADSS Spectrum Guidance*

Function	Spectrum Category
Normal Tracking	A
Surveillance Tracking	B
Distress Tracking	C
Data Retrieval (not used for real-time functions)	A

A: any type of spectrum properly allocated, on a primary basis, for the function being performed

B: only protected aeronautical safety spectrum can be used.

C: only protected aeronautical safety spectrum, or protected distress spectrum (e.g., 406 - 406.1 MHz), can be used

*This table is not intended to imply that any new spectrum allocations are necessary to support GADSS.

The above guidance provided by the ICAO FSMP on the type of spectrum to be used for the identified functions, can be further described by separating the individual functions and quantifying what is available to support that function, as follows:

- 1) **Normal tracking** is identified as the means of following an aircraft throughout its entire flight within the context of availability of position reporting at least once in 15 minutes. This function is deemed to be under the purview of the airline or company operating the aircraft. More than one method is available for an airline or company to accomplish flight following or normal tracking of a flight. Spectrum requirements for normal tracking were identified at WRC-15.
- 2) **Surveillance tracking** is a specific air traffic control function that is accomplished in accordance with ICAO Standards and Recommended Practices relative to airspace separations standards, technical standards and also the onboard avionics certification. No additional spectrum requirements have been identified by ICAO for this capability.
- 3) **Distress tracking**, in the operational context, will occur during emergency conditions of an aircraft. This is a performance-based requirement which is not technology-specific. Performance requirements include the ability to be manually activated, operate in the event of aircraft power loss, and communicate information to relevant authorities such as search and rescue and air traffic services. Principle methods being considered within ICAO for this function include the use of emergency position-indicating radiobeacons (EPIRBs) and emergency locator transmitters – distress tracking (ELT(DT)) both of which operate on 406.1 MHz, which is already allocated to the mobile satellite service (Earth-to-space). No additional spectrum requirements have been identified by ICAO for this capability.
- 4) **Data retrieval** in respect to the transmission of flight data is an operational capability that is still under discussion within the responsible operational and technical Panels of ICAO. Until there is maturity regarding an agreed method to accomplish flight data retrieval, it remains premature to determine any potential for additional new spectrum requirements. ICAO and ITU-R continue to work closely together as discussions of spectrum requirements for data retrieval progress.

Some of the key issues that have been identified with the development and implementation of GADSS, which are expected to be addressed by ICAO include:

- What are the data traffic requirements for different system components of GADSS (such as the aircraft tracking, autonomous distress and flight data recovery systems) and their terrestrial and satellite components at each phase of the operation?
- What are the radiocommunication requirements related to safety-of-life applications?
- What are the performance criteria for terrestrial and satellite systems?
- After an analysis of the existing allocations to the relevant aeronautical services, is any additional spectrum required?
- If additional spectrum is required, would sharing and/or compatibility with existing services be possible?

ICAO has communicated, in a response to WP5B, that their initial expectation is that the three forms of tracking (normal, surveillance and distress) do not require additional spectrum allocations. Studies are continuing regarding the operational performance and spectrum requirements for data retrieval.

PRELIMINARY VIEW:

Brazil, Canada, USA

1. The quantification and characterization of the radiocommunications requirements for both the terrestrial and satellite components of GADSS are the responsibility of ICAO;
2. Based on those requirements, relevant studies should be conducted in the ITU-R to review existing regulatory provisions and determine if additional regulatory changes are needed;
3. ITU-R studies should be done in coordination with ICAO.