International Civil Aviation Organization

MIDANPIRG Communication Navigation and Surveillance Sub-Group (CNS SG)

Sixth Meeting
(Tehran, Iran, 9 – 11 September 2014)

Agenda Item 5: Performance Framework for CNS Implementation in the MID Region

WRC 2015 AGENDA ITEM 1.5

(Presented by I.R.Iran)

SUMMARY

This paper describes a method by utilization of satellites operating in the fixed satellite service for the provision of command and non-payload communication for unmanned aircraft systems.

Action by the meeting is at paragraph 4.

REFERENCES

- Agenda Item 1.5 WRC15
- DOC 9750

1. INTRODUCTION

1.1 Frequency spectrum availability has always been critical for aviation and is expected to become even more critical with the implementation of new technologies. In addition to the five technology Roadmaps pertaining to Communication, Navigation, Surveillance (CNS), Information Management (IM) and Avionics, a global aviation spectrum strategy for the near-, medium- and long-term must support implementation of the GANP.

1.2 The ICAO position and policy for the ITU WRC horizon extends beyond the 15-year time frame of the current GANP and anticipates the development of the future aviation system. It is imperative that Civil Aviation Authorities and other Stakeholders not only coordinate the aviation position with their State's radio regulatory authorities, but also actively participate in the WRC process.

1.3 Iranian Aviation frequency experts practically participate in national WRC studies and seriously support ICAO frequency policies.

2. DISCUSSION

2.1 Agenda Item 1.5 calls for studies to determine whether a system operating under an allocation to the Fixed Satellite Service (FSS), which is regarded as a non-safety service, can be used to support Unmanned Aircraft System (UAS) Control and Non-payload Communications (CNPC)

which has been determined to be a safety application. If such use is found feasible, then any resultant technical and regulatory actions should be limited to the case of UAS using satellites, as studied, and not set a precedent that puts other aeronautical safety services at risk.

2.2 Unmanned Aircraft Systems (UAS) consist of an Unmanned Aircraft (UA) and associated Unmanned Aircraft Control Station (UACS).

2.3 At WRC-12, the spectrum requirements of UAS were considered and several new allocations were made to support UAS operations. Under Agenda Item 1.3, WRC-12 concluded in particular that the spectrum requirements for UAS satellite CNPC links can be accommodated in existing satellite allocations and don't require new or modified procedures/provisions.

2.4 The requirement for BLOS (satellite) communications (54 MHz) cannot be fulfilled in the limited spectrum available in the frequency bands 1.5/1.6 GHz, and no AMS(R)S satellite system currently operates in the frequency band 5 000 – 5 150 MHz to support current/near-term UAS CNPC.

2.5 Existing systems operating in the FSS in the unplanned frequency bands 4/6 GHz, 12/14 GHz and20/30 GHz have spectrum capacity available that can meet the requirements for BLOS communications and could be used for UAS CNPC provided that the principles detailed below are fulfilled. However the FSS is not recognized in the ITU as a safety service.

2.6 ICAO is responsible for developing the technical Standards and Recommended Practices (SARPs) for CNPC to ensure safe operation of UAS in non-segregates airspace. UAS CPNC operations in non-segregated airspace need to satisfy ICAO SARPS requirements.

2.7 CNPC links must meet specific Required Communications Performance (RCP) to satisfy the aviation safety requirements. Regulatory measures will be required to address some of the safety related conditions.

2.8 Based on studies to determine the regulatory, technical and operational conditions for possible Control and Non-payload Communications (CNPC) links for Unmanned Aircraft System (UAS) in non-segregated airspace in the frequency bands allocated to the FSS while considering the particular needs for safe and reliable operation for this type of links.

2.9 It should be recognized that due to the very fundamental difference of the nature of regular FSS and CNPC for UAS operation, it will not be possible to obtain the same level of protection for CNPC UAS as aeronautical mobile (R) service, aeronautical mobile-satellite (R) service, or the aeronautical radio navigation service as laid down in Radio Regulations

3. CONCLUSION

3.1 We believe that the numerous obstacles, constraints and due to uncertainty in the operational, regulatory and procedural aspects of the FSS as a commercial communication link to be used for an application of highly safety aspects, it is difficult, if not impossible, to state, at this stage, that FSS could be used to provide CNPC application in UAS.

4. ACTION BY THE MEETING

4.1 The meeting is invited to consider Agenda Item 1.5 WRC2015 and oppose to operate of CNPC in using FSS links.

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