International Civil Aviation Organization

THE THIRD MEETING OF IONOSPHERIC STUDIES TASK FORCE (ISTF/3)

15 – 17 October 2013, Seoul, Republic of Korea

Agenda Item 2: Review outcome of relevant meetings/conferences

b) ICAO NSP

REVIEW OUTCOME OF ICAO NAVIGATION SYSTEMS PANEL WORKING GROUP OF THE WHOLE (WGW/13) MEETING

(Presented by the Secretariat)

SUMMARY

ICAO Navigation Systems Panel (NSP) Working Group of the Whole (WGW/13) Meeting was held in Montreal from 19 to 28 March 2013. This paper reports relevant outcome of the meeting.

1. INTRODUCTION

1.1 Navigation Systems Panel (NSP) Working Group of the Whole and other NSP Working Groups and Sub-Groups (**WGW/13)** met at the International Air Transport Association (IATA) Conference Facility in Montreal, Canada from 19 to 28 March, 2013. WGW meeting sessions were chaired by the Rapporteur of Working Group 1 (WG1), Benoit Roturier. Four of the five WG1 subgroups held separate meetings during the time period allocated to the NSP meeting:

- The Cat II/III Subgroup (CSG) (Rapporteur: Tim Murphy),
- The GNSS SARPs Subgroup (GSSG) (Rapporteur: Eric Chatre),
- The Spectrum Subgroup (SSG) (Rapporteur: Felix Butsch), and
- The Conventional Navaids and Testing Subgroup (CNTSG) (Rapporteur: Ken Ashton).

2. DISCUSSION

2.1 It was informed that in order to stream line work programme with the follow-up actions to the outcome of 12th Air Navigation Conference, *"Job cards"* need to be prepared, discussed and provided for consideration and approval by Air Navigation Commission.

2.2 *"Job cards": Amendments to NSP work programme*, presented the purpose and format of "job cards" and recommended the development of a number of job cards reflecting required amendments to the NSP work program. The Secretary reminded the meeting that Mr. Fleming, a member of the Air Navigation Commission, had introduced the job card process during the May 2012 meeting. He then briefly presented the job card format. He also explained that the meeting should focus its attention on defining the work it proposes to do in response to those recommendations from

AN Conf/12 for which it has the lead role. Job cards will need to be filled in to describe the corresponding tasks.

2.3 The meeting noted that the AN Conf/12 placed a renewed emphasis on specific areas such as multi-constellation solutions, mitigation of GNSS vulnerabilities, including space weather effects, and coordination across ICAO panels and other groups.

2.4 The responsibility for preparing drafts of job cards to be reviewed by WGW was allocated to the different subgroups.

2.5 In response to the AN Conf/12 recommendations, NSP reviewed its work program as well as the recommendations from AN Conf/12 and agreed that six job cards should be developed. These job cards document the work that needs to be undertaken or further emphasized in order to address the AN Conf/12 recommendations that are relevant to NSP. The NSP developed five job cards during the meeting and the Secretary will develop an additional one. The six job cards address the following work areas:

a) GNSS radio frequency interference
b) GNSS evolution and multi-constellation
c) Mitigation of space weather effects
d) Alternative position navigation and timing (APNT)
e) Navigation aid rationalization
f) Maintenance of the Navigation Roadmap (to be developed by the Secretary)

2.6 During the last review of the job cards by the WGW, the Secretary noted that he may further edit the job cards prior to presentation to the Commission. The presentation will take place prior to the Commission's summer recess, i.e., in late May or early June.

2.7 Regarding *GNSS IONOSPHERE AND SPACE WEATHER ISSUES*, the meeting reviewed a paper presented by Japan at AN Conf/12 addressing ionosphere and space weather issues related to GNSS implementation. The AN Conf/12 paper encouraged coordinated actions at the international level for the collection of reliable data in order to characterize space weather phenomena relevant to GNSS navigation. The paper also highlighted the need to work on the operational concept for the notification of space weather events for air navigation.

2.7.1 The meeting confirmed that it fully supports the work needed in these areas and included corresponding tasks in its proposed work program (job cards).

2.8 The job-card NSP007 with title "Mitigation of Space Weather Effects" as follow-up task to AN Conf/12 Recommendations 6/7 and 6/9 submitted by NSP through the Secretary was approved by AN Commission on 13 June 2013. The approved job-car NSP007 is provided in the Attachment to this paper. The next review date for this Task is expected to be in November 2013 for a debriefing of the NSP WGW/14.

3. ACTION BY THE MEETING

3.1 The meeting is invited to note the information provided in this paper.

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Working Group on Strategic Review and Planning – ANWP Amendment Input Form (Job-card)

PART I

Category	Safety	Sustainability	**Implementation**	Reference: NSP007
Title	Mitigation of Space Weather Effects			
Proposed by	12th Air Navigation Conference (Recommendations 6/7, a. and 6/9)			
Problem Statement	GNSS operations can be affected by severe space weather events			
Specific Details (including impact statements) NSP report on ionospheric effects o	System designers need to make assumptions on the worst case ionospheric delay for the qualification of the systems. Similarly, States need to understand the potential for system performance degradation due to severe ionospheric disturbance/space weather events and the mitigation actions that need to be implemented. Guidance on the effect of space weather on GNSS operations and possible mitigation actions needs to be developed. This would, inter alia, involve coordination of international data collection campaigns to establish threat models for space weather, and optimum use of the available space weather information in a global context.			

PART II

Rating	High	**Medium**	Low	
Rationale for acceptance/rejection				
Action already in progress	NSP has already developed material, in Doc 9849 and a white paper published in 2011 (2nd edition), to describe the main effect of ionospheric events on GNSS operations. NSP coordinates an international data collection campaign for the characterisation of ionospheric threat models for single frequency SBAS and GBAS			
Interdependencies/References	Doc 9849 (*Global Navigation Satellite System (GNSS) Manual*); High Level Requirements; Concept of Operations			

Required Action	By Whom/Resources	Deliverables	Timescales (for deliverable)
1 Evaluate and make available to States information on known space weather threats to GNSS operations	NSP (in coordination with MET section)	Proposed means to predict/notify space weather events relevant for air navigation (possible update to Ionosphere White Paper)	Q4 2016
2 Develop guidance material for the coordination of regional and global activities on ionosphere GNSS threat characterization (including dual frequency services)	NSP	Draft amendment to Doc 9849	2014-2016
3 Study the optimum use of space weather information that is globally applicable from low to high magnetic latitude regions for enhanced GNSS performance	NSP	Draft guidance material (possible update to Concept of Operations)	Q4 2016
4			

Issue Date: 22 May 2013	Date Assessed by SRP: 12 June 2013	Date Approved by ANC: 13 June 2013	Next Review Date: November 2013	Completed Date: