



International Civil Aviation Organization

**EIGHTEENTH MEETING OF THE COMMUNICATIONS/NAVIGATION
AND SURVEILLANCE SUG-GROUP (CNS SG/18) OF APANPIRG**

Asia and Pacific Regional Sub-Office, Beijing, China
(21 – 25 July 2014)

Agenda Item 8: Aeronautical electromagnetic spectrum utilization

8.3) Review outcome of the Spectrum Review Task Force

**OUTCOME OF THE FIRST MEETING OF SPECTRUM
REVIEW WORKING GROUP**

(Presented by Secretariat)

SUMMARY

This paper presents the outcome of the First Meeting of the Spectrum Review Working Group (SRWG/1) of APANPIRG.

1. INTRODUCTION

1.1 The First Meeting of the Spectrum Review Working Group (SRWG/1) of APANPIRG was held in Bangkok, Thailand.

1.2 The meeting was attended by 8 participants from Australia, India, Singapore, and Thailand. Hong Kong China, New Zealand and Japan nominated experts but expressed regrets for being unable to have them participated in the meeting due to the current situation in Bangkok.

1.2.1 Mr. Paul Dowsett, Australia, Senior Engineering Specialist, Airservices Australia was elected chairman of the Working Group. Mr. Dowsett has 16 years experience as an engineer working in Air Traffic Communications, including 10 years with NATS (United Kingdom) in ATC voice communications and European standardization bodies. Mr. Paul Dowsett is now the technical engineering authority for aeronautical VHF, HF, and UHF communications in Australia.

2. DISCUSSION

2.1 The SRWG/1 noted the background having led to its creation, specifically the issue of a proposed deployment of 8.33 kHz channel spacing in the band 117.975-137 MHz in APAC Region for desirous States in the APAC Region, while VHF channels using 25 kHz spacing are currently assigned according to the Asia Pacific regional air navigation agreement adopted in 1993 that led to the following APANPIRG Decision:

Decision 17/6 – Establishment of Spectrum Review Working Group on 8.33 kHz channel spacing

That, ICAO Regional Office is requested to issue a letter to the States/Administrations concerned for nomination of spectrum management expert members of the spectrum review working group to study the requirement of 8.33 kHz channel spacing.

2.2 Initial discussion on the proposed approach for taking care of new VHF communications needs and potential introduction of 8.33 kHz spacing channel in the APAC Region was held with experts of Aeronautical Communication Panel WG-F and regional spectrum experts at the Regional Preparatory Group (RPG) meeting for ITU World Radiocommunication Conference 2015 (WRC-2015) from 11 to 12 March 2014. The RPG meeting considered that the 25 kHz spacing could be maintained for a period of time by relying on a more efficient coordination of the VHF bands (assignment and release) and by removing restriction of frequency pools for associated functions. It was informed that in Europe definite frequencies group associated with communication service function had been removed. Some lessons learnt from the introduction of 8.33 kHz in the European Region were discussed. The RPG meeting also identified the need to investigate the capability of ground VHF equipment employed by the States/Administration in the APAC Region as to 8.33 kHz spacing and requirement for retrofit of avionics including leading time for transition to 8.33 kHz spacing. It was observed that new aircraft from production line had already been equipped for such capability. However, as 8.33 KHz capability may come as an option on some new aircraft, early advance notice to minimize retrofit cost would be beneficial to the airspace users of APAC Region. Significant cost for older generation aircraft retrofit would be required in particular for those GA aircraft.

2.3 The RPG meeting was also reminded that in the foreseeable future there appears to be no requirement in USA for transitioning to 8.33 kHz, although traffic density is similar to that in Europe. Therefore, it would be a surprise if this would be required in APAC region in the near future. Considering that the new frequency separation criteria and ICAO global database being introduced would result in more efficiency in management of VHF bands and that the approach proposed was appropriate, the meeting developed the following Recommendation for consideration by the Spectrum Management Review Task Force (8.33 kHz) established by CNS SG of APANPIRG:

Recommendation 3: Spectrum Management Review Task Force to adopt the proposed approach and streamline the current assignment process, aiming at avoiding introduction of 8.33 kHz spacing in the APAC Region

That, the Spectrum Management Review Task Force follows the proposed 3 stages approach relying on new criteria being introduced at ICAO global level, since it is likely to bring enough possibilities of VHF frequencies assignments. The 8.33 Study group should also propose improvements to the existing regional VHF frequency assignment process based on the new tool, aiming at avoiding introduction of 8.33 kHz spacing in the APAC Region in the near future.

2.4 The meeting was informed that some Civil Aviation Administrations had requested airlines to be equipped with 8.33 kHz channel spacing capable avionics. However, general concern remains for retrofit of General Aviation and ageing aircraft.

2.5 Based on the the information above, the SRWG/1 meeting drafted its terms of reference which are placed at **Attachment A**. Accordingly, the meeting formulated the following draft Decision for consideration by the CNS SG/18 meeting:

Draft Decision 1/1 - Adoption of the Terms of Reference of SRWG

That, the Terms of Reference of SRWG placed at **Appendix A** be adopted.

Approach in 3 Stages to be followed by the working group and planning

2.6 The 3 stages approach initially developed at the RPG meeting to identify VHF Voice future needs and current limitations, identify solutions and then implement in a coordinated manner was refined and adopted by the meeting as per **Attachment B**.

2.7 In accordance with Stage 1a, a planning was elaborated by the meeting. The planning for the 3 Stages is placed at **Attachment C**. The planning will be finalized during the webconference #1.

2.8 It was recognized that as part of stage 2c, sharing lessons learnt from the European transition to 8.33 kHz spacing was needed. The problem of managing consistently the spacing of VHF between different ICAO regions was also highlighted by the meeting. As a first feedback the 8.33 kHz above FL195 Close-Out Report (version 4.0) issued by Eurocontrol in 2009 was reviewed by the meeting. The meeting also noted the European key milestones of the transition plan reflecting a long transition that eventually costed more than expected for the different stakeholders (e.g. the total cost for involved ANSP increased from 2,375 keuros in 2005 to 8,200 keuros in 2009). Difficulties with General aviation and military were stressed and arose in Europe when the implementation plan concerned the airspace used by Business & general aviation and State aircraft.

2.9 It was also emphasized that reaping the benefits of the transition, i.e using the frequencies freed, had taken between 6 and 18 months after the carriage had been mandated in Europe.

2.10 It was agreed that further specific feedback from Europe could be beneficial. The SRWG should identify its specific needs, and ICAO Secretariat could then coordinate with some of the European ACP WG-F members who had kindly offered their support at RPG meeting in March 2014.

Action Item 1/1: Secretariat to check with other ICAO regions their intention regarding the implementation of 8.33 kHz spacing scheme (target date: 30 Sept. 14)

2.11 The importance of the consulting and/or coordinating with relevant national frequency authorities in the stage of identifying solutions and implementing the new assignment of VHF frequencies was recognized by the meeting.

Review of new Operational needs in VHF communications from States for 2014- 2018

2.11 The current Australian situation with respect to licensing and channel spacing in the VHF 'Airband' (117.975 to 137 MHz) was presented. Australia currently uses 100 kHz, 50 kHz and 25 kHz channel spacing as required and its current operational needs do not require to consider implementation of 8.33kHz channel spacing at this time.

2.12 Australia supported the proposed 3 stage approach of the SRWG. However, it was further proposed that the SRWG should closely examine the potential for measures to improve the effective utilisation of the VHF airband before looking at any implementation or mandate of 8.33 kHz channel spacing. Specifically, Australia did not use the ICAO frequency utilization plan and its frequency pools anymore.

2.13 Japan JCAB needed some additional frequencies for restructuring its airspace in the future. Additional requirements for AOC function were also described. But VHF channels for AMS and ATS would be assigned following the 25 kHz spacing at least till 2018.

Improvement of VHF frequency assignment procedure

2.14 The current VHF frequency assignment procedure was reviewed (based on WP/04).

Specifically the following limitations were discussed:

- Interference between aeronautical stations and other applications operating illegally in the same bands; Thailand experienced for example interferences by FM radios;
- Lack of coordination from States with ICAO regional office in advance and late provision of annual updates based on the national assignment and coordination with own radio regulators. This is very difficult for the regional office to fully update the master list and reflect all changes in the database since conflicts with neighbouring Administrations frequencies arise each time geographical separation criteria adopted by RAN meeting are not met;
- There are difficulties to identify appropriate frequencies for new requirements resulting from new sectors of ACCs being established in the high density areas and for new facilities added for additional function or services;
- Interference between stations – frequencies assignment coordination has to be carried out in a number of cases with geographical separation criteria not met, which is being considered as acceptable;
- Minimum information required for the coordination – location of the facilities in coordinates and the type services to be provided by the service. Preferred candidate frequencies from initial study should be provided to the regional office for coordination; and
- Lack of coordination for frequencies to be used between ICAO air navigation Regions cause problems when the same frequency is allocated to two different stations located closely.

The meeting identified that an analysis to study the impacts of adopting the ICAO Handbook Volume II provisions would be needed in APAC region.

Action Item 1/2: To provide national views to the chairman on the impacts of adopting the ICAO Handbook Volume II provisions to replace the current regional RAN provisions (WP/4 refers) (target date: 24 April 2015, all Members)

Action Item 1/3: Chair to combine inputs from Members into one impact analysis (target date: 12 May 15, Paul Dowsett)

Based on the outcome of action 1/3, the meeting is expected to make appropriate recommendations to CNS/SG on the associated tool (ICAO global database).

Review of the frequency assignments in the Global database

<http://gis.icao.int/FF1/FF1.php>

2.15 The meeting discussed also the need for consistency of data between the ICAO Global database and the MIFR by ITU. The comparison of the two databases showed that only a small part of assignments in the ICAO's database is recorded in the MIFR. It also showed that the ICAO database is more accurate and up-to-date than the MIFR.

2.16 During the ICAO ACP WGF/30 meeting, a demonstration was provided of a prototype comparison tool which allows administrations to compare information contained in the MIFR with that contained in the ICAO data base, and generate any required ITU Notices. The meeting agreed that the technical tool developed to compare the two data bases was useful, however there was still considerable concern regarding the institutional issues such as ensuring that the ICAO data base remains the "master" when performing aeronautical frequency coordination. ICAO regional Offices coordinate frequency assignments only with aeronautical authorities or national entities authorized by national aeronautical authorities. In most countries the aeronautical authorities are authorized by the Telecommunication Administrations/national frequency planners to coordinate frequency assignments with ICAO before the approval process with the national radio management authority takes place. Any internal coordination within a given country is a domestic issue.

2.17 While the ICAO global database can provide a reference as it is more accurate and up-to-date and constitute as such a "master", official registration with ITU and update of aeronautical frequencies in the MIFR are matters of national radio management authorities. The update would be made on the basis of the ICAO records, which would be made in turn available to the ITU Administrations. But this process stays beyond the remit of ICAO.

2.18 The meeting noted the above information and appreciated the showcase of the global database and Frequency Finder tool.

Next meetings

2.19 The following meetings were planned:

- SRWG webconference #1 on 30 September 2014 (10am-12am Bangkok time): focus on SRWG planning and operational needs;

- SRWG webconference # 2 13 January 2015 (10am-12am Bangkok time): focus on delivering the operational needs and preparing work for stage 2; and
- **SRWG/2 19-21 May 2015 (tentatively in Australia):** focus on the result of simulations and preparation of CNS SG/19.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this paper;
- b) discuss the draft Decision placed at paragraph 2.5 on adoption of SRWG TOR;
and
- c) discuss any relevant matters as appropriate.

DRAFT

SPECTRUM REVIEW WORKING GROUP (SRWG)

Terms of Reference

In order to investigate the need for an increase in available VHF COM channels and, on the basis of the outcome, to develop recommendations for further consideration by the CNS SG, the APAC **SPECTRUM REVIEW WORKING GROUP**:

- develops an approach supported by new tools & criteria being introduced at ICAO global level, since they are likely to bring enhanced possibilities of VHF frequencies assignments;
- delivers a high level implementation plan for States/Administrations in the APAC region to implement the VHF assignments in a coordinated manner with ANSP, CAA and national frequency Authorities;
- proposes improvements to the existing regional VHF frequency assignment process based on the ICAO Global Spectrum Management tool, ICAO 9718 Volume II Handbook provisions and current coordination issues;
- develops an approach to transition to the new ICAO global database; and
- based on the above, develops recommendations for CNS SG about how to address the future operational needs and current limitations in VHF voice communications, aiming at avoiding introduction of 8.33 kHz spacing in the APAC Region for as long as practicable.

**Approach as discussed by
Regional Preparatory Meeting for WRC 2015**

1. The proposed approach is phased in 3 stages:

Stage 1: Identify VHF voice communications new needs and current limitations

- a) Draft a project planning for stages 1, 2 and 3;
- b) Gather new operational needs from Member States in terms of frequencies (and associated context: airspace or routes restructuration, new facilities etc.) in the next 5 years (2014-2019) and trends beyond 2020; and
- c) Identify current limitations with continuity of the current 25kHz spacing

Stage 2: Identify Solutions

- a) Simulate with the global database how this could meet the needs based on 25 kHz spacing, and the ICAO global frequency manager software tool
- b) For limitations (potential interferences detected through the tool) with neighboring States, identify solutions using the ICAO global frequency manager software tool
- c) If the need for 8.33 kHz spacing is identified, study impacts on operations (including airspace users, ATC procedures and technical systems) in the considered airspace and in the adjacent airspace to ensure continuous/seamless operations to the best extent possible
Lessons learnt from Europe 8.33 kHz transition will be reviewed and considered.
- d) Optionally, consult with relevant national frequency authorities about the feasibility of 25 kHz spacing continuity or 8.33 kHz spacing implementation; and
- e) Draft a high level implementation plan for continuity of 25 kHz spacing or implementation of 8.33 kHz spacing
If 8.33 kHz spacing is needed, the draft implementation plan should focus on a detailed description of airspaces within which 8.33 kHz channel spacing requires to be introduced and transition provisions needed for airlines, ANSP and CAA as necessary, both at regulatory and operational levels.
- f) Review and update the project planning stage 3 according to the proposed solutions; and
- g) Develop recommendations for CNS SG

Stage 3: Implement in a coordinated manner

- a) Finalize the implementation plan taking comments from CNS SG/other concerned groups into consideration; and
- b) States implement the new assignments in a coordinated manner (ANSP, CAA, national frequency Authorities) in line with the implementation plan

2. A report should be delivered after Stages 1 and 2 are completed for consideration by the CNS Sub Group, and before proceeding to the stage 3.

Appendix B to the Report

ID	Task Mode	Task Name	Duration	Start	Finish	2014		2015		2016		2017		2018		2019		2020		2021		2022	
						H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	
1		Dependencies	565 days?	Wed 7/15/15	Tue 9/12/17																		
2		CNS 19		Wed 7/15/15																			
3		CNS 20		Mon 7/11/16																			
4		CNS 21	1 day?	Tue 7/11/17	Tue 7/11/17																		
5		APANPIRG 28	1 day?	Tue 9/12/17	Tue 9/12/17																		
6		Stage 1: Identify VHF voice communications new needs and current limitations	121 days?	Thu 6/26/14	Thu 12/11/14																		
7		a-Draft a project planning for stages 1, 2 and 3	4 mons	Thu 6/26/14	Wed 10/15/14																		
8		b-Gather new operational needs from Member States in terms of frequencies (and associated context: airspace or routes restructuring, new facilities etc) in the next 5 years short(2014-2019) and trends beyond, mid and long terms 2020	6 mons	Thu 6/26/14	Wed 12/10/14																		
9		c-Identify current limitations with continuity of the current 25kHz spacing	6 mons	Thu 6/26/14	Wed 12/10/14																		
10		Needs and limitations	1 day?	Thu 12/11/14	Thu 12/11/14																		
11		Stage 2: Identify Solutions	1380 days?	Fri 12/12/14	Thu 3/26/20																		
12		a-Simulate with the global database how this this could meet the needs could be done based on 25 kHz spacing, and the new ICAO global frequency manager software tool and Handbook volume II provisions	6 mons	Fri 12/12/14	Thu 5/28/15																		
13		b-For limitations (potential interferences detected through the tool) with neighboring States, identify solutions using the ICAO global frequency manager software tool , based on the new ICAO frequency manager software tool and Hand	6 mons	Sun 3/8/15	Thu 8/20/15																		
14		c-If the need for 8.33 KHz kHz spacing is identified, study impacts on operations (including airspace users, ATC procedures and technical systems and ground installations) in the considered airspace and in the adjacent airspace to ensure continuous	12 mons	Fri 8/21/15	Thu 7/21/16																		
15		d-Optionally, consult with relevant national frequency authorities for about the feasibility of 25 kHz spacing continuity or 8.33 kHz spacing implementation	6 mons	Fri 2/5/16	Thu 7/21/16																		
16		e-Draft a high level implementation plan for continuity of 25 kHz spacing or implementation of 8.33 kHz spacing	9 mons	Fri 7/22/16	Thu 3/30/17																		
17		f-Review and update the project planning stage 3 according to the proposed solutions	1 mon	Fri 3/31/17	Thu 4/27/17																		

Project: draft planning SRWG	Task		Project Summary		Manual Task		Start-only		Deadline	
	Split		Inactive Task		Duration-only		Finish-only		Progress	
	Milestone		Inactive Milestone		Manual Summary Rollup		External Tasks		Manual Progress	
	Summary		Inactive Summary		Manual Summary		External Milestone			

ID	Task Mode	Task Name	Duration	Start	Finish	2014		2015		2016		2017		2018		2019		2020		2021		2022	
						H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1
18		g-Develop recommendations for CNS SG	3 mons	Fri 4/28/17	Thu 7/20/17																		
19		Recommendations for CNS SG	1 day?	Fri 7/21/17	Fri 7/21/17								July 21, 2017										
20		Stage 3: Implement in a coordinated manner	707 days?	Wed 7/12/17	Thu 3/26/20																		
21		a-Finalise the implementation plan taking into account comments from CNS SG/other concerned groups into considerations	3 mons	Wed 7/12/17	Tue 10/3/17																		
22		b-If no 8.33 KHz spacing is needed, States implement the new assignments in a coordinated manner (ANSP, CAA, national frequency Authorities) in line with the implementation plan and VHF new assignments are reflected in the global database	1 day	Wed 9/13/17	Wed 9/13/17																		
23		Implement new frequencies	6 mons	Wed 10/4/17	Tue 3/20/18																		
24		c-If 8.33 KHz spacing is needed, States implement the new assignments according to the implementation plan, including transition provisions needed for airlines, ANSP and CAA as necessary	661 days?	Wed 9/13/17	Thu 3/26/20																		
25		National mandates	24 mons	Wed 9/13/17	Wed 7/17/19																		
26		Safety case (regional/subregional)	240 days	Wed 9/13/17	Wed 8/15/18																		
27		Common safety case	6 mons	Wed 9/13/17	Wed 2/28/18																		
28		National safety cases	6 mons	Thu 3/1/18	Wed 8/15/18																		
29		Upgrade of ATC procedures/technical systems	12 mons	Fri 12/1/17	Thu 11/1/18																		
30		Training of operators	12 mons	Fri 12/1/17	Thu 11/1/18																		
31		ANSP readiness	1 day?	Fri 11/2/18	Fri 11/2/18								November 2, 2018										
32		Frequencies freed for reuse	1 day?	Thu 3/26/20	Thu 3/26/20								March 26, 2020										

Project: draft planning SRWG	Task		Project Summary		Manual Task		Start-only		Deadline	
	Split		Inactive Task		Duration-only		Finish-only		Progress	
	Milestone		Inactive Milestone		Manual Summary Rollup		External Tasks		Manual Progress	
	Summary		Inactive Summary		Manual Summary		External Milestone			