



International Civil Aviation Organization

COM Co-ordination Meeting

6 – 7 March 2013, Kunming, China



Agenda Item 1: Review of AFS communication requirements in the Sub-region of South Asia, including those requirements specified in the regional air navigation plan - FASID Tables

RELEVANT APANPIRG CONCLUSIONS

(Presented by the Secretariat)

SUMMARY

This paper presents a list of relevant Conclusions in the Communication fields formulated by APANPIRG for review.

1. Introduction

1.1 Relevant Conclusions in the Communication fields formulated by the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) are provided in this paper for review by the meeting. This is also specified in the CNS part of Basic Air Navigation Plan.

1.2 APANPIRG regularly reviews and updates the list of outstanding Conclusions covering Conclusions formulated by its previous meetings. ICAO contracting States in the region are requested to appropriate follow-up actions in accordance with the Conclusions.

2. Discussion

2.1 Circuit Planning

2.2.1 The 11TH Meeting of APANPIRG held in October 2000, based on the information available regarding emerging digital circuits or networks being implemented in the ASIA/PAC region and also in the adjacent region, considered desirable to recommend the use of digital communication network or circuits to support AFS communications requirements. The meeting, therefore, adopted the conclusion as follows:

Conclusion 11/14 - Use of digital circuits

That, States consider implementing digital communication networks or circuits in a co-ordinated manner in order to meet current and future AFS communication requirements for data/voice communications and to facilitate the introduction of ATN.

2.2.2 It was also noted by APANPIRG/11 that VSAT is one of reliable means of communications employed by several States in the Region to support AFS communication. However, spare parts for critical modules and elements such as redundant channel cards, RF unit should be readily available for replacement to ensure rapid restoration during breakdown. A reliable power supply system was considered as an essential facility to be provided. It was however recognized that for those VSAT stations providing both ATS direct speech and critical AFTN circuits without the provision of an alternate routing between States, an alternative communication link should be provided in order to assure required reliability. In light of above consideration, the APANPIRG meeting adopted following conclusion:

Conclusion 11/15 - Alternative arrangements for VSAT

That, States consider the provision of an alternative communication links for:

- a) critical AFS communications which are supported by a single VSAT system between States; and
- b) remote control air-ground (RCAG) VHF stations supported by a single VSAT link.

3. Action by the Meeting

3.1 The meeting is expected to review these Conclusions and requirements specified in the regional Basic Air Navigation Plan and take into account while action items are developed.

Part IV

COMMUNICATIONS, NAVIGATION AND SURVEILLANCE (CNS)

INTRODUCTION

1. This part of the Asia and Pacific (ASIA/PAC) Regions Basic Air Navigation Plan contains elements of the existing planning system and introduces the basic planning principles, operational requirements and planning criteria related to communications, navigation and surveillance (CNS) systems as developed for the ASIA/PAC regions.

2. Part IV constitutes the stable guidance material considered to be the minimum necessary for effective planning of CNS facilities and services in the ASIA/PAC regions. A detailed description/list of the facilities and/or services to be provided by the States in order to fulfill the requirements of the plan is contained in the ASIA/PAC Facilities and Services Implementation Document (FASID). It is expected that some elements of CNS/ATM system will be subject to amendment, as necessary, on the basis of experience gained in their implementation.

3. The Standards, Recommended Practices and Procedures to be applied are contained in:

- a) Annex 10 — *Aeronautical Telecommunications*, Volumes I, II, III, IV and V;
- b) Annex 11 — *Air Traffic Services*; and
- c) *Regional Supplementary Procedures* (Doc 7030).

4. Background information of importance in understanding and effective application of this part of the plan is contained in the *Report of the Third Asia/Pacific Regional Air Navigation Meeting* (Doc 9614, ASIA/PAC/3 (1993) on Agenda Items 10, 11 and 12.

5. The elements of the material referred to above are presented in the following paragraphs with appropriate cross-references to recommendations and/or conclusions of ASIA/PAC/3 meeting and Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG).

AERONAUTICAL TELECOMMUNICATIONS

General

6. The plan and details of the operational requirements for CNS are contained in Tables CNS 1A, CNS 1B, CNS 1C, CNS 1D, CNS 1E, CNS 2, CNS 3, CNS 4A and CNS 4B, and associated charts in Part IV of the FASID.

Ground-ground communications

Aeronautical fixed service (AFS)

7. The aeronautical fixed service comprises of:

- a) the aeronautical fixed telecommunication network (AFTN);
 - b) data communications sub-networks and associated systems supporting the ground-ground applications of the aeronautical telecommunication network (ATN), namely the ATS message handling services (ATS MHS) and ATS inter-facility data communications (AIDC);
 - c) ATS direct speech circuits; and
 - d) meteorological operation circuits, networks and broadcast systems.
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Aeronautical fixed telecommunication network (AFTN)

8. States should ensure that telecommunication agencies engaged in providing aeronautical circuits be impressed of the need for:

- a) high reliability terrestrial links connecting aeronautical facilities and common carrier terminals inclusive of priority restoration of service commensurate with the requirements of a safety service; and
- b) rapid restoration of circuits in the event of breakdown.

[ASIA/PAC/3, Conc. 10/1]

9. States operating AFTN circuits which do not function satisfactorily 97 per cent of the time during which the circuit is scheduled to be in operation, should exchange monthly circuit performance data. Where a circuit consistently achieves 97 per cent reliability, the exchange of performance data may cease. The circuit performance data should be exchanged directly between the correspondent stations, with copies to the administrations concerned and to the ICAO Regional Office. States should also identify the causes for inadequate circuit performance and take necessary remedial measures.

[ASIA/PAC/3, Conc. 10/2]

10. States responsible for the operation of AFTN circuits, which do not adequately meet transit time requirements should record transit time statistics on the twenty-third day of each third month (January, April, July and October) of each year, in accordance with the existing practices, for the AFTN circuits and terminals under their jurisdiction which do not meet the specified transit time criteria. The data recorded should be exchanged directly between the correspondent stations, with copies to administrations concerned and to the ICAO Regional Office.

[ASIA/PAC/3, Conc.10/3]

11. States operating AFTN circuits may exchange circuit loading statistics only for those circuits where occupancy level exceed permissible levels specified in the Manual on Planning and Engineering of AFTN, Doc. 8259.

[APANPIRG/16, Conc. 16/28]

12. States concerned should take positive measures to ensure system reliability and provide adequate management and supervision of facilities to eliminate system failure, and to ensure data integrity and timely delivery of messages.

[ASIA/PAC/3, Conc. 10/5]

13. The AFTN inter-regional entry/exit points:

- a) between ASIA/PAC and AFI should be Brisbane and Mumbai;
- b) between ASIA/PAC and EUR should be Bangkok, Singapore and Tokyo;
- c) between ASIA/PAC and MID should be Karachi, Mumbai and Singapore;
- d) between ASIA/PAC and NAM should be Brisbane, Nadi and Tokyo; and
- e) between ASIA/PAC and CAR/SAM should be Brisbane.

[APANPIRG/11, Conc. 11/6]

Technical aspects of AFTN rationalization

14. The trunk circuits interconnecting main AFTN communication centres should be provided to operate at a modulation rate commensurate with operational requirements, and employ International Alphabet Number 5 (IA-5) and character-oriented data link control procedures — system category B, or bit-oriented data link control procedures as defined in Annex 10, Volume III, Part I, Chapter 8.

15. Also, the circuits connecting tributary AFTN communication centres with main AFTN communication centres, or with other tributary AFTN communication centres, or with AFTN stations should be provided with, a modulation rate commensurate with operational requirements employing IA-5 code and procedures and an appropriately controlled circuit protocol.

[ASIA/PAC AFS RPG/3, Rec. 3/1]

16. To support data communication requirements and to provide needed data integrity and minimal transit time, CCITT X.25 protocol should be used between AFTN COM centres and main and tributary COM centres in the ASIA/PAC regions.

[APANPIRG/4, Conc. 4/27 and APANPIRG/7, Conc. 7/14]

16.1 States should continue using X.25 as the recommended protocol to support implementation of ATN ground infrastructure in the short to medium term (5-10 years) and consider acquisition of sufficient spares for the service life of the equipment. States not implementing X.25 should consider the use of emerging replacement technology.

[APANPIRG/15 in 2004, Conc.15/11]

17. States should consider implementing digital communication networks or circuits in a coordinated manner in order to meet current and future AFS communication requirements for data/voice communications and to facilitate the introduction of ATN.

[APANPIRG/11, Conc. 11/14]

17.1 States should consider the provision of an alternative communication links for critical AFS communications which are supported by a single VSAT system between States and for remote control air-ground (RCAG) VHF stations supported by a single VSAT link.

[APANPIRG/11, Conc.11/15]

17.2 States in the Bay of Bengal area are urged to implement AFS circuits using VSAT technology as a matter of high priority to enhance safety and efficiency of aircraft operations and to meet AFS communication requirements for data/voice communications.

[APANPIRG/13 Conc.13/13]

ATN/AMHS implementation

18. The ATN transition plan outlines the requirements to increase bandwidth and upgrade protocols for those trunk circuits that will support main data flow of traffic in the ASIA/PAC regions. The plan also provides target dates for implementation of boundary intermediate systems (BIS) and backbone BIS in the ASIA/PAC regions.

[APANPIRG/12, Conc. 12/14]

19. ATN development should be introduced in an evolutionary and cost-effective manner based on available ICAO SARPs and regional ATN technical and planning documents. It is recommended that there will be three phases in the implementation of the ATN infrastructure

- Phase 1. Up-grade of existing sub-network infrastructure to support the Backbone BISs (BBISs)

- Phase 2. Implementation of ATN Regional BBISs; and
- Phase 3. Implementation of supporting ATN BISs

[APANPIRG 12/14]

19.1 Considering the inclusion of ATN over IPS SARPs in ICAO Annex 10, Volume 3 and to support global harmonization of ATN implementation, States hosting BBIS should implement ATN over IPS in addition to ATN over OSI and complete this implementation of Dual Stack ATN (ATN/OSI and ATN/IPS) by 2011.

[APANPIRG 19/20]

19.2 Permit non-backbone States, and States in other regions with connections to Asia/Pacific region, to connect their Message Transfer Agents (MTAs) to backbone States using either the OSI-based ATN Internet Communications Services (ICS) or the ATN IPS on a bilateral basis.

[APANPIRG 21/20]

20. States should consider establishment of gateways, where required, to allow inter-operation between AFTN and ATS MHS.

ATS direct speech circuits

21. States concerned should assign a high priority to the establishment, in accordance with Annex 11, 3.6.1.1, of efficient direct-speech communications between ATS units serving adjacent areas in order to permit proper use of air-ground frequencies and further implementation of the air traffic control (ATC) service.

[ASIA/PAC/3, Conc. 5/21]

ATS inter-facility data communications (AIDC) circuits

22. States should consider implementing AIDC in order to enable the exchange of ATS messages related to flight notification, flight coordination, transfer of control surveillance data and free (unstructured) text data for active flights.

22.1 Noting the continued prevalence of RVSM Large Height Deviation (LHD) occurrences resulting from ATC Unit-to-ATC Unit coordination errors, APANPIRG recommended that States work towards the

implementation of compatible AIDC capabilities based on the Asia/Pacific AIDC ICD between ATC units as soon as possible

[APANPIRG/18, Conc.18/3]

22.2 States should expedite implementation of AIDC between neighboring ATS facilities in accordance with the Regional Air Navigation Plan and the Asia/Pacific AIDC ICD.

[APANPIRG/19, Conc.19/19]

Support for Global ICD for AFTN AIDC

23. Recognizing the benefits to be gained from globally harmonized interface arrangements for AIDC, APANPIRG supports the work being undertaken by the United States to coordinate a global Interface Control Document for AFTN AIDC and invites Asia/Pacific Regional Office to act as the regional point of contact for this work.

[APANPIRG/20, Conc.20/14]

Air/ground communications

Aeronautical mobile service and aeronautical mobile satellite service

Frequency utilization lists

24. States in the ASIA/PAC regions should coordinate, as necessary, with the ICAO Regional Office all radio frequency assignments for both national and inter-national facilities in the 190–526.50 kHz, 108–117.975 MHz, 960–1215 MHz and 117.975–137 MHz bands. The ICAO Regional Office, based on the information provided for this purpose by the States, will issue Frequency Lists Nos. 1, 2 and 3 at periodic intervals. [ASIA/PAC/3, Conc. 11/4, 11/5 and 12/9]

HF en-route communications

25. States should be urged to coordinate on a national basis with the appropriate national regulators, a programme directed towards achieving the elimination of the interference currently being experienced on some of the frequencies allocated to the Aeronautical Mobile (R) Service in the ASIA/PAC regions. When reviewing methods for developing such a national programme, consideration should be given to the procedures in Article S15 of the ITU Radio Regulations.

26. In the case of an unidentified interfering station, States should notify the ICAO Regional Office, utilizing the procedure and report form developed by the Fifth Session of the Communications Division (1954) and updated by the Communications Division Meeting (1978). The Harmful Interference Report Form is provided in Attachment A. However, in the case of persistent harmful interference to an aeronautical service which may affect safety, it should be immediately reported to ICAO and to the ITU, using the prescribed format, for appropriate action.

[ASIA/PAC/3, Conc. 11/6]

27 States, where aeronautical stations are experiencing HF radio interference, should take necessary actions in coordination with respective radio regulators to identify the source of interference and to eliminate the problem.

[APANPIRG/17, Conc.17/32]

28. Provision of Aeronautical Mobile (R) Service in the ASIA/PAC Region will be guided by the following strategy:

- 1) A channel spacing of 25 kHz will continue to be the operational specification.
- 2) The VHF voice service, backed by CPDLC and HF will be the primary communication medium for transcontinental traffic; and a combination of CPDLC and HF voice will be the communication medium for oceanic traffic.
- 3) The requirement for basic voice communication will continue, supplemented by data-link Flight Information Service (DFIS) applications including D-VOLMET, D-ATIS and PDC to significantly reduce pressure on VHF spectrum congestion.
- 4) Frequency band 136 – 137 MHz will be used exclusively for the air-ground VHF data-link application.

[APANPIRG/18, Conc. 18/29]

Satellite Communication Service Performance

29. States and International Organizations are requested to liaise with satellite service providers to establish a mechanism to maintain and modernize the satellite communication infrastructure.

[APANPIRG/19, Conc.19/24]