

International Civil Aviation Organization



**THE TWELFTH WORKING GROUP MEETING OF  
AERONAUTICAL TELECOMMUNICATION NETWORK  
(ATN) IMPLEMENTATION CO-ORDINATION GROUP OF  
APANPIRG (ATNICG WG/12)**



5 – 8 August, Renton, WA, USA

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**Agenda Item 4: Ad-hoc Working Group: MPLS VPN**

**UPDATES ON PAN INTER-REGIONAL AIDC FOR AIDC**

(Presented by the Secretariat)

**SUMMARY**

This paper presents an update on the activities of the inter-regional AIDC task force (IRAIDCTF) and the relevant part of latest draft of the Pan Regional APAC/NAT AIDC ICD for information and comments if any.

**1. INTRODUCTION**

1.1 This paper provides an update on the activities of the inter-regional AIDC task force (IRAIDCTF) and the latest draft of the Pan Regional APAC/NAT AIDC guidance for information and comments by the meeting.

1.2 NAT SPG Conclusion 48/28 and APANPIRG Conclusion 23/20 have endorsed the Terms of Reference and establishment of an Inter-regional AIDC Task Force (IRAIDTF) with the main objective of consolidating and harmonising the NAT and APAC regional AIDC guidance material.

1.3 The 1<sup>st</sup> meeting of the IRAIDTF (IRAIDTF/1) was convened on 16-18 January 2013. IRAIDTF WebEx/1 meeting was held on 27 February 2013. IRAIDTF WebEx/2 meeting was held on 10 April 2013.

1.4 The 2<sup>nd</sup> meeting of the IRAIDTF (IRAIDTF/2) was held from 22 to 26 July 2013 at ICAO Regional Office, Bangkok, Thailand.

1.5 The 2<sup>nd</sup> meeting of the Task Force reviewed and updated the latest master comments matrix and updated draft ICD. The Version 0.8 was developed.

## 2. DISCUSSION

2.1 19 participants from Australia, Hong Kong China, India, Iceland, New Zealand, United States of America, Singapore, Thailand and Viet Nam attended the 2<sup>nd</sup> meeting of IRAIDTF.

2.2 The AIDC implementation status in APAC Region was noted by the IRAIDTF/2 meeting which is provided in the **Attachment A** to this information paper.

2.3 The meeting reviewed the Chapter xx of the PAN Regional ICD for AIDC which is provided in **Attachment B** to this paper for comments.

2.4 The meeting discussed several issues relevant to the work of ACSICG including:

- Training: the meeting discussed the need to provide Air Traffic Controllers with training on the specific AIDC topic. The meeting considered that such training should be provided, either as part of transition to a new system or as a dedicated training. It was also noted that such training may be integrated with other required training;
- The original Chapter 8 of the initially integrated AIDC ICD - “Common Boundary agreements” was entirely removed, considering that it documented the current NAT interfaces and was not considered appropriate for inclusion in the PAN Regional ICD. The group also agreed that some samples of AIDC messaging set in the initial integrated ICD document be relocated as Appendix B to the PAN AIDC ICD. The Chapter 9 – PAN AIDC ICD/ICAO AIDC relationship was agreed to be appended to the ICD as Attachment A to the PAN AIDC ICD and Chapter 6 – ATM Application Naming Conventions to become Attachment B to the PAN AIDC ICD;
- Implementation guidance material: the meeting opined that the need for further enhancement of AIDC implementation guidance as provided in the Chapter 7. This will be developed (Appendix C to the PAN ICD – additional implementation guidance); and
- Scheduled maintenance and failure recovery procedures: It was noted that scheduled maintenance on AIDC and AFTN systems or equipment by an ANSP should be beforehand coordinated with its counterparts as there may have operational effects (loss of AIDC function due to flooding of messages or out of sequence messages following an AIDC server reboot for example) on the receiving ATSU, and may therefore need coordinated mitigation steps. It was felt that further guidance was needed on timer settings after failure;

2.5 The Meeting agreed that v.0.8 and the master comments matrix would be cleaned up (delegates from India offered to assist to put v. 0.8 into formatted and clean version within one to two months) for further discussion at the next webconference (using the Live meeting tool) to be convened in October 2013, dates to be determined. This would allow providing v.0.8 for comments to the Task Force. This would also be followed by another teleconference scheduled in December 2013 and a face-to-face meeting of the Task Force in early 2014 at a venue to be determined. This tentative schedule would allow completing the work and producing the draft 1st Edition of the PAN Regional ICD for AIDC by the end of January 2014, for submission to APANPIRG and NAT SPG through their Sub-groups for adoption during 2014.

**3. ACTION BY THE MEETING**

3.1 The meeting is invited to:

- a) note the information provided;
- b) provide updates to information contained in the Attachment A; and
- c) provided comments to the information contained in Attachment B.

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**AIDC IMPLEMENTATION STATUS IN THE APAC REGION** A

Country Administration /Country Administration	ATS Unit A	ATS Unit B (Counterpart)	Remark: Date of implementation
Australia	Brisbane	Melbourne	
Australia/New Zealand	Brisbane	Auckland	
Australia/New Zealand	Melbourne	Auckland	
Australia/Fiji	Brisbane	Nadi (Oceanic)	
Australia/Mauritius	Melbourne	Mauritius	
Australia/South Africa	Melbourne	Johannesburg	
Australia/USA	Brisbane	Oakland	
Australia/Indonesia	Brisbane	Ujung Pandang	Undergoing operational trial from May 2013
China	Sanya	Hong Kong	8 Feb. 2007
	Hong Kong	Taipei	12 Nov. 2012
	Guangzhou	Nanning	
	Guangzhou	Zhanjiang	
	Guangzhou	Zhuhai	
	Nanning	Kunming	
	Nanning	Zhanjiang	
	Zhanjiang	Haikou	
	Chengdu	Chongqing	
	Chengdu	Guiyang	
	Guiyang	Chongqing	
	Guiyang	Kunming	
Fiji/USA	Nadi	Oakland	
India			Being implemented at all ATCC plus 32 Aerodromes
India/Pakistan	Mumbai	Karachi	Under Trial
Japan/USA	Fukuoka ATM Center	Oakland ARTCC	
	Fukuoka ATM	Anchorage ARTCC	
Japan/Republic of Korea	Tokyo ACC	Incheon ACC	
	Fukuoka ACC	Incheon ACC	
Japan/Taipei, China	Fukuoka ACC	Taipei ACC	March 2012
	Naha ACC	Taipei ACC	
Malaysia	Kota Kinabalu	Kuching	
New Zealand/Fiji	Auckland	Nadi (Oceanic)	
New Zealand/USA	Auckland	Oakland	
New Zealand/France	Auckland	Tahiti	
Pakistan	Karachi	Lahore	

**SOME AIDC CIRCUITS BEING PLANNED AND/OR UNDER TRIAL  
ARE LISTED FOLLOWS:**

Country Administration /Country Administration	ATS Unit A	ATS Unit B (Counterpart)	Remark: Date of implementation
Bangladesh	Dhaka	Chittagong Dhaka	System being updated
	Dhaka	Sylhet	
China/Republic of Korea	Qingdao	Incheon	Planned for 2013
DPR. Korea	Pyongyang	Adjacent ACCs	Being planned
Indonesia/Australia	Makassar	Brisbane	On-going trial
Malaysia	Kuala Lumpur	With adjacent ATS Units	By end of 2013
Maldives	Male	With neighboring ACCs	ATM system software already upgraded to support AIDC
Maldives/Sri Lanka	Male	Colombo	Planned for 2013
Mongolia	Ulaanbaatar	With China (AIDC) and Russia (OLDI)	ATM supports OLDI and AIDC discussion with the concerned for implementation
Myanmar	Yangon	All adjacent ATS units	ATM system is ready in 2013
Philippines	Manila	Fukuoka ATM	Planned for 2015
Thailand	Bangkok		Together with ATM system upgrades
Viet Nam			Trial conducted in 2012, implementation planned for 2013

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## Chapter 3. Communications and Support Mechanisms

### 3.1 Introduction

- 3.11 Coordination communications are divided into two areas: one addresses the need for voice communications between ATSUs, whereas the other addresses the need for data communications. It is anticipated that the continuing implementation of automated data communications between ATSUs will result in a reduction in the utilization of voice communications.

### 3.2 Message headers, timers and ATSU indicators

- 3.21 Message headers.
- 3.21.1 The AFTN IA-5 Message Header, including the use of the Optional Data Field defined in ICAO Annex 10, Vol II and herein, will be employed for the exchange of all ATS data. The AFTN priority indicator FF shall normally be used for all data exchanges.
- 3.21.2 Optional data field.
- 3.21.2.1 The optional data field provides a flexible way to convey information from end-to-end, undisturbed by the communication processes along the path. Since the information is optional it is necessary to specify a unique number and ending for each defined use. Option 1 has already been allocated for additional addressing use, and will be found in ICAO Annex 10, Vol II. Option numbers 2 and 3 have been defined for computer applications to convey message/data unit identification and message/data unit reference information, respectively, and are adopted in this ICD. Other options can be defined and added as the need arises. The proposed encoding has no impact on AFTN switching centers as they ignore this part of the origin line. The ODF is required for AIDC. When AMHS or AFTN/AMHS gateways are used for AIDC messages exchanges the ODF elements as specified in this ICD shall be supported.
- 3.21.3 Addressing.
- 3.21.3.1 The Source and Destination addresses of the AFTN header convey the direction and logical identity of the application processes exchanging AIDC data information. The application process must be aware of the AFTN addresses that are used for this function. The first four characters specify the location as per the ICAO Location Indicators (Doc 7910), while the next three characters specify an office/agency or a processor at the given location as per Doc 8585. The eighth character of the address indicates the end system application and details of the naming assignment are contained in Chapter 6, *ATM Application Naming Conventions*.
- 3.21.4 Message/data identification number.
- 3.21.4.1 The message/data identification number is a six digit number, taken from a single application pool of available numbers. The identification of the sending and receiving units would use the normal eight character addresses of the AFTN header.
- 3.21.4.2 The message/data identification number is encoded and conveyed in the AFTN message header Optional Data Field (ODF), option 2. The AFTN implementation provides functionality consistent with the OSI primitive/parameter structure.
- 3.21.4.3 A message/data identification number will be assigned to each message/data unit requiring confirmation of receipt by the initiating processor. This number will be assigned by the application process basis in such a way as to guarantee a unique identification number for a period of time as specified in paragraph 3.21.7 below. For messages/data not requiring confirmation the message/data identification parameter shall not be used.

### 3.21.5 Reference Information.

3.21.5.1 The message/data reference information is a way of linking a message/data unit to a previously sent message. This function is encoded and conveyed in the AFTN ODF, option 3. This implementation would make the linking information consistent with the abstract OSI protocol primitive/parameter structure. The reference information consists of the message/data identification number of the previously sent message/data unit being referenced. As the previous message being referenced could have been originated by either processor, the location indicator of the message source shall be used as a prefix to the reference number. Examples are found in paragraph 3.22.5 below.

### 3.21.6 Time stamp.

3.21.6.1 The time stamp is expressed as 12 digits in year, month, day, hours, minutes, and seconds (YYMMDDHHMMSS). The precision (seconds) of the time stamp will support computation of transmission delays. This data item is conveyed as option 4 of the ODF. The AFTN date time group may be used by administrations to monitor performance of the messaging exchanges

### 3.21.7 Cyclic Redundancy Check (CRC).

3.21.7.1 The CRC is a four digit hexadecimal number that is used to ensure end-to-end message integrity. The CRC method employed is the CRC-CCITT XModem (to be confirmed). The CRC is computed over the message text, from the beginning left parenthesis to the closing right parenthesis, inclusive. Non printable characters such as line feeds and carriage returns shall be excluded from the CRC calculation. This data item is conveyed as option 5 of the ODF.

### 3.22 Timers.

3.22.1 In order to guarantee the uniqueness of the message/data identification number, and yet allow for the efficient reuse of the numbers in the pool, two timers are required for each message/data unit requiring confirmation: accountability and reuse.

#### 3.22.2 Accountability timer.

3.22.2.1 The accountability timer determines the maximum period of time for the responding application to confirm receipt of a given message/data unit. The default value for this timer nominally shall be three minutes. If there is no valid response from the responding application, the initiating processor shall retransmit the message/data unit and reset the timer, or initiate local recovery procedures. When local procedures allow retransmission, a maximum value, such as three, must be determined before local recovery procedures are initiated. The accountability timer shall be cancelled by the receipt of any message with the appropriate message/data reference identifier, which will typically be a LAM or LRM. Retransmissions use the same message/data identification number as the original message/data unit.

#### 3.22.3 Reuse timer.

3.22.3.1 The reuse timer function employs two timers that determine the minimum period of time during which a message/data identification number is guaranteed to be unique. Reuse timer A shall be set for exchanges not involving dialogues between processors. The range for reuse timer A shall be from 1 to 30 minutes, in one minute increments. The default value for reuse timer A shall be 5 minutes, or as agreed by the concerned ATSU's. Reuse timer B shall be set for exchanges where a dialogue is involved in the exchange. The range for reuse timer B shall be 2 to 90 minutes, in one minute increments. The default value for reuse timer B shall be 10 minutes, or as agreed for communicating applications by the concerned administrations. A given message/data identification number can be reused when an ACP, AOC, or REJ response message is received or the reuse timer has expired.

#### 3.22.4 System Failure Timer Procedures.

3.22.4.1 In the event of system failure, the accountability and reuse timers will be reset and resume timing upon completion of system recovery.

- 3.22.5 The following examples depict four AIDC Messages encoded in accordance with the previous procedures. The second message is a reference to the first message. SOH, STX, message ending and ETX characters are omitted for clarity, as are the alignment functions. The proposed encoding would have no impact on AFTN switching centres as they ignore this part of the origin line.

FF NFFFZOZO

122145 KZOA ZOZO 2.000033-4.940412214523-5.A34B-

(CPL-UAL714-IS-B747/H-S/C-KLAX-05S179W/2220F370-M082F370(route data) -YSSY-0)

**Explanation:** Sending an initial coordination message (number 000033 from Oakland Air Route Traffic Control Center (KZOA ZOZO) to Nadi ACC (NFFFZOZO) at time 940412 214523.

FF KZOA ZOZO

122147 NFFFZOZO 2.000044-3.KZOA000033-4.940412214703-5.DE6A-

(ACP-UAL714-KLAX-YSSY)

**Explanation:** Nadi ACC (NFFFZOZO) accepts the proposed coordination condition received from Oakland Air Route Traffic Control Center (KZOA ZOZO) by sending message number 000044 from NFFFZOZO to KZOA ZOZO at 940412214703. The message refers to message 000033 sent earlier by KZOA ZOZO

FF KZNY ZOZO

122145 CZQM ZOZO 2.000033-4.940412214523-5.A34B-

(CPL-UAL714-KJFK- etc.)

**Explanation:** Sending Message number 000033 from CZQM ZOZO to KZNY ZOZO at time 940412 214523.

FF CZQM ZOZO

122147 KZNY ZOZO 2.000044-3.CZQM000033-4.940412214703-5.DE6A-

(ACP-UAL714-KJFK-EGLL)

**Explanation:** Sending message number 000044 from KZNY ZOZO to CZQM ZOZO at 122147 and the data refers to message 000033 sent earlier by CZQMZRZO

### 3.3 Engineering considerations

The exchange of AIDC messages is currently organized through AFTN. However, the use of AMHS through AMHS/AFTN gateways, OSI or IPS based ATN (Doc 9880 and 9896 refer) could be also implemented

#### 3.31 Performance Criteria.

- 3.31.1 In order to effectively use the AIDC application for the interchange of ATC coordination data, performance requirements need to be specified. These specified performance requirements need to be agreed to by states implementing AIDC through bi-lateral agreements.

#### 3.32 Recording of AIDC data.

- 3.32.1 The contents and time stamps of all AIDC messages shall be recorded in both end systems in accordance with the current requirements for ATS messages.

- 3.32.2 Facilities shall be available for the retrieval and display of the recorded data.

### 3.4 Test considerations

- 3.41 Test messages shall have the same format as operational messages, but shall be distinguished by non-operational callsigns specified in bi-lateral agreements. Off-line test systems should be considered in addition to testing on operational systems.