



International Civil Aviation Organization

**THE FIFTH MEETING OF AERONAUTICAL
TELECOMMUNICATION NETWORK (ATN)
IMPLEMENTATION CO-ORDINATION GROUP
OF APANPIRG (ATNICG/5)**



Kuala Lumpur, Malaysia, 31 May – 4 June 2010

Agenda Item 5: Update regional implementation matrix table

**UPDATE TO AERONAUTICAL TELECOMMUNICATION NETWORK
IMPLEMENTATION STATUS IN ASIA AND PACIFIC REGIONAL CNS/ATM MATRIX**

(Presented by the Secretariat)

SUMMARY

This paper presents the CNS/ATM Implementation Planning Matrix which was reviewed by CNS/MET Sub Group in its Thirteenth Meeting and was adopted by APANPIRG in its Twentieth Meeting. This paper invites the participants to review the information provided in respect of their administration and update it where required.

1. Introduction

1.1 The CNS/ATM Implementation Matrix informs about the status of implementation of various major CNS/ATM elements in the Region and this includes implementation of ATN and AIDC also. The Matrix serves as a planning tool for monitoring the progress of implementation. States have been encouraged to provide their updates regularly through the Sub-group and Task Force meetings.

2. Discussion

2.1. The CNS/ATM Implementation Planning Matrix was updated by the CNS/MET Sub-group in its Thirteenth Meeting and was reviewed by APANPIRG/20 in 2009. The Matrix, after it is updated in the ATNICG/5 meeting will be presented to the ADS-B Study and Implementation Task Force Meeting scheduled from 7 to 11 June, 2010. The Matrix, after it has been updated by the ATNICG and the ADS-B SITF will be presented to CNS/MET Sub Group in its Fourteenth Meeting. After review by the CNS/MET SG, the Matrix will be presented to the APANPIRG/21 for its review and adoption. The Matrix adopted by APANPIRG/20 is provided at **Appendix** to this paper for reference and updating.

3. Action by the Meeting

3.1 The meeting is invited to review and update the information on the implementation of ATN and AIDC as contained in the appended Matrix to this paper.

Appendix X to the Report on Agenda Item 3.4

CNS/ATM Implementation Planning Matrix

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AIDC	CPDLC	Navigation*			ADS-B/ Multilateration	ADS-C	Remarks
				En-route	Terminal	Approach			
AUSTRALIA	ATN tests were conducted. BIS Router and Backbone BIS Router and AMHS implemented.	AFTN based AIDC Implemented between Brisbane and Melbourne, Auckland, Nadi and Auckland. AIDC is also in use between Melbourne and Mauritius.	Implemented and integrated with ATM systems to support FANS1/A equipped aircraft.	Implemented	Implemented		16 ADS-B sites are operational. A total of 28 UAP ground stations are expected to become operational throughout 2007. Additional 20 stations have been delivered in 2007 for installation at en-route radar site and other sites. 5NM Separation service has been introduced. NFRM on the carriage and use of ADS-B avionics has been issued. WAM installed in Tasmania. Commissioning expected 2009. Provides radar like WAM data and ADS-B data.	FANS 1/A ADS-C implemented.	

APANAPIRG/20
Appendix X to the Report on Agenda Item 3.4

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AIDC	CPDLC	Navigation*			ADS-B/ Multilateration	ADS-C	Remarks
				En-route	Terminal	Approach			
AUSTRALIA (Cont'd)							<p>ASMGCS with multilateration being installed at Melbourne, Sydney, Brisbane and Perth. Operational between 2009 -2010</p> <p>Multilateration based precision runway monitor to be commissioned in 2010.</p>		
BANGLADESH	BIS Router and AMHS planned for 2011.	AIDC between Dhaka and CTG, Dhaka and Sylhet planned for 2011.		Not yet planned	Not yet planned		Not yet planned	Not yet planned	
BHUTAN	ATN BIS Router and UA service 2011.					Procedures developed for NPA.			
BRUNEI DARUSSALAM	ATN BIS Router planned for 2009 and AMHS planned for 2009-2011.								

APANAPIRG/20

Appendix X to the Report on Agenda Item 3.4

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AIDC	CPDLC	Navigation*			ADS-B/ Multilateration	ADS-C	Remarks
				En-route	Terminal	Approach			
CAMBODIA	BIS Router and AMHS planned for 2011.	Planned 2009	Planned 2009			Procedure developed for NPA.			
CHINA	<p>ATN Router and AMHS deployed in 2008.</p> <p>Tripartite BBIS trial completed with Bangkok and Hong Kong, China in Jan. 2003.</p> <p>ATN trial with Hong Kong using XOT over internet conducted in 2006, Further trials planned in 2009.</p> <p>AMHS/ATN tests with Macau is on going.</p>	<p>AIDC between some of ACCs within China has been implemented.</p> <p>AIDC between several other ACCs are being implemented.</p> <p>AIDC between Sanya and Hong Kong put in to operational use in Feb 2007.</p> <p>AIDC between Qingdao and Incheon planned for 2013.</p>	<p>Implemented to ATS Rout.</p> <p>L888 route,</p> <p>Trial on HF data link conducted for use in western China.</p>	<p>Implemented in certain airspace.</p> <p>L888, Y1 and Y2 routes.</p>	<p>RNAV (GNSS) implemented in certain airports.</p> <p>Beijing, Guangzhou, Tianjin.</p>	<p>Ali, Linzhi and Lhasa airports</p>	<p>ADS-B trial has been conducted in 2006. 5 UAT ADS-B sites are operational and used for flight training of CAFUC.</p> <p>Another ADS-B project for ATS route between Chengdu and Jiuzhai using 1090ES conducted since 2008. Will be followed by Chengdu – Lhasa and B215 route.</p>	<p>FANS 1/A based ADS-C implemented.</p> <p>L888 route.</p>	
HONG KONG, CHINA	ATN and AMHS technical trial with Japan conducted in 2003.	AFTN-based AIDC with Sanya put into operational use in February 2007.	FANS 1/A based CPDLC trials completed in 2002.	Implemented in certain airspace	Implemented in certain airspace.	RNAV (GNSS) departure procedures implemented in July 2005.	A-SMGCS trial using ADS-B/ Multilateration technology on the prime airport surveillance area completed in 2006.	FANS 1/A trials for ADS-C completed in 2002.	

APANAPIRG/20
Appendix X to the Report on Agenda Item 3.4

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AIDC	CPDLC	Navigation*			ADS-B/ Multilateration	ADS-C	Remarks
				En-route	Terminal	Approach			
HONG KONG, CHINA (Cont'd)	<p>64 Kbps ATN Link with Bangkok put into operational use in June 2004.</p> <p>Preliminary ATN/AMHS technical trials with China (Beijing) using VPN over Internet connection conducted in September 2006.</p> <p>Operational AMHS commissioned in June 2009.</p> <p>ATN/AMHS interoperability test with Macao commenced in July 2009.</p> <p>ATN/AMHS interoperability tests with other adjacent communications centres will commence in late 2009.</p> <p>ATN/AMHS operations planned for 2010.</p>	<p>AIDC trial with other adjacent ATS authorities planned for end 2009/2010.</p>	<p>VDL Mode-2 technical trial conducted in 2002.</p> <p>D-ATIS, D-VOLMET and 1-way PDC implemented in 2001.</p> <p>PDC service upgraded to 2-way data link in June 2008.</p>			<p>Flight check for RNAV Procedures conducted in April 2008. 6- months operational trial commenced in February 2009.</p>	<p>A larger-scale A-SMGCS covering the whole Hong Kong International Airport put into operational use in April 2009.</p> <p>Data collection/ analysis on aircraft ADS-B equipage in Hong Kong airspace conducted on quarterly basis since 2004.</p> <p>ADS-B trial using a dedicated ADS-B system was conducted in April 2007. Further ADS-B trial planned for 2010.</p>		

APANAPIRG/20

Appendix X to the Report on Agenda Item 3.4

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				En-route	Terminal	Approach			
MACAO, CHINA	ATN AMHS interoperability with China started 25 March with planned duration of 2 months. ATN & AMHS tests with Hong Kong commenced on July 2009.								ATZ within Hong Kong and Guangzhou FIRs. In ATZ full VHF coverage exist. Radar coverage for monitoring purposes.
COOK ISLANDS									
DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA	The ATN BIS Router and AMHS to be implemented in 2011.	With neighboring ACCs to be implemented TBD		Implemented in certain ATS routes G711, B467		RNAV(GNSS) Non-precision approach to be implemented in 2011.	ADS-B has been used as back-up surveillance of SSR since 2008.		
FIJI	ATN BIS Router and AMHS implementation by 4 th quarter 2010.	AFTN based AIDC implemented between Nadi, Brisbane, Auckland and Oakland.	Implemented and integrated with ATM systems to support FANS1/A equipped aircraft.	Implemented		Implemented	ADS-B implementation in 2009/2010.	FANS 1/A ADS-C implemented.	

APANAPIRG/20

Appendix X to the Report on Agenda Item 3.4

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AIDC	CPDLC	Navigation*			ADS-B/ Multilateration	ADS-C	Remarks
				En-route	Terminal	Approach			
FRANCE <i>(French Polynesia Tahiti)</i>		Implementation of limited message sets with adjacent centres under discussion.	FANS-1. Implemented since 1996.					FANS 1/A ADS-C implemented since March 1999.	
INDIA	ATN BBIS router and AMHS Physical installation over. SAT in May 2008, coordinating with China, Thailand and Singapore for conduct of test.	AFTN Based AIDC Coordinating with Bangladesh and Pakistan and, we are ready.	FANS-1 implemented at Kolkata, Chennai, Mumbai and Delhi.	SBAS Technical development in 2007. Implementation planned for 2009.			Trial planned for 2006. ASMGCS Implemented at IGI Airport New Delhi.	FANS 1/A ADS-C implemented at Kolkata, Chennai, Delhi and Mumbai.	
INDONESIA	ATN BIS Router and AMHS planned for trial in 2009. Trial with Singapore planned.	Brisbane and Makassar in planned in June 2009.	FANS-1/A. CPDLC in Ujung Pandang FIRs already trial start from 2008 and will be implemented in 2009.			Procedure to be completed in 2006 for NPA.	22 ADS-B ground stations have been installed in 2009. Upgrading ATC automation at Makasar for ADS-B application capabilities in 2009.	FANS 1/A ADS-C trial planned at Jakarta and Ujung Pandang ACC in 2007.	MATSC new version with capability for ADS-B and Mode-S will be operated in 2009.

APANAPIRG/20
Appendix X to the Report on Agenda Item 3.4

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				En-route	Terminal	Approach			
JAPAN	ATN BBIS already implemented. AMHS implemented between Japan and USA in 2005 and between Japan and Hong Kong, China, ROK, Singapore, Australia planned for 2009-2011. Connection test between Taipei 2008 – ongoing.	AIDC based. AFTN procedure implemented with Oakland and Anchorage. Planned between Incheon ACC and Fukuoka ATMC 2009. Between Fukuoka, ATMC and Taipei ACC 2012.	FANS1/A system Implemented in Fukuoka FIR.	SBAS implemented RNAV5 implemented.	RNAV1 implemented	RNP Approach implemented	Two (2) Multilateration will be implemented in January 2010.	FANS 1/A. ADS-C implemented in Fukuoka FIR.	
KIRIBATI									
LAO PDR	ATN BIS Router and AMHS completed planned for implementation with Bangkok in 2010.	AIDC with Bangkok planned for 2010.		Implemented. Planned for 2011.					
MALAYSIA	ATN BIS Router completed 2007. AMHS planned in 2011	AFTN AIDC planned with Bangkok ACC in 2011.	Implemented for Bay of Bengal in July 2008.	Implemented for Oceanic Routes.	Basic RNAV implemented	NPA at KLIA implemented	Implementation of ADS-B proposed in 2010 - 2015.	FANS 1/A ADS-C implemented for Bay of Bengal on July 2008	

APANAPIRG/20
Appendix X to the Report on Agenda Item 3.4

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				En-route	Terminal	Approach			
MALDIVES	ATN BIS Router/AMHS planned for implementation in the 2011.	Planned for 2011.	FANS1/A installed Trials planned in last quarter of 2007.	Trials planed for 2005-2008. Implementation in later 2008.			Trials planned for 2007-2008. Implementation in late 2008.		
MARSHALL ISLANDS						NPA implemented at Majuro Atoll.			
MICRONESIA (EDERATED STATES OF)									
Chuuk				Implemented					
Kosrae				Implemented					
Pohnpei				Implemented					
Yap				Implemented					
MONGOLIA	ATN BIS Router and AMHS planned for 2005 and 2006. Trial with Bangkok conducted.		Function available. Regular trials are conducted.		GPS procedures are being developed and implemented at 10 airports.		ADS-B trial in progress implementation planned for 2006.	FANS 1/A ADS-C implemented since August 1998.	
MYANMAR	Implementation of AMHS to be completed by the end of 2010.	The capability of ATM Automation system to support AIDC by 2011	Implemented since August 1998.				A plan to implement ADS-B by 2011	Implemented since August 1998.	

APANAPIRG/20
Appendix X to the Report on Agenda Item 3.4

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				En-route	Terminal	Approach			
NAURU									
NEPAL	BIS Router and AMHS planned for 2010.	AFTN/AMHS based AIDC between KTM-CAL, KTM-BAN, KTM-LHASA planned for 2010.			GPS departure and approach has been developed for 8 airports and planned for implementation in 2008.		ADS-B feasibility study planned for 2007.		
NEW CALEDONIA							Tontouta ACC 2009 Tontouta APP 2009.		
NEW ZEALAND	BIS Router and AMHS implementation planned for 2010.	AFTN based AIDC implemented between New Zealand, Australia, Fiji, Tahiti, Chile and USA.	FANS-1/A. Implemented	Will be implemented as required.	RNAV procedures being implemented as developed.	RNP AR APCH implemented at Queenstown (ZQN).	Domestic trial was conducted in 2005. Use will be re-evaluated in 2008. Trial of Area MLAT conducted in 2006. ADS-B planned as an element of MLAT at specific sites for domestic use.*	FANS 1/A Implemented	*MLAT being implemented in Auckland (Surface Movement) and Queenstown.

APANAPIRG/20

Appendix X to the Report on Agenda Item 3.4

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				En-route	Terminal	Approach			
PAKISTAN	Implementation of ATN considered for Phase II (2005-2010).	Implemented between Karachi and Lahore ACCs	Implementation planned from 2005-2010.	Planned for 2005-2010.	RNAV arrival and departure procedure being developed.	NPA procedure are being developed.	Feasibility study for using ADS-B is in hand. One station was installed at ACC Karachi and evaluation is in progress.	Planned for 2005-2010.	Existing Radar system being upgraded.
PAPUA NEW GUINEA				Implemented		Implemented at certain aerodromes.			
PHILIPPINES	ATN G/G BIS Router/AMHS implemented in 2006. AMHS trials with Singapore by end 2008 and Hong Kong planned in 2009.	Planned for 2011.	CPDLC Planned for 2011.				Included in CNS/ATM Project and scheduled for implementation in 2011.	FANS 1/A ADS-C planned for 2011.	

APANAPIRG/20

Appendix X to the Report on Agenda Item 3.4

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				En-route	Terminal	Approach			
REPUBLIC OF KOREA	ATN BIS Router/AMHS planned for 2011.	AFTN based AIDC planned for 2009 between Incheon ACC and Fukuoka ATMC. AIDC between Incheon and Qingdao planned for 2013.	PDC & D-ATIS implemented 2003.			NPA procedure developed at Incheon International Airport in 2008.	ADS-B trials planned for 2008-2009 at Incheon International Airport.	FANS 1/A based ADS-C implemented since 2003 for contingency purpose.	
SINGAPORE	AMHS implemented. ATN BIS Router trial with Malaysia commenced in 2007 and with Indonesia in 2009. ATN/AMHS trial planned with Australia, India, Thailand, UK and Philippines.	ATN based AIDC to be implemented	Implemented since 1997. Integrated in the ATC system in 1999.		RNAV SIDS and STARS implemented in 2006.	NPA Procedure implemented in 2005.		FANS 1/A ADS-C implemented since 1997. Integrated with ATC system in 1999.	
SRI LANKA	ATN BIS Router Planned for 2009. AMHS planned along with BIS in 2009.		PDLC in trial operation since November 2000.				ADS-B Trials planned for 2010 and implementation in 2011.	FANS 1 /A ADS-C trial since November 2000.	GPS based domestic route structure being developed.

APANAPIRG/20
Appendix X to the Report on Agenda Item 3.4

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				En-route	Terminal	Approach			
THAILAND	BBIS/BIS Routers already implemented. Target date for AMHS in 2008.	AFTN based AIDC planned for 2010.	FANS-1/A Implemented.	Under implementation	Implemented at Phuket Airport	Implemented at Phuket	Multilateration implemented in 2006 at Suvarnabhumi Int'l. Airport. 22 ADS-B ground stations will be implemented in 2008.	FANS 1/A ADS-C Implemented.	
TONGA	AMHS planned for 2008.					NPA planned for 2007.	Trial planned for 2010		CPDLC and ADS-C is not considered for lower airspace
UNITED STATES	AMHS implemented. AMHS Atlanta Sept 2009 to serve CAR/SAM, / North Atlantic/Europe	AFTN based AIDC implemented.	FANS-1/A based CPDLC implemented.	Implemented	Implemented		Implemented	Implemented	
VANUATU									

APANAPIRG/20
Appendix X to the Report on Agenda Item 3.4

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AIDC	CPDLC	Navigation*			ADS-B/ Multilateration	ADS-C	Remarks
				En-route	Terminal	Approach			
VIET NAM	BIS Routers planned for 2009. ATN/AMHS trial in 2010 and operation in 2012.	AFTN based AIDC implemented in 2009. Trial for ATN based AIDC planned in 2010.	CPDLC operational trial conducted in early 2007.	For en-route TBD.	RNAV		TBD.	FANS 1/A ADS-C operational trial conducted for oceanic area of Ho Chi Minh FIR since March 2002.	

* Navigation – Navigation including Performance Based Navigation (PBN), APV and precision approach