



ICAO

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**Seventh Meeting of Aeronautical Communication Service
Implementation Co-ordination Group of APANPIRG
(ACSICG/7)**

Web-conference, 21 – 23 July 2020

Agenda Item 4: Review report of Sixth Meeting of the Asia/Pacific ATS Inter-Facility Data -Link Communication Implementation Task Force (APA TF/6)

MAIN OUTCOME OF THE APA TF/6 MEETING

(Presented by the Secretariat)

SUMMARY

This paper presented the main outcome of the Sixth meeting of the AIDC Task Force (APA TF/6) for information and consideration.

1. INTRODUCTION

1.1 The Sixth meeting of the ATS Inter-facility Data Communication Task Force (APA TF/6) was held from 14 to 16 July 2020. The meeting was an on-line meeting using MS TEAMS.

1.2 The meeting was attended by 75 participants from 13 States and one International Organization (Bangladesh, Cambodia, China, India, Indonesia, Lao PDR, Malaysia, Pakistan, Philippines, Singapore, Sri Lanka, Thailand, USA and IFATCA).

2. DISCUSSIONS

Outcome of APANPIRG/30 on AIDC

2.1 The meeting briefly reviewed the outcome of APANPIRG/30 and CNS SG/23 meetings on ATS Inter-facility Data Communication (AIDC) related matters presented by the Secretariat.

2.2 The meeting reviewed the status of ATN/AMHS and AIDC in APAC Region resulted from latest report from relevant meetings. The latest implementation status updated by APA TF/6 meeting is provided in Appendix A for review this meeting.

Updates to the AIDC (ATSU) pairs identified by APANPIRG

2.3 The meeting then noted the AIDC implementation priorities and the target date of implementation against the hotspots identified by RASMAG and APANPIRG.

AIDC Implementation status updates by States

2.4 A number of information papers on the progress of AIDC implementation were presented by States including Malaysia (IP/02); Singapore (IP/03); India (IP/04); China (IP/05, IP/06); Indonesia (IP/08); Thailand (IP/09) and the Philippines (IP/10). The progress on implementation as reported in the IPs had been consolidated into **Appendix A** to this paper.

2.5 The meeting congratulated Thailand for two AIDC connections implemented recently between Bangkok/Kuala Lumpur and Bangkok/Vientiane, in particular for the one implemented on the same day of APA TF/6 meeting i.e. on 14 July 2020. Bangkok new ATM automation system was put into operation on 12 February 2020.

2.6 The meeting also congratulated the Philippines for successful implementation of AIDC connections with other three States. In addition, Manila ACC had already conducted AIDC tests with Kota Kinabalu and Ho Chi Minh. The AIDC trial operations with Ho Chi Minh ACC will commence in 4Q 2020. Indonesia confirmed that the LOA on AIDC between Kota Kinabalu and Manila had been signed and the target date for implementation is in September 2020.

Additional information on AIDC implementation provided by States verbally

2.7 Bangladesh informed the meeting that the AIDC project is delayed and now is under internal approval processes. Bangladesh will coordinate for necessary trials with States concerned after the approval by CAA. Bangladesh which is likely in 2023.

2.8 Sri Lanka informed the meeting that the testing with Maldives and Chennai, India was suspended as impacted by the COVID pandemic. Sri Lanka will try to resume the trials soon with India and Maldives and will also initiate discussions with Jakarta, Indonesia for trials in 2021.

2.9 Pakistan inform the meeting of their AIDC implementation status. The AIDC ICD Version 2 is used by Pakistan. There is a successful domestic AIDC implementation between Lahore and Karachi. Pakistan is also keen to conduct testing with India (Mumbai and Delhi) once ready.

AIDC Connections implemented since APA TF/5 meeting

2.10 The meeting noted that AIDC implementation in South China Sea sub-region had been satisfactory while further efforts by States in the Bay of Bengal sub-region are required. The summary of the new AIDC connections implemented since the APA TF/5 meeting is listed below:

- Automatic handling over based on OLDI ICD between Shenyang ACC and Khabarovsk ACC implemented in October 2019 over a dedicated line;

- AIDC operational implementation between Kuala Lumpur ACC and Chennai OCC came into effect on 01 April 2020;
- Operational AIDC between Singapore ACC and Kuala Lumpur ATCC with limited messages set was implemented on 01 November 2019;
- Operational AIDC between Bangkok ACC and Kuala Lumpur ATCC with limited messages set was implemented on 14 March 2020;
- Operational AIDC between Bangkok ACC and Vientiane ACC with 5 messages set was implemented on 14 July 2020;
- AIDC service between Manila ACC and Hong Kong ACC implemented on 23 May 2019;
- AIDC service between Manila ACC and Singapore ACC implemented on 1 Nov.2019; and
- AIDC service between Manila ACC and Taipei ACC implemented on 5 December 2019.

2.11 The meeting encouraged States/Administrations concerned to continue work bilaterally to expedite implementation of those planned AIDC connections.

2.12 The graphical map for quick and easy understanding of the regional AIDC implementation status updated by Singapore based on the information available to the meeting is provided in Appendix D to the meeting Report.

AIDC Implementation Issues (WP/05)

2.13 Under this Agenda, the meeting reviewed and discussed the consolidated implementation issues (Appendix B to the meeting Report) collected and presented by Indonesia with supports by India and Singapore. The identified issues are classified into three categories i.e. a) pertaining to Communication Infrastructure and Interfacing equipage; b) pertaining to ATM system parameters and Application Software; and c) pertaining to Design Procedures, SOP, Operator's Training. The AIDC reported issues till date were presented for review and discussion by the meeting. Totally 89 issues were consolidated. The meeting considered that the issue table would continue to serve as a reference for other States. A summary of the identified issues is shown in the Table below:

Fault Categories	APA TF/6 (2020)		
	Issues Reported	Closed	Open
a. Communication Link	9	3	6
b. ATM System	50	20	30
c. AIDC Message	17	15	2
d. Airspace Design/Procedures	8	4	4
e. Other	5	2	3
Total	89	44	45

Some Implementation Issues reported by China

2.14 15-20 seconds of exchanged AIDC message could be generally achieved with adjacent ATSU's over AFTN while the ATC controller's preference is less than 5 seconds. With the increasing number of traffic, the latency would be much longer. A number of failures of the AIDC process would grow and the benefits of AIDC would be compromised. Use of dedicated lines can improve the latency issue but the structure of the network would become more complicated. Optimizing the existing AFTN circuit and upgrading exchanges of AFTN messages over CRV, the latency could be improved.

2.15 Some issues were observed regarding the Optional Data Field missing in AIDC message headers, especially for ODF 2 and 3. According to the AIDC ICD Ver. 3, ODF 2 and 3 are defined to carry message/data unit identification and message/data unit reference information, respectively which should be used to improve the accuracy of AIDC message processing.

2.16 For AIDC application, normally the Transfer of Control Point (TCP) or the common FIR boundary shall be determined. For domestic use, China has formulated the standard for FDR data exchange to deal with this. Testing for verification between Kunming ACC and Xishuangbanna/Dali Airport were carried out. Additional function for allocation of Calculate Take-Off Time (CTOT) and SSR code is also specified in the FDR standard which could further reduce air/ground voice communication time.

2.17 The AIDC handover test between China and Laos started in December 2018. While Kunming uses NUMEN-2000 test platform, Vientiane uses TopSky backup system. The test was carried out in a simple mode by using AFTN link.

2.18 ABI, EST and ACP messages are sent automatically in NUMEN-2000 system manufactured by LES company. TOC and AOC messages are sent manually. ABI message is sent 15 minutes prior SAGAG, and EST is sent 80 km or 10 minutes before SAGAG. For outbound flights, Laos reported they couldn't deal with the metric altitude in ABI and EST messages. Later, LES company upgraded the system. By configuring the programs, the altitudes sent to Laos are imperial and other domestic areas are metric. Whereas, the altitudes displayed on controllers' positions are metric, which is convenient for the controllers. For outbound flights, Laos replied LRM after receiving EST sent by Kunming. Also, FPL NOT PREAC was displayed in LRM. At present, there is no ABI in the AIDC handover between Kunming and adjacent control areas, because the route in ABI could be modified

wrongly by the opposite end system. However, due to the limitation from TopSky, ABI is indispensable to activate the flight plan. After that, LES company upgraded related programs and added routes in ABI.

2.19 Latency through AFTN link up to 320 seconds was one of the concerned issues. The average during the test was 68 seconds. Long latency would have caused handover failure. It was recommended to make joint efforts by China and Laos PDR to work out a solution to the problem of transmission latency.

2.20 The meeting encouraged States/Administrations to provide the identified issues with recommended solutions to Indonesia for consolidation into the issues form.

AIDC Issues Summary and Solutions

2.21 Indonesia proposed that the focal points for AIDC implementation should contact each other to work out jointly for the outstanding issues identified in the table. States/Administrations were urged to share the lessons learnt by providing more identified issues for consolidation into the implementation issues report.

2.22 The Secretariat was then requested to distribute the issue form in excel format to all designated AIDC focal points for sharing and seeking updates from States/Administrations.

Future meeting of APA Task Force

2.23 There are also a number of AIDC connections planned for implementations in 4Q2020 or early 2021. Noting the achievements made in completion of tasks specified in the TOR and the discussions at CNS SG/23 meeting, the APA TF/6 meeting considered it necessary to continue the work of the Task Force for a short period of time. The meeting agreed to have another meeting in the first half of 2021 to review the implementation status of those AIDC connections planned for completion by the end of 2020 and/or early 2021 before dissolving the AIDC Task Force.

2.24 Considering the impact of the COVID pandemic, the next meeting of the Task Force is not possible to schedule with a fixed date and is likely to be held in early 2021. The Secretariat will coordinate and inform member States of the Task Force about exact dates of the meeting at due course.

3. ACTION BY THE MEETING

3.1 The meeting is invited to note the progress of AIDC implementation, the implementation plan and the new issues identified by the AIDC Task Force.

3.2 The meeting is also expected to update the ATN/AMHS/AIDC implementation status provided in **Appendix A** to this paper.

ATN/AMHS/AIDC Implementation Status in the APAC Region

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
AFGHANISTAN					
AUSTRALIA	<p>ATN tests were conducted. BIS Router and Backbone BIS Router and AMHS implemented.</p> <p>AMHS has been migrated to CRV.</p> <p>Connection with Singapore using AMHS was implemented October 2016;</p> <p>Another AMHS connections pending CRV (target date by March 2020) including both connection with New Zealand and USA.</p> <p>AMHS connection with Indonesia pending on CRV implementation</p> <p>AMHS connection with South Africa has been established</p> <p>Plan to upgrade AMHS support IWXXM traffic from Nov. 2020.</p>	COMSOFT	<p>AFTN/AMHS based AIDC Implemented between Brisbane and Melbourne, Oakland, Nadi and Auckland;</p> <p>Implemented between Melbourne and Johannesburg;</p> <p>AIDC is also in use between Melbourne and Mauritius;</p> <p>Operational trial between Brisbane and Ujung Pandang since May 2013. Implementation in July 2017. LOA needs to be updated.</p>		
BANGLADESH	In Q1/2013, Bangladesh installed ATN/AMHS and BIS Router at Dhaka (VGHS) with User Agents at Chittagong (VGEG) and Sylhet (VGSY).	COMSOFT	Tentative date of implementation of AIDC is Q4 of 2023 with Kolkata and Yangon.		Implementation of AIDC is included in the "Modernization of CNS-ATM System of

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
					CAAB” project which is going on G2G agreement with French Government and likely to be implemented by the end of 2023.
BHUTAN	<p>ATN/AMHS circuits, using IP over VPN, with Thailand (Bangkok) and India (Mumbai) commissioned in June and July 2017 respectively.</p> <p>IOT and POT with Mumbai completed on 27th June 2017.</p> <p>IOT and POT with Thailand completed on 2nd May 2017.</p> <p>TMC signing with both countries at final stage.</p>	AEROTHAI’S AMHS System	Currently not applicable. If required in the future, will be decided after CRV implementation (scheduled for mid-2019).		
BRUNEI DARUSSALAM	ATN BIS Router planned for 2015 and AMHS planned for 2015				

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
CAMBODIA	BIS Router and AMHS installed. Cambodia (CATS) AMHS connected with Bangkok via VSAT IP link since 10 December 2013	AVITECH	AIDC function and capability made available. Ready for testing with neighbors ATS Facilities starting from 2017 and target date of implementation with Bangkok in 4Q2019	THALES which supports AIDC ICD Version 1.	
CHINA	<p>ATN Router and AMHS including NCC deployed in 2008 which is being upgraded to support ATN/IPS with target date of completion in December 2013.</p> <p>The Beijing-Hong Kong AMHS link was put into operation in 2018;</p> <p>With Thailand is completed POT, after sign the TMC circuit and was put into operation in Q12020</p> <p>AMHS/ATN technical tests with Macau completed in 2009. Plan for ATN/AMHS implementation with Macao China in 2019.</p> <p>ATN/AMHS circuit with ROK has been put into operation since June 2011.</p>	IN-HOUSE (Aero-Info Technologies Co., Ltd)	<p>AIDC between some of ACCs within China has been implemented. AIDC between several other ACCs are being implemented.</p> <p>AIDC between Sanya and Hong Kong China put in to operational use since 8 Feb 2007.</p> <p>AIDC between Dalian and Incheon implemented in Nov. 2016;</p>	<p>ATN Router and AMHS including NCC deployed in 2008 which is being upgraded to support ATN/IPS with target date of completion in December 2013.</p> <p>The Beijing-Hong Kong AMHS link was put into operation in 2018;</p> <p>With Thailand is completed POT, after sign the TMC circuit and was put into operation in Q12020</p>	IN-HOUSE (Aero-Info Technologies Co., Ltd)

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
	<p>ATN/AMHS tests with India has been put into operation since 2016.</p> <p>ATN and AMHS IOT with Mongolia is completed in May 2018. Plan for commissioning after POT completion in 2020</p> <p>Connection tests with Nepal is TBD.</p> <p>AMHS testing with Japan in 2020.</p> <p>AMHS testing with Russia in 2020.</p>		<p>AIDC between Shanghai/Guangzhou and Tapei put in to operational use since 2013.</p> <p>AIDC between Guangzhou and Hong Kong China put in to operational use since May 2018.</p> <p>OLDI between Shenyang and Khabarovsk put into operational use since Oct.2019.</p> <p>For: Beijing/Ulaanbaatar, Further testing is planned in 2020.</p> <p>Kunming/Yangon under test and progress since May 2017</p>	<p>AMHS/ATN technical tests with Macau completed in 2009. Plan for ATN/AMHS implementation with Macao China in 2019.</p> <p>ATN/AMHS circuit with ROK has been put into operation since June 2011.</p> <p>ATN/AMHS tests with India has been put into operation since 2016.</p> <p>ATN and AMHS IOT with Mongolia is completed in May 2018. Plan for commissioning after POT completion in 2020</p> <p>Connection tests with Nepal is TBD.</p> <p>AMHS testing with Japan in 2020.</p>	

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
			<p>Kunming/Vientiane under test and progress since Dec. 2018.</p> <p>Sanya/Hanoi under test trial since 2019.</p>	<p>AMHS testing with Russia in 2020</p>	
<p>HONG KONG, CHINA</p>	<p>Manila / Philippines CRV/AMHS circuit was put into operation in May 2019.</p> <p>Beijing / China ATN/AMHS circuit was put into operation in 2018. Plan to migrate to CRV in 2020.</p> <p>Bangkok / Thailand ATN/AMHS circuit was put into operation use in 2014. Plan to migrate to CRV in 3Q2020.</p> <p>Fukuoka / Japan Currently on AFTN. Plan to cut over to CRV/AMHS in 1Q 2020.</p> <p>HoChiMinh / Vietnam Currently on AFTN. Plan to test ATN/AMHS in 2020.</p> <p>Taibei</p>	<p>COMSOFT</p>	<p>AFTN-based AIDC with Sanya put into operational use in Feb 2007. AIDC technical trial with Taibei conducted in 2010 and completed in 2012 and put into operational use in Nov. 2012</p> <p>AIDC technical and interoperability tests with Guangzhou were conducted successfully in April and June 2017 respectively and put into operational use in May 2018.</p> <p>AIDC technical and interoperability tests with Manila were conducted successfully in May 2018 with no observations on exchanging core set</p>	<p>Raytheon ATM system Support AIDC ICD Version 3 commissioned in November 2016.</p>	<p>Already support exchange of IWXXM messages based on FTBP.</p>

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
	Currently on AFTN. Plan to test CRV/AMHS in 2020		messages (EST, ACP, TOC, AOC, LAM, LRM). AIDC operational trial with Manila was commenced in March 2019.		
MACAO, CHINA	ATN/AMHS interoperability test with Beijing commenced in March 2009. ATN/AMHS circuit with Hong Kong put into operational use in end Dec. 2009. ATN/AMHS implementation with mainland China planned for 2019.	COMSOFT	(Not applicable for using AIDC, looking into the possible application (some way) between TWR and ACC/APP).		
COOK ISLANDS					
DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA	The ATN BIS Router and AMHS planned for in 2011.		With neighboring ACCs to be implemented		

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
FIJI ISLANDS	<p>ATN BBIS IPS router and AMHS implemented over CRV for connection to USA in April, 2019 with Australia planned for June, 2019.</p> <p>For connections with sub-regional centers: For New Caledonia using AMHS since 2017; For connection with Kiribati using UA/AMHS implemented in 2015.</p>	COMSOFT	AFTN based AIDC implemented between Nadi/ Brisbane, Auckland and Oakland.	<p>- Support and implemented AIDC messaging: ABI, EST, CPL, CDN, ACP, TOC, AOC with all three centers</p> <p>- AIDC ICD version 2.0 implemented with Auckland and Oakland.</p> <p>- AIDC ICD Version 1.0 implemented with Brisbane</p>	
FRANCE <i>(French Polynesia Tahiti)</i>	<p>Planned for implementation of AMHS in 2020.</p> <p>Using IP with New Zealand since 2017.</p>		Implementation of AIDC (based on Version 3) with adjacent centers (Oakland and Auckland) since 2009.	THALES EUROCAT for AIDC	Alternate routing for backup between Tahiti and Christchurch via Tahiti/New Caledonia IP link
INDIA	<p>Dual stack ATN/IP router and AMHS implemented at Mumbai in 2011. Operational AMHS connections with Bangkok, Dhaka, Singapore, Kathmandu, Karachi implemented.</p> <p>With Beijing implemented in 2016; With Colombo implemented in May 2017; With Bhutan implemented in July 2017; Planned for Nairobi in Q1 2020 and Muscat for 2020.</p>	COMSOFT	<p>-15-May-2017, AIDC implemented between Chennai and Kuala Lumpur with ABI and EST messages. CDN is done with voice confirmation. TOC/AOC to be implemented;</p> <p>- Chennai-Colombo under test trial;</p>	<p>1) Raytheon at Mumbai and Chennai.</p> <p>2) Selex at Hyderabad and Bengaluru.</p> <p>3) INDRA at 40 locations</p>	<p>1) Major Indian airports and ATC centers have integrated ATS Automation Systems having AIDC capability. Successful AIDC trials have been carried out amongst major ATSU's within India.</p>

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
			<ul style="list-style-type: none"> - Chennai-Male under test trial; - Chennai-Yangon under test trial; - Mumbai-Male test trials completed; LOA signed. - Trivandrum-Male under test trial. LOA signed. - Mumbai-Muscat under test trial; -Ahmedabad-Karachi under test trial. LOA signed. 		<ul style="list-style-type: none"> 2) AIDC implemented between Chennai and Mumbai. 3) AMHS implemented and working between <ul style="list-style-type: none"> A. BBIS: Mumbai-Singapore, Bangkok B: BIS: Mumbai, Kathmandu, Dhaka, Karachi, Colombo & Paro
INDONESIA	<p>ATN BIS Router and AMHS with Singapore implemented since February 2018;</p> <p>AMHS Trial (IOT) with Brisbane pending for CRV implementation.</p>	IDS	<p>AIDC implementation in Ujung Pandang ACC conducted as follows:</p> <ul style="list-style-type: none"> 1) Ujung Pandang ACC –Brisbane ACC: Implemented since July 2017. 2) Ujung Pandang ACC – Manila ACC: <ul style="list-style-type: none"> - Operational trial since October 2019; - Target date for implementation in 3Q2020. 	Thales TopSky in Makassar able to support ICD version 3 since December 2015.	For CRV, target of contract in 4Q2020 and implementation in 1Q2021.

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
			<p>3) Ujung Pandang ACC – Kota Kinabalu ACC: - Successfully tested and target date for operational trial in 4Q2020; - Target date for implementation 1Q2021.</p> <p>4) Ujung Pandang ACC – Oakland ARTCC: - Successfully tested and target date for implementation in 4Q2020.</p> <p>5) Ujung Pandang ACC – Port Moresby ACC: - Successfully tested on 7 July 2020; - Target date for operational trial in 3Q2020. - Target date for implementation 1Q2021.</p> <p>6) Ujung Pandang ACC – Jakarta ACC (4Q2020);</p>		

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
			<p>AIDC implementation in Jakarta ACC will be carried out with the following priorities:</p> <ol style="list-style-type: none"> 1) Jakarta – Ujung Pandang (4Q2020); 2) Jakarta – Chennai (3Q2021); 3) Jakarta – Melbourne (4Q2021); 4) Jakarta – Colombo (2Q2022); 5) Jakarta – Singapore (3Q2022); 6) Jakarta - Kuala Lumpur (4Q2022); 7) Jakarta – Kota Kinabalu (4Q2022). 		<p>Priority is in accordance with Hot Spot identified by RASMAG/23</p>
JAPAN	<p>ATN BBIS router and AMHS installed at 2000. Connection tests with USA 2000 - 2004 and put into operational use in 2005.</p> <p>ATN BBIS router (to apply to Dual Stack) and AMHS (to upgrade in 2015. The connection test with each country which is not currently connecting is started after update.</p>	NEC	<p>AIDC implemented between Fukuoka ATMC and Oakland ARTCC in 1998.</p> <p>AIDC implemented between Fukuoka ATMC and Anchorage ARTCC in 2005.</p> <p>AIDC implemented between Tokyo</p>		<p>Japan and USA conducting testing AIDC over AMHS and cutover date is 5 May 2017.</p>

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
	<p>Upgrading connection with Hong Kong and Singapore using VPN will be implemented in 2020 after implementation of CRV.</p> <p>Coordinating for all other circuits upgrading.</p>		<p>ACC/Fukuoka ACC and Incheon ACC in 2010.</p> <p>Implemented between Fukuoka and Incheon since June 2009.</p> <p>AIDC implemented between Fukuoka ACC/Naha ACC and Taipei ACC implemented.</p> <p>AIDC between Fukuoka ACC and Shanghai ACC under negotiation.</p>		
KIRIBATI	<p>Connection with Nadi using UA/AMHS implemented in 2015.</p>				
LAO PDR	<p>ATN BIS Router and AMHS completed, planned for operation with Bangkok since 4Q 2016.</p>	THALES	<p>AIDC testing with Bangkok in 2017 and target for implementation in 4Q2019.</p> <p>Testing with Hanoi on-going since 2017; with Cambodia operational test again in June 2018, and implementation 2Q 2019.</p>	<p>THALES which is able to support ICD Version 2.</p>	

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
			Testing with Kunming and Yangon ongoing.		
MALAYSIA	<p>ATN BIS Router completed 2007. AMHS implementation planned for Q42017;</p> <p>Malaysia – Singapore for AMHS implementation in March 2020.</p> <p>Malaysia – Thailand for AMHS implementation in 2019.</p>	FREQUENTIS	<p>AIDC technical test between Kuala Lumpur ACC and Bangkok ACC conducted since November 2016 (ABI/EST/ACP/LAM/LRM/CDN/REJ/TOC/AO C).</p> <p>The operational trial commenced in August 2019 (EST/ACP/LAM/LRM).</p> <p>The operational implementation commenced on 14th March 2020 (EST/ACP/LAM/LRM). AIDC technical test between Kuala Lumpur ACC and Chennai OCC conducted since February 2013.</p> <p>The operational trial implemented in phases from September 2016 (ABI/EST/MAC/LAM/L</p>	LEONARDO which is able to support ICD Version 3.	

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
			<p>RM/ACP). Review on the CDN message implementation conducted in August 2017. SOP signed 26 April, 2017.</p> <p>The MOU signed on March 2020.</p> <p>The operational implementation commenced on 1st April 2020 (ABI/EST/ACP/LAM/LRM/CDN/R EJ/MAC).</p> <p>The operational trial for TOC/AOC started on 1st July until 1st August 2020.</p> <p>AIDC technical test between Kuala Lumpur ACC and Singapore ACC conducted since April 2015 (ABI/EST/ACP/LAM/LRM/CDN/R EJ).</p> <p>The operational trial started on September 2018 (EST/ACP/LAM/LRM).</p>		

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
			<p>The operational implementation commenced on 1st November 2019 (EST/ACP/LAM/LRM).</p> <p>AIDC technical test between Kuala Lumpur ACC and Ho Chi Minh ACC To Be Discussed (TBD).</p> <p>AIDC technical test between Kuala Lumpur ACC and Jakarta ACC TBD.</p> <p>AIDC technical test between Kota Kinabalu ACC and Manila ACC started on May 2019 (EST/ACP/ LAM/LRM). The operational trial plan to be started in 4Q2020 (EST/ACP/ LAM/LRM).</p> <p>The operational implementation plan to be started in 1Q2021 (EST/ACP/LAM/ LRM).</p>		

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
			<p>AIDC technical test between Kota Kinabalu ACC and Ujung Pandang ACC started on August 2019 (EST/ACP/LAM/LRM).</p> <p>The operational trial plan to be started in 4Q2020 (EST/ACP/ LAM/LRM).</p> <p>The operational implementation plan to be started in 1Q2021 (EST/ACP/LAM/LRM).</p> <p>AIDC technical test between Kota Kinabalu ACC with Jakarta ACC TBD.</p> <p>AIDC technical test between Kota <u>Kinabalu</u> ACC and Singapore ACC started on November 2019 (EST/ACP/LAM/ LRM).</p> <p>The operational trial to be commenced on October 2020 (EST/ ACP/LAM/LRM).</p>		

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
			<p>The operational implementation to be started in 1Q2021 (EST/ACP/LAM/LRM).</p> <p>AIDC technical test between Kuching ACC and Singapore ACC started on November 2019 (EST/ACP/LAM/LRM).</p> <p>The operational trial to be commenced on 20th July until 18th October 2020 (EST/ACP/LAM/LRM).</p> <p>The operational implementation to be started in 4Q2020 (EST/ACP/LAM/LRM).</p> <p>AIDC between Kuching ACC and Jakarta ACC TBD.</p>		

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MALDIVES	<p>In the process of replacing the existing operational AFTN system by AMHS. It is expected to complete the installation before the end of 2019.</p> <p>With the new AMHS, it is planned to establish a new IP connection between an additional neighboring ATSU as the current link is an X.25 connection between Colombo.</p> <p>Also will look for the possibility of implementing the CRV network to use with AMHS and AIDC during the same phase.</p>		<p>Connection established with all the adjacent ATSUs. Interoperability tests successfully completed in 2017.</p> <p>LOA signed for operational trials between Mumbai, Chennai, and Trivandrum. Operational trials were also successful with these ATSUs, while several issues were resolved from both ends.</p> <p>Ready to sign LOA with Melbourne and is expected during the 2nd quarter of 2019.</p> <p>Trials with Colombo had few issues, which Colombo is working to resolve it on their end with the automation system supplier. Connections between all 5 ATSUs are turned ON</p>	SELEX which is able to support ICD Version 3.	

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			in the ATS automation system to conduct pre-notified operational trials.		
MARSHALL ISLANDS					
MICRONESIA (EDERATED STATES OF)					
Chuuk					
Kosrae					
Pohnpei					
Yap					
MONGOLIA	<p>AMHS/AFTN gateway implemented 2012.</p> <p>ATNBIS router implemented in 2014.</p> <p>ATN and AMHS IOT with China was completed in May 2018. Plan for commissioning after POT completion in 2019.</p>	COMSOFT	<p>ATM automation system supports both AIDC and OLDI.</p> <p>Coordinating with Russia on OLDI connection in target date 2016.</p> <p>Coordinating with China on AIDC connection between Beijing/Ulaanbaatar</p>	INDRA Aircon 2100 supporting AIDC ICD Version 2.	

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			technical trials in progress. Planned date of testing in 2019.		
MYANMAR	AMHS including ATFN/AMHS gateway implemented in Nov. 2011; Connection with Thailand implemented in 4Q2016; Planned for AMHS connection with Beijing. Target date TBC.	THALES	AIDC connection pre-operation test with Thailand conducted in 4Q2017 and Target date of implementation 1Q2020; AIDC testing with Kunming Chennai, Kolkata and Vientiane conducted in 2020.	THALES Automation system (Topsky ATC supports APAC AIDC ICD Ver. 2.	
NAURU					
NEPAL	AFTN/AMHS Gateway implemented in 2012. AMHS implemented with India since June 2014. AFTN connection with China. Plan to test AMHS connection soon.	COMSOFT	Nepal uses custom built ATM system from NEC. Some issues regarding ICD need to be resolved in order to proceed ahead with AIDC testing with India and China.		
NEW CALEDONIA	New router and AMHS commissioned December 2016	COMSOFT			

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NEW ZEALAND	AMHS connection with the USA over CRV was implemented in April 2019. AMHS connection to Australia over CRV is scheduled for June 2019.	COMSOFT	AIDC implemented between New Zealand, Australia, Fiji, Tahiti, Chile and USA.	Supported the Basic 5 message set. ATM systems are LEIDOS and ADACEL	
PAKISTAN	ATN/AMHS connections with Mumbai since 2015. Planning for AMHS connection with Beijing and Kuwait after upgrading existing facilities between the Countries. Target dates for implementation TBC.	COMSOFT	Implemented between Karachi and Lahore ACCs Further testing to be conducted between Delhi/Karachi & Delhi/Lahore after system upgradation at Indian end; Mumbai/Karachi & AHM/Karachi on trial operation. For testing with Muscat planned for 4Q2019. Coordination for testing with Tehran is in progress.	ATM system from Intra AIRCON 2100	Existing Radar system being upgraded.
PAPUA NEW GUINEA	Currently AFTN over IP. AMHS implementation is planned for after successful implementation of CRV this year. AMHS implementation planned for 2020.	COMSOFT is the supplier of PNG AFTN/AMHS system	AIDC using AFTN operational with Australia, testing/trial with Oakland (USA) started late last year and in progress.	New ATM System from Thales (TopSky-ATC) implemented and operational now supports AIDC V3.	

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			AIDC implementation with Indonesia to happen after CRV implementation this year.		
PHILIPPINES	<p>New ATN/AMHS was installed at the New CNS/ATM Center in Manila. Site Acceptance was successfully done on October 2015. The new AMHS commissioned and operational in March 2018. The international connection still using AFTN except Hong Kong. The AMHS Implemented over CRV with Hong Kong 1Q2019 and with Singapore is planned over CRV by end of 2Q2020.</p> <p>AMHS implementation with Oakland USA via CRV is planned for 3Q2020.</p>	COMSOFT	<p>On-going test with Singapore, Ujung Pandang and Taipei ACCs; Planned technical trial over new ATM system with other ACCs from 4Q2017 to 3Q2019: Coordination is underway for using AIDC function of the new ATM system with adjacent ACCs.</p> <p>Implemented with Singapore ACC in Nov. 2019; 4Q2019 – Ujung Pandang ACC; 3Q2019 – Taipei ACC; Implemented with Hong Kong ACC in May 2019; AIDC with Taipei ACC implemented on 5 Dec. 2019.</p>	THALES which is able to support ICD Version 2.	

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REPUBLIC OF KOREA	<p>ATN/AMHS circuit with China put into operational use in June 2011.</p> <p>AMHS implementation with China over CRV in 2Q2020.</p> <p>AMHS implementation with Japan over CRV in 4Q2020.</p>	SAMSUNG	<p>AIDC implemented between ACC and Fukuoka ATMC in 2010</p> <p>AIDC between Incheon and Dalian implemented in Nov. 2016.</p>	Rockheed Martin System	
SINGAPORE	<p>AMHS implemented.</p> <p>ATN/AMHS circuit with India put into operational use in March 2011.</p> <p>ATN/AMHS circuit with UK put into operational use in March 2012.</p> <p>ATN/AMHS circuit with Thailand put into operational use in December 2014.</p> <p>ATN/AMHS circuit with Australia put into operational use in October 2016.</p> <p>ATN/AMHS circuit with Indonesia put into operational use in February 2018.</p> <p>ATN/ AMHS circuit with Malaysia put into operational in March 2020.</p> <p>Inter-Operability Test (IOT) with Japan and Vietnam started in 2019. IOT with Philippines, Sri Lanka, Bahrain and Brunei targeted in 2020/2021.</p>	FREQUENTIS COMSOFT	<p>Operational with Ho Chi Minh implemented July 2014</p> <p>Kuala Lumpur operational trial started since September 2018 and is implemented Nov. 2019.</p> <p>Manila operational trial started in February 2019. Implementation Nov. 2019</p> <p>Technical trials with Jakarta ACC will be initiated once the Jakarta ACC ATMS renewal is completed.</p>	THALES supports ICD Version 3 since December 2018	<p>AMHS implemented.</p> <p>ATN/AMHS circuit with India put into operational use in March 2011.</p> <p>ATN/AMHS circuit with UK put into operational use in March 2012.</p> <p>ATN/AMHS circuit with Thailand put into operational use in December 2014.</p> <p>ATN/AMHS circuit with Australia put into operational use in October 2016.</p> <p>ATN/AMHS circuit with Indonesia put into operational use in February 2018.</p>

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
					ATN/ AMHS circuit with Malaysia put into operational in March 2020. Inter-Operability Test (IOT) with Japan and Vietnam started in 2019. IOT with Philippines, Sri Lanka, Bahrain and Brunei targeted in 2020/2021.
SRI LANKA	ATN BIS Router Planned for 2013. IP based AMHS implemented by Oct. 2017. <ul style="list-style-type: none"> - Mumbai tested May 2017 operational planned for Q4 2017; - Singapore testing in Q4 2017 operational for 2018; - Male testing and operational date TBD. 	IDS	Trials with Male planned for in 3Q2019. Trial with Chennai on-going. Plan for implementation in 2018 and with Melbourne plan for 1Q2018.	INTELCAN which is able to support ICD Version 3.	
THAILAND	BBIS/BIS Routers already implemented. AMHS has been implemented since July 2011. Connection with Bangladesh, Bhutan, Cambodia, China, India, Lao PDR, Myanmar, Singapore, Hong Kong China implemented.	AEROTHAI's AMHS System	The implementation with <ul style="list-style-type: none"> • Malaysia has done on 14th March 2020 • Lao PDR has done on 14th July 2020 	THALES which supports AIDC feature, APAC AIDC ICD V.3.	

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	<p>Implementation with Malaysia has done on 14th .</p> <p>Interoperability Test: with Viet Nam planned for end of 3Q2019 and Italy planned for end of 4Q2019</p> <p>Connection with SITA (SITA AMHS Gateway inter-connections) implemented.</p>		In addition, it is planned to implement AIDC with Cambodia and Myanmar by 3Q2020 and 4Q2020 consecutively.		
TONGA	<p>AMHS planned for 2008.</p> <p>The provider is linked to the New Zealand AFTN</p>				CPDLC and ADS-C is not considered for lower airspace
UNITED STATES	<p>AMHS implemented. (Salt Lake City & Atlanta). Transition using AMHS when counter parts ready</p> <p>Planned for AMHS implementation with</p> <ul style="list-style-type: none"> - Australia (1/2019) - Fiji (1/2019) - New Zealand (1/2019) - Japan (2/2019) - Philippines (3rd 2020) 	IN-HOUSE	<ul style="list-style-type: none"> - Fiji, Japan, New Zealand, - Tahiti (via New Zealand), - Papua New Guinea (via Australia) - Philippines (3rd 2020) - Indonesia via Australia (2019) - Russian Federation (pending joining CRV) 	IN-HOUSE which is able to support APAC and NAT ICDs currently Version 2.	
VANUATU					

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
VIET NAM	<p>AMHS (basic) implemented. Trial phase from 4Q/2015 to 3Q/2018. IOT with Thailand in progress from 4Q/2017 Plan to use AMHS in 4Q/2018;</p> <p>Planned for IOT with Hong Kong, Singapore and Thailand in 2019</p> <p>For IOT with Laos PDR and Cambodia in 2019.</p>	IN-HOUSE	<p>Operational between Ho Chi Minh and Singapore since July 2014. Trial for additional messages sets since 2018.</p> <p>Implementation between Ho Chi Minh with Philippines planned for 4Q2020;</p> <p>Technical testing with Cambodia already done; Trials between Hanoi and Vientiane, Lao. PDR on going.</p> <p>with Malaysia TBC</p> <p>Testing with Cambodia on – going; For operation trial TBC.</p>	<p>Support ICD Version 1.0 with THALES at Ho Chi Minh ATM system.</p> <p>Support ICD Version 3.0 with Selex at Hanoi ATM System.</p>	
Wallis and Futuna (FRANCE)	AMHS implementation planned for end of 2017			COMSOFT	
