



ICAO

*International Civil Aviation Organization***Seventh Meeting of the Common Aeronautical Virtual Private Network Operations Group (CRV OG/7)**

Bangkok, Thailand, 20 – 22 January 2020

Agenda Item 2: Review and update the AMHS/ATN Implementation Status table and the APAC CRV Implementation Table

**UPDATE THE AMHS/ATN IMPLEMENTATION STATUS TABLE AND
THE APAC CRV IMPLEMENTATION TABLE**

(Presented by Secretariat)

SUMMARY

This paper presents the AMHS/ATN Implementation Status table and the APAC CRV Implementation Table for review and update by the meeting.

1. INTRODUCTION

1.1 The Sixth Meeting of the Common Aeronautical Virtual Private Network Operations Group of APANPIRG (CRV OG/6) held in May 2019 reviewed and updated the status of ATN/AMHS/AIDC implementation in the APAC Region. The meeting also updated the CRV implementation table.

1.2 The ACSICG/6 meeting held in May 2019 and CNS SG/23 meeting held in September 2019 further reviewed the status of ATN/AMHS and AIDC in APAC Region resulted from CRV OG/6 meeting report.

2. DISCUSSION

2.1 The ATN/AMHS/AIDC implementation table further updated by CNS SG/23 meeting is provided in **Attachment A** to this paper. The updated CRV implementation table by CNS SG/23 meeting is provided in **Attachment B** to this paper.

2.2 In following up a proposal from APA TF/5 meeting, the implementation status of AIDC shown on graphical map was presented to CNS SG/23 meeting for quick and easy understanding and decisions makers of States. Singapore took lead for development of this implementation map based on information contained in the implementation status table.

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2.3 The CRV implementation status was also presented to the APAC DGCA Conf/56 held in August 2019. CRV implementation is one of elements of air navigation service emphasized in the Declaration of Asia Pacific Ministerial Conference on Civil Aviation also called Beijing Declaration.

2.4 The latest updates from the service provider on the planning and implementation status of are as follows:

- under operation
Australia, Fiji, Hong Kong China, Japan, New Zealand, Philippines and USA
- under provisioning
Republic of Korea, Singapore and Bhutan
- Hot prospects in 2019
Indonesia
- Planning for 2020
Bahrain, China, Thailand, France New Caledonia and Polynesia, Malaysia, India, Russia and PNG

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this paper;
- b) review and update the ATN/AMHS/AIDC implementation table provided in **Attachment A**; and
- c) review and update the CRV implementation table provided in **Attachment B**.

Attachment A to WP/02
Appendix A to CNS SG/23 Report

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>64 kbps IPLC established with Fiji for basic AMHS will be migrated to CRV when successful CRV pilot project is completed.</p> <p>Connection with Singapore using AMHS was implemented October 2016;</p> <p>Another AMHS connections pending CRV pilot project (target date by March 2019) including both connection with New Zealand and USA.</p> <p>AMHS connection with Indonesia 4Q 2020</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>		

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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
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 2018 with Kolkata and Myanmar.		<p>The Bangladesh ATM Upgrade Project (BATMUP) under Public Private Partnership (PPP) in Dhaka is expected to be completed by 2018.</p> <p>As soon as the ATM up-gradation is completed hopefully Bangladesh will be able to implement AIDC with Kolkata and Myanmar by the end of 2018.</p>
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>	AEROTHAI'S AMHS System	Currently not applicable. If required in the future, will be decided after CRV implementation (scheduled for mid-2019).		

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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
	TMC signing with both countries at final stage.				
BRUNEI DARUSSALAM	ATN BIS Router planned for 2015 and AMHS planned for 2015				
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	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. The Beijing-Hong Kong AMHS link was put into operation in 2018; With Thailand is completed POT, after sign the TMC circuit and was put into operation in Q3 2019. AMHS/ATN technical tests with Macau completed in 2009. Plan for ATN/AMHS implementation with Macao China in 2019.	IN-HOUSE (Aero-Info Technologies Co., Ltd)	AIDC between some of ACCs within China has been implemented. AIDC between several other ACCs are being implemented. AIDC between Sanya and Hong Kong put in to operational use since 8 Feb 2007. AIDC between Dalian and Incheon implemented in Nov. 2016;		

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	<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 2019.</p> <p>Connection tests with Nepal is TBD.</p>		<p>Guangzhou with Nanning/Zhanjiang/Zhuhai implemented;</p> <p>Nanning and Kunming/Guiyang/Zhanjiang implemented in 2011; Zhanjiang/Haikou;</p> <p>Chengdu and Chongqing/Guiyang implemented in 2011;</p> <p>Guiyang and Chongqing/Kunming implemented in 2011;</p> <p>For Beijing/Ulaanbaatar, planned date of testing in 2019.</p>		
HONG KONG, CHINA	<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 2019.</p> <p>Bangkok / Thailand ATN/AMHS circuit was put into operation use in 2014. Plan to migrate to CRV in 2019.</p>	COMSOFT	<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</p>	Raytheon ATM system Support AIDC ICD Version 3 commissioned in November 2016.	Already support exchange of IWXXM messages based on FTBP.

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	<p>Fukuoka / Japan Currently on AFTN. Plan to cut over to CRV/AMHS in Q1 2020.</p> <p>HoChiMinh / Vietnam Currently on AFTN. Plan to test ATN/AMHS in 2019.</p> <p>Taibei Currently on AFTN. Plan to test CRV/AMHS in 2019</p>		<p>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 messages (EST, ACP, TOC, AOC, LAM, LRM). AIDC operational trial with Manila was commenced in March 2019.</p>		
MACAO, CHINA	<p>ATN/AMHS interoperability test with Beijing commenced in March 2009.</p> <p>ATN/AMHS circuit with Hong Kong put into operational use in end Dec. 2009. ATN/AMHS implementation with mainland China planned for 2019.</p>	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		

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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.</p> <p>Operational AMHS connections with Bangkok, Dhaka, Singapore, Kathmandu, Karachi implemented.</p> <p>With Beijing implemented in 2016;</p> <p>With Colombo implemented in May 2017;</p> <p>With Bhutan implemented in July 2017; and</p> <p>Planned for Muscat and Nairobi for 2019.</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 in testing phase;</p> <p>- Chennai-Male test trials in progress; LOA signed.</p> <p>- Mumbai-Karachi test trials in progress;</p>	<p>1) Raytheon at New Delhi, Mumbai and Chennai</p> <p>2) Selex at Hyderabad and Bengaluru.</p> <p>3) INDRA at 39 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 ATSUs within India.</p> <p>2) AIDC implemented between Chennai and Mumbai.</p> <p>3) AMHS implemented and working between</p>

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			<p>- Chennai-Yangon is in testing phase; -Mumbai-Male test trials in progress; LOA signed. -Trivandrum-Male test trials in progress. LOA signed. - Mumbai- Muscat planned for 2019.</p>		<p>A. BBIS: Mumbai-Singapore, Bangkok B: BIS: Mumbai, Kathmandu, Dhaka</p>
<p>INDONESIA</p>	<p>ATN BIS Router and AMHS with Singapore implemented Since February 2018; AMHS Trial (IOT) with Brisbane planned 4Q2020 over VPN;</p>	<p>IDS ELSA</p>	<p>Implementation Jakarta (new ATM system in 4Q2020) The target date of AIDC implementation will commence testing in 4Q2020 including following pairs: Jakarta-Singapore; Jakarta-Chennai; Jakarta-Ujung Pandang; Jakarta-Melbourne; Jakarta – Kuala Lumpur Ujung Pandang –Brisbane: implemented in July 2017. Ujung Pandang – Manila - Successful testing conducted; Target date of implementation 4Q2019</p>	<p>Thales in Makassar able to support ICD Version 3 since December 2015</p>	<p>Between PNG – Ujung Pandang, the implementation are waiting for PNG’s ATM system upgraded. For CRV, contract in 3Q2019 and implementation in 4Q2019</p>

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			<p>Ujung Pandang - Kota Kinabalu - Implementation date TBC</p> <p>-Ujung Pandang – Oakland, test conducted, and target date for implementation in 3Q2019.</p>		
<p>JAPAN</p>	<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> <p>Upgrading connection with Hong Kong using VPN will be implemented in 2019 after implementation of CRV;</p> <p>Coordinating for all other circuits upgrading.</p>	<p>NEC</p>	<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 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>		<p>Japan and USA conducting testing AIDC over AMHS and cutover date is 5 May 2017.</p>

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KIRIBATI	Connection with Nadi using UA/AMHS implemented in 2015.				
LAO PDR	ATN BIS Router and AMHS completed, planned for operation with Bangkok since 4Q 2016.	THALES	AIDC testing with Bangkok in 2017 and target for implementation in 4Q2019. Testing with Hanoi on-going since 2017; with Cambodia operational test again in June 2018, and implementation 2Q 2019. Testing with Kunming and Yangon ongoing.	THALES which is able to support ICD Version 2.	
MALAYSIA	ATN BIS Router completed 2007. AMHS implementation planned for Q42017; Malaysia – Singapore for AMHS implementation in 2019 Malaysia – Thailand for AMHS implementation in 2019.	FREQUENTIS	AIDC testing with Bangkok ACC conducted since 2016. Operational trial will commence in August 2019. AIDC Between Kuala Lumpur/ Chennai implemented in phases from May 2017 implementation for ABI, EST and MAC along with response messages LAM, LRM and ACP. Review on the CDN message implementation conducted in Aug. 2017. SOP signed 26 April, 2017. AIDC testing with Singapore on going since	SELEX which is able to support ICD Version 3.	

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			<p>2016. Target date for operational trial from 3Q2018, and Implementation 2Q2019.</p> <p>Planned testing with Ho Chi Minh ACC – 3Q2019;</p> <p>AIDC between KK ACC and Manila ACC in 4Q2020 and technical testing 2Q 2019.</p> <p>KK ACC with Ujung Pandang TBC;</p> <p>AIDC between Kuching ACC and Singapore planned for 2Q2020;</p> <p>AIDC technical test between Kota <u>Kinabalu</u> ACC and Singapore planned for 3Q2019;</p> <p>AIDC between Kuala Lumpur and Jakarta testing planned for 4Q2020.</p>		
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</p>		<p>Connection established with all the adjacent ATSU's. Interoperability tests successfully completed in 2017.</p>	SELEX which is able to support ICD Version 3.	

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	<p>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>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 in the ATS automation system to conduct pre-notified operational trials.</p>		
MARSHALL ISLANDS					
MICRONESIA (EDERATED STATES OF)					

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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 technical trials in progress. Planned date of testing in 2019.</p>	INDRA Aircon 2100 supporting AIDC ICD Version 2.	
MYANMAR	<p>AMHS including AFTN/AMHS gateway implemented in Nov. 2011;</p> <p>Connection with Thailand implemented in 4Q2016;</p> <p>Planned for AMHS connection with Beijing. Target date TBC.</p>	THALES	<p>AIDC connection pre-operation test with Thailand conducted in 4Q2017 and Target date of implementation 4Q2019;</p> <p>AIDC testing with Kunming and Chennai conducted in 2017.</p>	THALES Automation system upgraded to Thales Topsky ATC system in January 2017 which supports AIDC Ver. 2 and AMHS connections	
NAURU					

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NEPAL	BIS Router and AMHS commissioned with Kathmandu Mumbai circuit on 2 June 2014.	COMSOFT	AIDC between Kathmandu and Beijing and planned testing between KTM-BBN and KTM-CCU for 3Q2018		
NEW CALEDONIA	New router and AMHS commissioned December 2016	COMSOFT			
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	Plans to create a newly duplicated digital communications line connecting with existing and new sites and AMHS system implemented in 4Q2014	COMSOFT	Plan to implement with all neighboring FIRs in 3Q 2018. Negotiation with Indonesia for AIDC with Ujung Pandang in May 2018.	COMSOFT which is able to support ICD Version 3	

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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 4Q2019.</p> <p>AMHS implementation with Oakland USA via CRV is planned for 4Q2019.</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>Planned implementation: 2Q2019 – Singapore ACC; 4Q2019 – Ujung Pandang ACC; 3Q2019 – Taipei ACC; 2Q2019- Hong Kong ACC;</p>	THALES which is able to support ICD Version 2.	
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 4Q2019.</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	

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SINGAPORE	<p>AMHS implemented. 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>Inter-Operability Test (IOT) with Japan, Malaysia, Philippines, Sri Lanka and Vietnam targeted in 2019. IOT with Bahrain and Brunei targeted in 2020.</p>	FREQUENTIS COMSOFT	<p>Operational with Ho Chi Minh implemented July 2014</p> <p>Kuala Lumpur operational trial started since September 2018 and is on-going, implementation planned for June 2019.</p> <p>Manila operational trial started in February 2019. Implementation planned for June 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	
SRI LANKA	<p>ATN BIS Router Planned for 2013. IP based AMHS implemented by Oct. 2017.</p> <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	<p>Trials with Male planned for in 3Q2019.</p> <p>Trial with Chennai on-going. Plan for implementation in 2018 and with Melbourne plan for 1Q2018.</p>	INTELCAN which is able to support ICD Version 3.	

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THAILAND	<p>BBIS/BIS Routers already implemented. AMHS has been implemented since July 2011.</p> <p>Connection with Bangladesh, Bhutan, Cambodia, China, India, Lao PDR, Myanmar, Singapore, Hong Kong China implemented.</p> <p>Implementation with Malaysia planned for 2019.</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>	AEROTHAI's AMHS System	<p>AIDC Connection test with Lao PDR, Cambodia, Myanmar and Malaysia underway since 2016;</p> <p>Operation trial with these States from late 2017 to early 2019. Target date of implementation is around 4Q2019.</p>	<p>THALES which is being implemented with planned completion in 4Q2019.</p> <p>AIDC feature supports APAC AIDC ICD V.3.</p>	
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 Planned for AMHS implementation with Philippines 4Q2019</p>	IN-HOUSE	<p>AFTN based AIDC implemented. Planned for AIDC implementation with Philippines 4Q2019, with Indonesia Ujung Pandang 3Q 2019 through Australian AMHS and directly in 3rd 2020</p>	<p>IN-HOUSE which is able to support APAC and NAT ICDs currently Version 2.</p>	
VANUATU					

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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	

Attachment B to WP/02
Appendix E to CNS SG/23 Report

CRV IMPLEMENTATION TABLE

State/ Administration	Intended date for CRV cut-over	Applications targeted	Migration scheme	Prerequisites/ dependencies
Australia	Contract in May2018 and service readiness in 3Q 2018	<p>AFTN, ADS-B, AMHS, Voice With:</p> <p>Australia February,2019(AMHS/AIDC), March,2019(Voice) Fiji March,2019 (AMHS June 2019/AIDC, Voice completed April) New Zealand, February, 2019 (AMHS June 2019, AFTN May 2019/AIDC), March, 2019 (Voice April 2019 completed) Indonesia 4Q2019 (TBC) (AMHS/AIDC, Voice, ADS-B); PNG 4Q2019(TBC), (AMHS/AIDC, Voice) Singapore 2Q2019 TBC (AMHS/AIDC, Voice); South Africa TBC</p> <p>3Q2019 TBC,(AMHS/AIDC, Voice); Japan would be end of 2019.</p>	staged approach	Termination of current COM contract
Bhutan	Contract in 3Q2019, service readiness in 4Q2019	Data(AMHS, AFTN) and voice		Administrative approval from the management for the direct contract and approval from BCAA
Cambodia	As early as convenient, dependent on neighboring countries			Internal decision making

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State/ Administration	Intended date for CRV cut-over	Applications targeted	Migration scheme	Prerequisites/ dependencies
China	Contract in 3Q2019, service readiness in 4Q2019	Data(AMHS) With: Hong Kong 4Q2019; Japan 2Q2020; Thailand 4Q2019; India 4Q2019. Republic of Korea a.s.a.p ATFM traffic test May 2020 over CRV	staged approach	
Democratic People's Republic of Korea	Contract in 3Q2018 and service readiness in 4Q2018	AFTN and VoIP		
Hong Kong, China	Contract signed on 6 April 2018. Connection was installed successfully in June 2018. CRV-Voice with Manila was put into operation on 14 August 2018.	DATA (AMHS) With: Beijing 4Q2019; Manila operational May 2019 Japan 1Q2020; Thailand 3Q2019;	staged approach	Need to coordinate with relevant CAAs/ANSPs in joining CRV in a harmonized manner, etc.
Macao, China	To be confirmed			CBA migration from X25 to IP
Fiji	Contract in May 2018 and service readiness in 3Q 2018	Data (AMHS) and VoIP With: Australia ATS voice April 2019 completed, AMHS planned June 2019, NZ ATS voice c. 2019 and USA ATS voice March 2019 completed. AMHS April 2019.	Staged approach	CBA, safety case

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State/ Administration	Intended date for CRV cut-over	Applications targeted	Migration scheme	Prerequisites/ dependencies
France (New Caledonia and French Polynesia)	2019 is target for DNSA to sign contract subject to internal security assessment (done).	ATS Voice, AMHS with Fiji & AIDC, AMHS with USA, AIDC/AMHS with NZ and ATS voice.		CBA, cost must be affordable <i>Wallis and Futuna: no dedicated connection to CNS</i>
India	Contract in 3Q2019 and service readiness in 4Q2019. Available	. Data first then voice.	staged approach	CBA, safety case
Indonesia	Contract in 3Q2019 and Service readiness in 4Q2019	AFTN, AMHS, ADS-B and voice		CBA completed
Japan	Contract signed in Nov.2017 and service readiness in 1Q 2018 for Fukuoka	Data first: With: Hong Kong 1Q2020 USA completed 1Q 2019 Singapore 3Q2019; China 2Q2020	staged approach	
Malaysia	Contract to be signed 4Q 2019 and service readiness in 1Q2020	AFTN, AMHS, ADS-B and ATS voice	staged approach	New ATC centre operational in 2020. Contract issue with the new ATC main contractor. COM Project is part of the main contract.
Myanmar	As early as convenient	AFTN, AMHS, ADS-B and voice		CBA
New Zealand	Contract in May 2018 and service readiness in 3Q 2018	Australia AMHS June 2019, French Polynesia AMHS and Voice Chile AMHS (SAM regional network REDDIG)		CBA attractive if all counterparts join in

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State/ Administration	Intended date for CRV cut-over	Applications targeted	Migration scheme	Prerequisites/ dependencies
Philippines	Contract signed in March 2018 and service readiness in 2Q2018	Data (AMHS and AIDC) and voice with HK AIDC 2Q 2019, AMHS May 2019 with Taipei AIDC 3Q2019 , AMHS IOT 2Q 2019, Voice completed 1Q 2019. with USA AMHS & AIDC 4Q 2019. For Voice: with HK Aug. 2018, with USA June 2019	staged approach	Success transition to the New ATM centre in 4Q2018
Republic of Korea	Contract in 3Q2019 and service readiness in 4Q 2019	Data (AMHS), AIDC and VoIP With CHN AMHS 4Q2019 With JPN xx	staged approach	
Singapore	Contract in May Q2019 and service readiness in 3Q2019	1/AFTN/AMHS 2/Voice/AIDC/ADS-B AMHS With: Australia 3Q2019; Japan 3Q2019 Thailand 2019; India 2019.	staged approach	CBA attractive if all counterparts join in
Sri Lanka	As soon as CRV is available	AMHS connectivity with Mumbai, Singapore and Male. Direct Speech facilities with Chennai, Trivendrum, Mumbai, Male, Jakarta, Melbourne, Singapore	Phased approach with the implementation of CRV	CBA
Thailand	Contract in 3Q 2019 and service readiness in 4Q2019	Data first Then voice, subject to safety case: China 4Q2019 Hong Kong 4Q2019; Singapore 4Q2019; India 2019.	Staged approach	

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State/ Administration	Intended date for CRV cut-over	Applications targeted	Migration scheme	Prerequisites/ dependencies
United States	Contract in May 2018 and service readiness in 3Q 2018	1) with Australia AFTN to AMHS over IP: Feb 2019 Voice: March, 2019 2) With Fiji AMHS/AIDC Feb 2019 Voice March, 2019 3) With New Zealand AMHS/AIDC, Voice March 2019 4) With Japan AMHS/AIDC Feb 2019 VOICE: TBC 5) With Philippines AMHS/AIDC 3Q2019 VOICE April, 2019 6) other FIRs as opportune (French Polynesia, Samoa, Indonesia, PNG etc.) 7) ATFM, AMHS with Attachment 8) BBIS with Fiji, Australia and Japan 3Q2018 (for only AMHS)	Staged approach	
Viet Nam	To be confirmed later (After discussed with PCCW Global)			
