International Civil Aviation Organization

Eleventh Meeting of the Aeronautical Communication Services Implementation Coordination Group (ACSICG/11)

Bangkok, Thailand, 19 - 22 March 2024

Agenda Item 6:　　　　Review and update the AMHS/ATN/AIDC Implementation Status

　　　　　　　　　　　6.1 AMHS implementation Status

AMHS IMPLEMENTATION STATUS IN THE APAC REGION

(Presented by the Secretariat)

SUMMARY
This paper updates the AMHS implementation status for review and action by the meeting.

1.　　INTRODUCTION

1.1　　　　AMHS has been deployed by the majority of ANSPs as AFTN replacement in APAC Region, the ICAO APAC Regional Office has been promoting the implementation of AMHS in the Region for more than 10 years. This paper summarizes and updates the AMHS implementation status on a yearly basis.

2.　　DISCUSSION

2.1　　　　As of CNS SG/27 held from 28 August to 1 September 2023, there were **24** States/Administrations in the APAC Region which put their AMHS into operations per the AMHS Routing Directory Tables from the ATS Messaging Management Centre (AMC) as of February **2024** provided in **Appendix A**.

2.2　　　　States/Administrations that have no active AMHS in operations per the AMHS Routing Directory Tables are provided in **Appendix B**. To avoid possible overload of the AFTN traffic, relevant Meteorological authorities/organisations should not disseminate IWXXM messages to these States/Administrations. A COM Chart captured from the EUROCONTROL AMC as of 22 February 2024 is provided in **Appendix C** for easy reference.

2.3　　　　In 2014, the ACSICG/1 meeting consolidated a table on the status of AMHS and AIDC in the APAC Region to make the regional picture of implementation status on the enabler AMHS and B0-FICE, the Table was named as **ATN/AMHS/AIDC Implementation Status in the APAC Region** and has been updated by ACSICG on yearly basis.

2.4   With the dissolution of APAC AIDC Task Force and the establishment of ATM
Automation System Task Force, a comprehensive repository on AIDC implementation was developed
and maintained (refer to WP/10 of this meeting), therefore, ACSICG/9 meeting introduced a Table
Implementation Status of ATN/AMHS in the APAC Region by extracting part of information from
ATN/AMHS/AIDC Implementation Status in the APAC Region, which was updated by
ACSICG/10 and is provided in **Appendix D** to this paper.

3.   **ACTION BY THE MEETING**

3.1   The meeting is invited to:

   a) note the information in this paper;

   b) review and update the information contained in **Appendix A, B,** and **D**
       respectively if necessary; and

   c) discuss any relevant matter as appropriate.

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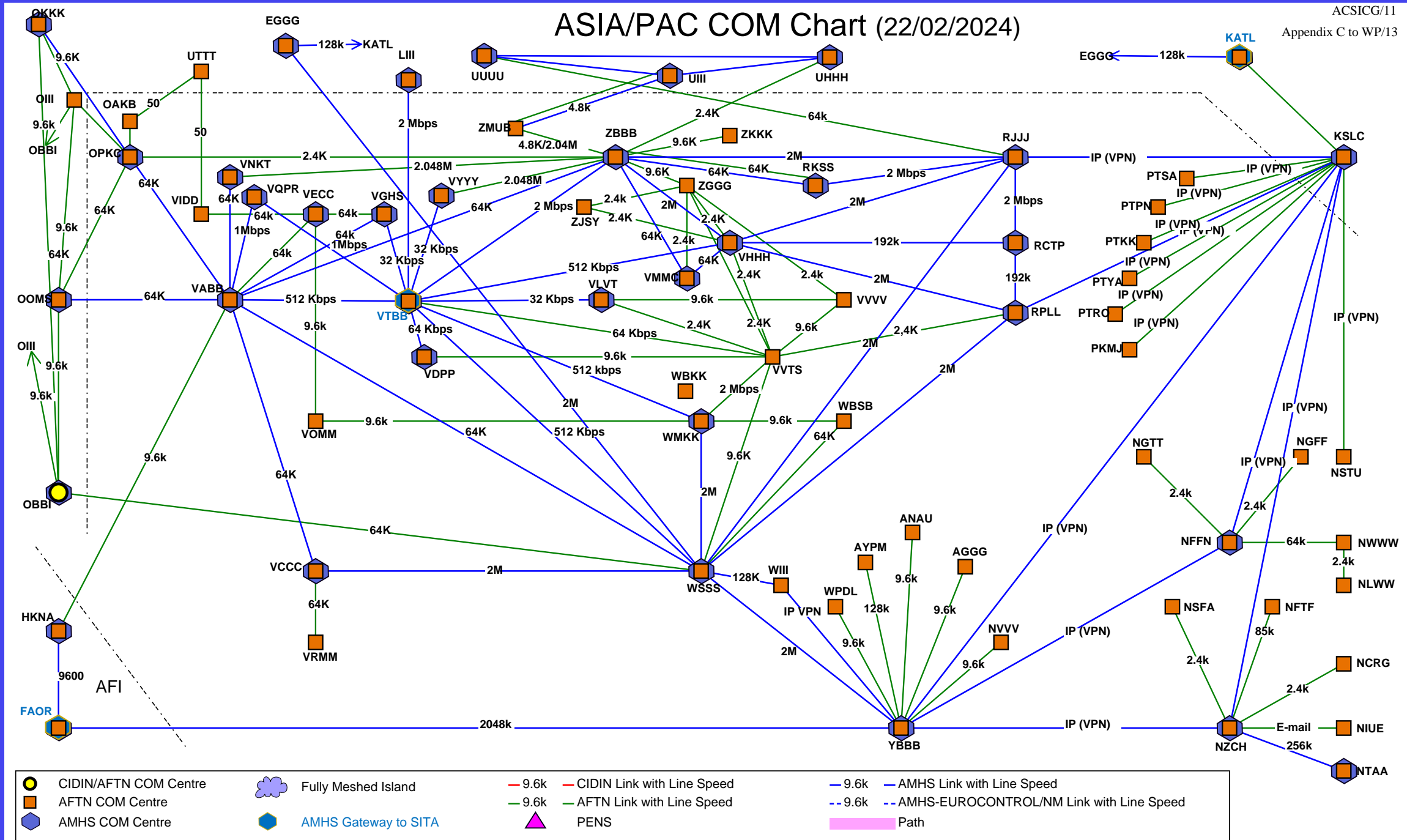| States with AMHS in Operation (Active AMHS Routing Directory found)		
State/Administration	IWXXM Support	COM Centre with AMHS Routing
Australia	Yes	YBBB - BRISBANE (FIR/FIC/ACC/COM/MET/NOF) - Australia
Bangladesh	-	VGHS - HAZRAT SHAHJALAL INTERNATIONAL AIRPORT, DHAKA - Bangladesh
Bhutan	-	VQPR - PARO, INTL - Bhutan
Cambodia	-	VDPP - PHNOM PENH - Cambodia
China	Yes	ZBBB - BEIJING CITY - China
	-	RCTP - TAIPEI/TAIWAN TAOYUAN INTERNATIONAL - China
Fiji	Yes	NFFN - NADI/INTL - Republic of Fiji
Hong Kong China	Yes	VHHH - HONG KONG/INTERNATIONAL - Hong Kong Special Administrative Region of China
India	Yes	VABB - CHHATRAPATI SHIVAJI INTL AIRPORT, MUMBAI - India
	-	VECC - NETAJI SUBHASH CHANDRA BOSE INTERNATIONAL AIRPORT, KOLKATA - India
Indonesia	-	WIII - JAKARTA/SOEKARNO-HATTA INTL - Indonesia
Japan	Yes	RJJJ - FUKUOKA/JCAB AIR TRAFFIC MANAGEMENT CENTRE, AFTN/AMHS COM CENTER - Japan
Lao PDR	-	VLVT - VIENTIANE(WATTAY) - Lao People's Democratic Republic (the)
Macao China	Yes	VMMC - MACAO/INTL AIRPORT - Macao Special Administrative Region of China
Malaysia	-	WMKK - KL INTERNATIONAL/SEPANG - Malaysia
Mongolia		ZMUB - ULAANBAATAR CHINGGIS KHAAN
Myanmar	-	VYYY - YANGON INTERNATIONAL - Myanmar, the Republic of the Union of
Nepal	-	VNKT - KATHMANDU - Federal Democratic Republic of Nepal
New Zealand	-	NZCH - CHRISTCHURCH INTL - New Zealand
Pakistan	-	OPKC - KARACHI/JIAP INT'L - Pakistan
Philippines	Yes	RPLL - NINOY AQUINO INTERNATIONAL AIRPORT, MANILA - Philippines
ROK	Yes	RKSS - GIMPO - Republic of Korea
Singapore	Yes	WSSS - SINGAPORE/SINGAPORE CHANGI INTL - Singapore
Sri Lanka	-	VCCC - RATMALANA/COLOMBO - Sri Lanka
Thailand	Yes	VTBB - BANGKOK (ACC/FIC/COM CENTRE) - Thailand
United States	Yes	KSLC - SALT LAKE CITY INTL - United States of America KATL - HARTSFIELD - JACKSON ATLANTA INTL - United States of America
Total: 24 States/Admins	Total: 12 States/Admins	

Source: ATS Messaging Routing Directory Part II

States without AMHS in Operation (AMHS Routing Not Found)		
Afghanistan		
Brunei Darussalam		
Cook Islands		
Democratic People's Republic of Korea		
Kiribati		
Maldives		
Marshall Islands		
Micronesia (Federated States of)		
~~Mongolia~~	ZMUB-UIII	AFTN
Nauru		
Palau		
Papua New Guinea		
Samoa		
Solomon Islands	AGGG-OOMS	AFTN
Timor Leste		
Tonga		
Tuvalu		
Vanuatu		
Viet Nam		
Total: 19 States		

Source: ATS Messaging Routing Directory Part II

ASIA/PAC COM Chart (22/02/2024)

ACSICG/11
Appendix C to WP/13

Legend:
- ⬤ CIDIN/AFTN COM Centre
- ◼ AFTN COM Centre
- ⬣ AMHS COM Centre
- ☁ Fully Meshed Island
- ⬡ AMHS Gateway to SITA
- ▲ PENS
- —— 9.6k —— CIDIN Link with Line Speed
- —— 9.6k —— AFTN Link with Line Speed
- —— 9.6k —— AMHS Link with Line Speed
- -- 9.6k -- AMHS-EUROCONTROL/NM Link with Line Speed
- ▬ Path

Implementation Status of ATN/AMHS in the APAC Region ^{Extracted from ATN/AMHS/AIDC Implementation Table}

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	Remarks
AFGHANISTAN			
AUSTRALIA	AMHS over CRV with: Singapore, New Zealand, Fiji and USA AMHS over leased line with: South Africa AFTN over CRV with: PNG AFTN over leased line with: Indonesia Planning to migrate existing AFTN connections with Indonesia and PNG to AMHS over CRV (TBC, pending readiness both ends) Extended AMHS with FTBP in support of IWXXM exchange in operation since Nov. 2020.	Frequentis Comsoft	
BANGLADESH	In Q1/2013, Bangladesh installed ATN/AMHS and BIS Router at Dhaka (VGHS) with User Agents at Chittagong (VGEG) and Sylhet (VGSY).	COMSOFT	

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	Remarks
BHUTAN	ATN/AMHS circuits, using IP over VPN, with Thailand (Bangkok) and India (Mumbai) commissioned in June and July 2017 respectively. IOT and POT with Mumbai completed on 27th June 2017. IOT and POT with Thailand completed on 2nd May 2017. TMC signing with both countries signed.	AEROTHAI'S AMHS System	
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	

| 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.
Hong Kong China
The Beijing-Hong Kong AMHS link was put into operation in 2018; CRV/AMHS circuit was put into operation in April 2021

Thailand
With Thailand was put into operation in Q12020
Plan implement IOT and POT in 2022

Macau China
AMHS/ATN technical tests with Macau completed in 2009. Plan for ATN/AMHS implementation with Macao China is TBD.

Korea
ATN/AMHS circuit with ROK has been put into operation since June 2011.
Completed CRV/AMHS IOT in 2021
Plan implement POT in Q2 2022

India
ATN/AMHS tests with India has been put into operation since 2016.

Mongolia
ATN and AMHS IOT with Mongolia is completed in May 2018. Plan for commissioning after POT completion in 2021

Nepal
Connection tests with Nepal is TBD.

Japan
AMHS testing with Japan was completed in March 2021.It will put into operation after TMC is signed. | IN-HOUSE
(Aero-Info Technologies Co., Ltd) | IN-HOUSE
(Aero-Info Technologies Co., Ltd) |

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	Remarks
	China have completed TMC signed and circuit put into operation in 2021 Russia AMHS IOT with Russia in 2021.		
HONG KONG, CHINA	**Manila / Philippines** CRV/AMHS circuit was put into operation in May 2019. **Beijing / China** CRV/AMHS circuit was put into operation in April 2021 Macao / China ATN/AMHS circuit was put into operation in December 2009. Wait for Macao to join CRV. **Bangkok / Thailand** ATN/AMHS circuit was put into operation use in 2014. Wait for Thailand to join CRV. **Fukuoka / Japan** CRV/AMHS circuit was put into operation in September 2020. **HoChiMinh / Vietnam** Currently on AFTN. Simple AMHS IOT was conducted in Dec 2019. Wait for Vietnam to join CRV. **Taibei / China** CRV/AMHS circuit was put into operation in June 2020.	COMSOFT	

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	Remarks
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. Upgrade of ATN/AMHS to support IPS and IWXXM planned with tentative target date of Q2 2023.	COMSOFT	
COOK ISLANDS			
DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA	The ATN BIS Router and AMHS planned for in 2011.		

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	Remarks
FIJI ISLANDS	ATN BBIS IPS router and AMHS implemented over CRV for connection to USA in April, 2019 with Australia planned for June, 2019. . For connections with sub-regional centers: For New Caledonia using AMHS since 2017; For connection with Kiribati using UA/AMHS implemented in 2015. Upgrade of AMHS to support the Extended ATS service with up to 4.0MB file size including FTBP. and IWXXM planned with tentative target date of Q2 2023.	COMSOFT	B2B connection between Nadi AMHS and Brisbane AMHS planned for Q3, 2022 as backup for CRV.
FRANCE *(French Polynesia Tahiti)*	Planned for implementation of AMHS in 2022 (T2). Using IP with New Zealand since 2017.	COMSOFT	

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	Remarks
INDIA	Dual stack ATN/IP router and AMHS implemented at Mumbai in 2011. Operational AMHS connections with Bangkok, Dhaka, Singapore, Kathmandu, Karachi implemented. With Beijing implemented in 2016; With Colombo implemented in May2017; With Bhutan implemented in July 2017; (IOT/POT) between Mumbai – Muscat is scheduled with mutual agreement between India & Oman between 0600-0900 UTC from 21.06.2021. Technical Memorandum of Cooperation (TMC) between Oman and India has been signed in Feb.-2022. As agreed mutually, Mumbai- Muscat AMHS circuit will be commissioned on 25/04/2022 at 0600UTC. Technical Memorandum of Cooperation (TMC) between Oman and India has been signed in Feb.-2022. As agreed mutually, Mumbai-Muscat AMHS circuit will be commissioned on 25/04/2022 at 0600UTC.	COMSOFT	INDIA
INDONESIA	ATN BIS Router and AMHS with Singapore implemented since February 2018; AMHS Trial (IOT) with Brisbane pending for CRV implementation.	IDS	For CRV, target of contract in 2Q2022 and implementation in 4Q2022.

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	Remarks
JAPAN	ATN BBIS router and AMHS installed at **USA** in 2000. Connection tests with USA in 2000 - 2004 and put into operational use in 2005. 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. Hong-Kong AMHS/FTBP over CRV was put into operation in September 2020. **Singapore** AMHS/FTBP over CRV was put into operation in December 2020. **Beijing/China** AMHS/FTBP over CRV was put into operation in March 2021. **Taipei/China** AMHS/FTBP over CRV was put into operation in March 2022. **Incheon/Korea** Plan for AMHS/FTBP over CRV IOT in 4Q 2022	NEC	Japan and USA conducting testing AIDC over AMHS and cutover date is 5 May 2017.
KIRIBATI	Connection with Nadi using UA/AMHS implemented in 2015.		
LAO PDR	- ATN BIS Router and AMHS Implemented with Bangkok and Phnom Penh. - AFTN used with Hanoi and Kunming. - For Yangon we have no direct link the connection is used via Bangkok.	THALES	

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	Remarks
MALAYSIA	ATN BIS Router completed 2007. AMHS for Malaysia – Singapore implemented in March 2020. AMHS for Malaysia – Thailand implemented in Dec 2019.	FREQUENTIS	
MALDIVES	In the process of replacing the existing operational AFTN system by AMHS. It is expected to complete the installation before the end of 2019. 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. Also will look for the possibility of implementing the CRV network to use with AMHS and AIDC during the same phase.		
MARSHALL ISLANDS			
MICRONESIA (EDERATED STATES OF)			
Chuuk			
Kosrae			
Pohnpei			
Yap			

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	Remarks
MONGOLIA	AMHS/AFTN gateway implemented 2012. ATNBIS router implemented in 2014. ATN and AMHS IOT with China was completed in May 2018. ATN and AMHS POT with China was completed in May 2019. Upgraded the AMHS system and purchased UA terminals in 2020, but it is not yet fully operational due to the Covid-19 pandemic situation. The AMHS system is planned to be fully operational in the fourth quarter of 2022.	COMSOFT	
MYANMAR	AMHS including AFTN/AMHS gateway implemented in Nov 2011. Connection with Thailand implemented in 4Q2016. Planned for AMHS connection with Beijing. Target date TBC.	THALES	AMHS including AFTN/AMHS gateway implemented in Nov 2011. Connection with Thailand implemented in 4Q2016. Planned for AMHS connection with Beijing. Target date TBC.
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	

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	Remarks
NEW CALEDONIA	New router and AMHS commissioned December 2016	COMSOFT	
NEW ZEALAND	An AMHS connection with the USA over CRV was implemented in April 2019. The AFTN connection to Australia was moved to CRV in June 2019. The AFTN connection to Australia over CRV was replaced with an AMHS connection over CRV in September 2020 Work to provide an AMHS connection over CRV between Bhutan and New Zealand as a temporary solution for their usage of CRV (pending Thailand and India connecting to CRV) is ongoing (April-2022).	Frequentis Comsoft	
PAKISTAN	ATN/AMHS connections with Mumbai and Kuwait since 2015 and 2018 respectively. AMHS connection with Beijing, Kabul, Tehran and Muscat will be provided after up gradation of existing AMHS at Karachi which is already in progress.	Existing COMSOFT After up gradation ISD	
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	

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	Remarks
PHILIPPINES	ATN/AMHS Boundary Intermediate System was installed at the new Manila CNS/ATM Center; • Site Acceptance, Oct. 2015 • Commissioned & operational, March 2018 AMHS implementation over CRV with the following adjacent FIR's; • **HONG KONG** - May 2019 • **TAIPEI** - Sept. 2019 • **SINGAPORE** - Dec. 2020 • **OAKLAND** - April 2021	**Frequentis - Comsoft**	The New ATN/AMHS of Manila CNS/ATM center has been in domestic operations since March 2018. And with the implementation of CRV, AMHS connection has been implemented with the following adjacent FIR's; **-HONG KONG** **-TAIPEI** **-SINGAPORE** **-OAKLAND**
REPUBLIC OF KOREA	Plan to upgrade AMHS supporting IWXXM from 2022 over CRV 1) AMHS/CRV IOT with China and Japan in 4Q of 2021 2) AMHS/CRV POT with China on July 2022, and with Japan in 4Q 2022 3) Cutover to CRV with China and Japan in 4Q 2022 4) Implementation of AMHS/CRV with China and Japan in 4Q 2022	FREQUENTIS	

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	Remarks
SINGAPORE	AMHS implemented with: 1) AMHS circuit with India put into operational use in Mar 2011. 2) AMHS circuit with UK put into operational use in Mar 2012. 3) AMHS circuit with Thailand put into operational use in Dec 2014. 4) AMHS circuit with Australia put into operational use in Oct 2016. 5) AMHS circuit with Indonesia put into operational use in Feb 2018. 6) AMHS circuit with Malaysia put into operational in Mar 2020. 7) AMHS circuit with Japan put into operational in Dec 2020. 8) AMHS circuit with Philippines put into operational in Dec 2020. Inter-Operability Test (IOT) with Vietnam and Sri Lanka started in 2019 and 2022 respectively. IOT with Bahrain and Brunei to be confirmed.	FREQUENTIS COMSOFT	
SRI LANKA	ATN BIS Router Planned for 2013. IP based AMHS implemented by Oct. 2017. - Mumbai tested May 2017 operational planned for Q4 2017; - Singapore testing in Q4 2017 operational for 2018; - Male testing and operational date TBD.	IDS	

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	Remarks
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, Malaysia and Rome implemented. Bangkok - Vietnam Circuit Commissioning: Planned for end of 3Q2022 Connection with SITA (SITA AMHS Gateway inter-connections) implemented.	AEROTHAI's AMHS System	
TONGA	AMHS planned for 2008. The provider is linked to the New Zealand AFTN		CPDLC and ADS-C is not considered for lower airspace
UNITED STATES	- Australia - Fiji - New Zealand - Japan - Philippines - Indonesia (2023)	IN-HOUSE	
VANUATU			

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	Remarks
VIET NAM	AMHS (basic) implemented from 4Q/2018. Plan AMHS extended from Q4 2022 IOT with Singapore from 10/2019 to 8/2020 IOT with Hong Kong 12/2019 IOT with Thailand 6/2020, POT 8/2020.	IN-HOUSE	
Wallis and Futuna (FRANCE)	AMHS implementation planned for end of 2017		

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