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

OUTCOME OF APANPIRG/30 ON AFS RELATED MATTERS

(Presented by the Secretariat)

SUMMARY

This paper presents the outcome of APANPIR/30 (November 2019) on AFS related matters including those relevant to CRV planning and implementation. The report of APANPIRG/30 is based on the deliberations of CNS SG/23 meeting held in September 2019.

1. INTRODUCTION

1.1 The Thirtieth Meeting of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/30) held from 4 to 6 November 2019 reviewed the outcomes of the Twenty Third Meeting of the Communications, Navigation and Surveillance Sub-group (CNS SG/23) held from 2 to 6 September 2019. The meeting noted with appreciation the work done and achievements by the SG and the contributory bodies reporting to APANPIRG through the SG.

1.2 The full report and papers of the SG meeting are available on the following webpage: https://www.icao.int/APAC/Meetings/Pages/2019-CNS-SG23.aspx

DISCUSSION

2.1 The meeting noted that CNS SG/23 meeting had adopted several Conclusions and Decisions related to AFS matters:

Conclusion CNS SG/23/1 *(ACSICG/6/1)*	-	AFTN/AMHS-Based Interface Control Document for ATFM
Conclusion CNS SG/23/3 *(ACSICG/6/3-CRV OG/5/2)*	-	CRV Implementation Plan amendment (Version 2)
Conclusion CNS SG/23/4 *(SWIMTF/3/1)*	-	The philosophy and roadmap for APAC SWIM implementation
Conclusion CNS SG/23/5 *(SWIMTF/3/3)*	-	Interoperable Registry Model for SWIM Registry in APAC Region

Decision CNS SG/23/2 *(ACSICG/6/2 - CRV OG/5/1)* Revised Terms of Reference of CRV OG

Aeronautical Fixed Service (AFS)

2.2 The Sixth Meeting of the Aeronautical Communication Services Implementation Co-ordination Group (ACSICG/6) of APANPIRG held from 13 to 15 May 2019. The meeting noted the outcomes of the meeting including those from the 5th and 6th meetings of CRV Operations Group (CRV OG)

2.3 The meeting noted the ATN/AMHS/AIDC implementation status in the APAC Region provided in *Appendix A* to CNS SG/23 meeting report.

2.4 The meeting noted that a COM Coordination Meeting among China, Japan, Mongolia and Russian Federation was held on 6 May 2019. As proposed by APAC States in APAC Region, Russian Federation agreed to consider to connect CRV at Moscow, Irkutsk and Khabarovsk to support AMHS connections and possible ATS direct speech circuits between ACCs in APAC States and Russian Federation. The States concerned agreed to develop a target date for joining CRV and meeting again for the concrete testing procedures in early 2020.

2.5 Noting that the AFTN/AMHS ICD could meet part of the objectives of the ATFM/SG, and could supplement the guidance material and performance expectations of the Regional Framework for Collaborative ATFM as endorsed by APANPIRG, the SG meeting adopted AFTN/AMHS based Interface Control Document for ATFM through Conclusion CNS SG/23/1 proposed by the ACSICG/6 meeting (ACSICG/6/1). The ICD is provided in *Appendix B* to the report of CNS SG/23 meeting.

Revised Terms of Reference of CRV OG

2.6 The CNS SG reviewed the proposed changes to the Terms of Referene of CRV OG including amendment to the title of CRV (the Common aeRonautical VPN), and undertake continuous CRV service improvements for future needs etc.. and adopted Decision CNS SG/23/2 (ACSICG/6/2 – CRV OG/5/1) regarding revised TOR of the CRV OG. The revised TOR is provided in *Appendix C* to the report of CNS SG/23 meeting.

Successful Implementation of CRV

2.7 The meeting noted that CRV-Voice between Hong Kong China and Manila, Philippines serving Inter Area Speech Circuit (IASC) was successfuly implemented in August 2018. Taking a phased approach, ATSMHS data over CRV was succefully conducted between the two locations in March/April 2019. The very first CRV-voice implementation served as a showcase encouraging States/Administrations in the region to implement CRV to reap early benefits.

Pilot Project and Test Plan / Service Acceptance Test

2.8 The meeting noted the test results from the CRV Pilot Project i.e. the proof of concept Test Plan/Pilot Service Acceptance Testing for the confirmation on key aspects of the CRV network. The tests conducted in Pilot Project proved the concept of the CRV network against the 10 points of test plan established by the CRV OG. The meeting appreciated the efforts made by pilot project States for the successful testing conducted. The SG meeting considered no necessary for other States to spend efforts on duplicating similar test, in order to speed up the CRV implementation. A State Letter, with reference T 8/2.10- AP025/19 (CNS), dated 6 March 2019 was sent to notify States/Administration about the test result and encourage them to initiate service order with PCCWG for CRV implementation as early as possible, with no later than end of 2020.

Packet Overhead in CRV Network

2.9 During the CRV pilot acceptance testing, it was observed during the throughput test that the available bandwidth could be less than the subscribed bandwidth. It was clarified that the available bandwidth was discounted because of the processing of GRE tunnel overhead. As such, States/Administrations were urged to ensure that they subscribe appropriate amount of bandwidth for the required service and applications over CRV.

Route Restriction

2.10 The meeting noted the proposal from New Zealand to amend paragraph 2.4.4 of the CRV Implementation Plan to include:

> *(ii) When peering with the CRV Contractors network, it is permissible to use the CRV User's own Public IP addressing and ASN, and the CRV Contractor will use a Public AS.*

2.11 In conjunction with this amendment proposal to the CRV Implementation Plan, the meeting considered a proposal from CRV OG/6 meeting regarding the need to separate Appendix A – CRV Implementation Status Table from the CRV Implementation Plan in order to reflect the progress of CRV implementation in a timely manner. In view of the foregoing considerations, the meeting adopted Conclusion CNS SG/23/3 (ACSICG/6/3– CRV OG/5/2) regarding adoption of the CRV Implementation Plan amendment. The updated CRV Implementation Plan Version 2 is provided in *Appendix D* to CNS SG/23 meeting report.

CRV Implementation Status

2.12 The PCCWG informed the meeting that around 60 ANSPs of ICAO member States in APAC and MID Regions are expected to join the CRV. The meeting was reminded that 2020 is the target year for all ANSPs to implement the project**.** There are seven States/Administrations that already have signed service order with PCCWG with several more States to join CRV in either 2019 or 2020. The CRV Implementation Status updated by CRV OG/6 is provided in *Appendix E* to CNS SG/23 meeting report.

2.13 The meeting noted that cybersecurity is a broad topic much wider than CRV. GRE tunnel, encryption and firewall are viable solutions to improve cybersecurity on CRV, while States/Administrations have to make comprehensive consideration of cost, impact on operational performance and acceptable level before the CRV implementation.

Role of AFTN/ATSMHS Routing Directory during Transition

2.14 The CNS SG/23 meeting noted the function and role of AFTN and ATSMHS routing directory (28th Edition) during the transition period from point to point connection to AFTN/ATSMHS over CRV environment. The meeting discussed that if direct routing was allowed in the hybrid environment with CRV and point to point connection by end of 2020, i.e. direct routings are only implemented for those States/Administrations who have joined CRV while for those States/Administrations not joining CRV yet are still required to follow the current routing directory. As result of discussions, the meeting agreed to fully follow the AFTN/ATSMHS routing directory during the transition period by end of 2020. For inter-regional traffic, it is required to follow the existing entry/exit points and procedure.

Inter-Regional Communication Connection

2.15 Kuwait highlighted an issue of missing flight plans at CRV OG/5 meeting. India, Pakistan, Singapore and Oman, Bahrain, Kuwait are the designated entry/exit countries between the APAC and the MID Regions. The performance of the four interregional circuits between two regions were analyzed. Among the reported cases, one reason was due to a communication failure, unavailability of alternative routes, and delay in AFTN failure detection. The meeting recommended to initiate further action including alternative communication link, to encourage entry/exit points at the APAC and MID Region to join the CRV project and to migrate the Inter-Regional connection to AMHS with enhanced connection reliability and availability. The CRV OG/5 meeting encouraged Kuwait, Bahrain, Oman in the MID Region and India and Pakistan in APAC Region to join CRV to improve the circuit performance.

AMHS via secure VPN over the internet

2.16 States joined CRV may consider some alternate means of exchanging messages in the event of a local or regional CRV failure. In late November 2018, Airservices Australia experienced a network outage in their international service provider's network which caused delay in the exchange of data between the USA, Indonesia, Singapore and South Africa. Australia proposed to consdier using Business to Business (B2B) Virtual Private Networks (VPN) which has been implemented with FAA and Airways New Zealand. The States/Administrations were encouraged to consider the role of bi-lateral B2B VPNs to ensure the continuity of AMHS services in the event of a local or regional CRV failure.

CRV Regional Diversity Planning

2.17 There are some locations where the infrastructure or the traffic do not justify additional Points of Presence (POPs) that, in theory, would prevent single points of failure. ATSMHS require AMHS to have dynamic alternative routing. The concern expressed about single points of failure in the Pacific region with one POP is presented. B2B VPNs over the Internet could be a viable solution as they are low in cost and readily implemented. In order to pursue B2B VPNs as backup to the CRV for AMHS, the following issues need to be addressed:

a) Procedures to determine what failures would activate the use of B2B VPNs by users;
b) Security of B2B VPNs for AMHS (internal issue); and
c) Procedures to activate B2B VPNs for AMHS at affected Communication Centers.

2.18 CRV member states were also reminded of the guidelines given in ICAO Doc 9855 AN/459 *on the Use of the Public Internet for Aeronautical Applications*.

Connecting of Service Providers to the CRV

2.19 The CRV OG/6 meeting acknowledged that by allowing connection from Service Providers (such as PCCWG, Aireon, SITA, etc.) and Service Consumers (such as Airlines, Airports, MET Organisations, etc) to the CRV, potential telecommunications cost reduction could be achieved with added value to the use of the CRV. The process for connecting Service Providers and Service Consumers to the CRV was adopted by the CRV OG/6 meeting through Decison CRV OG/6/2.

2.20 CRV OG is not responsible for the accreditation/certification/validation of a Service Providers, but taking all reasonable steps in assessing the Service Providers to ensure they have sufficient systems and process in place to provide their service over the CRV. In this connection, the CRV OG/6 meeting encouraged States to use CRV for the exchange of ADS-B data and agreed that there is a potential to reduce the costs of space based ADS-B service delivery over CRV.

CRV Pioneer State Contribution to the ICAO Managed Service Agreement (MSA)

2.21 As a task of CRV OG, consideration on the use of residual MSA funds to conduct independent safety assessment of the CRV was conducted through a questionnaire. The Democratic People's Republic of Korea and Hong Kong China would have their contributions returned according to an APANPIRG Conclusion.

2.22 Based on the feedback derived from the questionnaire, CRV OG/6 made Decision CRV OG/6/3 on the way forward. A working group led by Co-Chair of CRV OG (Asia) to develop the Scope of Work (SOW) and PCCWG was invited to join the development.

ICAO No Country Left Behind Initiative applied to CRV

2.23 France DSNA provided two concrete cost comparison cases, one for French Polynesia and one for New-Caledonia. These examples indicated that additional financial efforts by small States were required which have little needs and incentive to make connection to CRV.

2.24 PCCWG informed that Package D is the lowest reasonable offer they can make and that it doesn't want to weaken the network performance by offering a cheaper solution that may introduce risks. From PCCWG perspective, amongst the solutions proposed by France, the only one that could solve the problem is to have a cost sharing scheme between small Island States and the peering bigger States to acquire mutual benefits. PCCWG was encouraged to further explore more cost effective solutions for any countries facing challenges in procuring CRV services with financial constraints. PCCWG would also study how CRV could interface with PASNET, and revert the solution/proposal to CRV OG/7 for consideration.

CRV Security Encryption Solution

2.25 France informed the CRV OG/6 meeting that security risk assessment on CRV was performed according to the French law deriving from the EU NIS Directive and encryption has to be set up for the New-Caledonia/Fiji and French Polynesia/New-Zealand connections.

2.26 French DSNA proposed to test and implement trials on IPSec encryption, given that it was a proven, standardized, easy to configure multi-vendor solution at a lower price. The CRV OG/6 meeting suggested DSNA to conduct the test by coordination with counterpart and request support from PCCWG when available. The meeting encouraged States/Administrations to share their best practices regarding cybersecurity resolution by engagement of local resources with papers or high level guidance materials.

Supporting the Implementation of IWXXM

2.27 The *Guidelines* developed and endorsed by the ICAO Meteorology Panel (METP) is available on the METP Secure website: https://portal.icao.int/METP/Pages/default.aspx and on the public website https://www.icao.int/airnavigation/METP/Pages/default.aspx. Noting that the *Guidelines* document indicates that AMHS provides a mechanism for the exchange of IWXXM information, the Secretariat highlighted the previous APANPIRG Conclusions (27/50 and 28/16), which urged States/Administrations to progress the planning and implementation of AMHS networks and infrastructure to support the regional implementation of IWXXM.

IWXXM Distribution over AMHS

2.28 The AMHS File Transfer Body Part (FTBP) enhanced feature can support distribution of eXtensible Markup Language (XML) based IWXXM data as a message "attachment". In order to support IWXXM over AMHS, and ensure delivery of the data to intended destinations, the following steps were recommended by USA for consideration:

a) Implementation of FTBP capability to AMHS systems;

b) Additional bandwidth of CRV may be required for IWXXM traffic; and

c) Implementation of Meteorology Systems/Services, such as NOAA NextGen IT/WebService and FAA CSS Wx, to provide and consume IWXXM data.

AFTN and AMHS Routing Table in AMC

2.29 Thailand provided updates on the routing matrix of the Routing Directory Menu in the AMC website including the AFTN Routing table, CIDIN Routing table and AMHS Routing Table. The Global Routing introduced in AMC is to ensure consistency of the AFTN/AMHS Routing worldwide. States/Administrations were invited to review and decide how to manage their Routing Tables in AMC. States/Administrations may prefer to manage either directly by themselves or through the Asia/Pacific focal point – AEROTHAI on behalf of COM Centres in the APAC Region. Such decision should be coordinated with AMC Team to make the necessary follow-up actions.

2.30 It was further clarified that in case States wish to manage the directory information by themselves, the information updates in the AMC should be made within first seven days of each AIRAC cycle.

CAAP-FAA AMHS/AIDC Planned Implementation

2.31 The Philippines and USA proposed to implement Air Traffic Services (ATS) Message Handling System (AMHS) and ATS Inter-Facility Data Communications (AIDC) between Manila Area Control Center (ACC) and Oakland Center. The bi-lateral agreement to establish the CRV connection between USA and Philippines was agreed in March 2019. The voice service between Manila ACC and Oakland Center will be migrated to CRV network from the existing T1/E1 circuit. USA updated the meeting that the AMHS and AIDC connection over CRV is expected to be completed by June 2020.

The Fifth Meeting of the Asia/Pacific AIDC Task Force (WP/06)

2.32 The APA TF/5 meeting was held in Bangkok from 23 to 25 April 2019. The papers and report of the meeting is provided at the following website:
https://www.icao.int/APAC/Meetings/Pages/2019-APA-TF5.aspx

2.33 The main achievements of the APA TF/5 meeting were highlighted below:

- The meeting considered that CRV could be used to resolve latency issue of AFTN communication circuit used for AIDC application;

- The meeting considered necessary to present the AIDC implementation status shown on graphical map for quick and easy understanding by APANPIRG and decisions makers of States. Singapore and India offered to take the task for the development. The Task Force co-chair presented the chart of AIDC implementation status chart as shown in ***Appendix F*** to the report of CNS SG/23 meeting; and

- AIDC Implementation Issues consolidated by Indonesia were reviewed and updated. Total 84 issues among which additional 11 issues were identified. 31 issues were closed including some caused by link latency.

Updates to the AIDC (ATSU) pairs identified by APANPIRG

2.34 The meeting further reviewed the hot-spot identified by RASMAG/23 and APANPIRG/29 meetings. The meeting noted that the hot-spot identified by RASMAG/23 and APANPIRG/29 meetings were updated the Task Force. The progress and target date of implementation are highlighted below:

- Jakarta and Chennai - 4Q 2020
- Jakarta and Ujung Pandang – 4Q 2020
- Jakarta /Melbourne FIRs - 4Q 2020;
- Chennai and Kuala Lumpur was implemented on 15 May 2017 with a limited set of messages and LOA to be signed in 4Q 2019 (SOP was signed 26 April in 2017);
- Manila and Fukuoka – coordination in progress;
- Manila and Taipei – operational trial in May, 2019. LOA to be signed 3Q 2019;
- Manila and Hong Kong – 2Q 2019;
- Manila and Ho Chi Minh – technical test in June 2019, and implementation 4Q 2019;
- Manila and Singapore: 2Q 2019;
- Manila and Kota Kinabalu: - technical test in May 2019, and implementation 4Q 2020;
- Manila and Ujung Pandang: - technical test in May 2019, and implementation 4Q 2019;
- Urumqi/Lahore: New IDD service provider selected by Pakistan and communication being improved and LHD reduced;
- Beijing/Ulaanbaatar: coordination is underway for testing and implementation;
- Hong Kong/Guangzhou AIDC operational trial was conducted since 2Q 2018; and
- Mumbai/Karachi and Muscat – coordination is underway for implementation and Mumbai side is ready (added by RASMAG/22)

Achievements and Terms of Reference of the APA Task Force and Action items

2.35 The meeting noted the achievements of APA Task Force summarized by its co-chair:

- Completed Regional AIDC Implementation Guidance Material;
- Created greater awareness of the benefit of AIDC, especially to address LHD issues;
- Promoted implementation/trials by States:
- Identified LHD hotspots implemented or implementing AIDC by 2020; and
- Co-operation amongst States through sharing of implementation issues which led to resolution of some identified issues;

2.36 Noting the achievements made by the APA TF in completion of tasks specified in the TOR which focusing Southeast Asia and Bay of Bengal sub-regions, the meeting invited the AIDC Task Force to discuss a dissolved date of the Task Force at its next meeting.

2.37 Upon a query regarding on whether the implementation status chart can be included into the updated seamless ANS plan, the co-chair of APA TF stated that the chart in the current form is not completed as it is based on reported implementation status in the APA TF only and further updates including verification and confirmation would be required.

Third Meeting of System Wide Information Management Task Force

2.38 The meeting noted the following outcomes of SWIMTF/3 meeting held in Bangkok from 7 to 10 May 2019:

- APAC SWIM Implementation Materials to be completed by SWIMTF/4 meeting;

- SWIMTF/3 developed a philosophy and roadmap for APAC SWIM implementation which was adopted by CNS SG/23 meeting through Conclusion CNS SG/23/4 (SWIMTF/3/1);

- Guidance for SWIM Service Identifiers (SSID) and SWIM Service Versioning was kept in the SWIM Respository of APAC SWIM Portal for refernce and furture consideration for endorsement;

- Interoperable Registry Model developed by the SWIMTF was adopted by CNS SG/23 meeting as APAC SWIM Registry through Conclusion CNS SG/23/5 (SWIMTF/3/3).

- Asia/Pacific FIXM version 4.1 Extension was endoresed by the SWIMTF/3 and CNS SG meetings;

- A test platform for SWIM based services and applications validation associated with Task 2-1-3 was carried out and led by Japan, China, and Republic of Korea in collaboration with technical supporters from Japan Electronic Navigation Research Institute (ENRI), China Air Traffic Management Bureau (ATMB), Korea Airports Corporation;

- The SWIM ASEAN Demonstration was scheduled for 12-15 November 2019 in Singapore and Thailand (one day in Bangkok and one day in Singapore);

- Seventeen (17) States/Administrations provided responses to the APAC SWIM Survey conducted during December 2018 to March 2019. Several recommendations and conclusions derived from the survey were reviewed and noted by the meeting;

- Through a launch ceremony of CRV for APAC Region, the meeting re-confirmed a conclusion of CRV OG/5 meeting that CRV will be used to support SWIM Implementation in APAC Region;

- Reconfirmed that “the concern on CRV bandwidth was not a technical issue but a decision of the CRV subscriber to opt for CRV bandwidth requirements to meet its operational needs”;

- SWIMTF/3 recommended that initial tests for SWIM applications over CRV could be conducted between those participating States of ASEAN SWIM Demonstration. Similar trials may also be conducted by States for validating the test bed (China, Japan and Republic of Korea);

- SWIMTF/3 endorsed the SWIM Education Video and Education Brochure for publication and distribution. ACSICG/6 meeting appreciated the SWIM Education Video. Further SWIM training package and training programme were developed by the SWIMTF in coordination with Global Aviation Training (GAT); and

- SWIMTF/4 meeting is scheduled for 18 to 21 May 2020 in conjunction with METP WG-MIE/7 meeting tentatively scheduled for 11-15 May 2020 in Thailand.

APAC SWIM Registry Approach

2.39 The meeting noted that the SWIM TF endorsed an interoperable registry model for APAC Region which consists of independent registries that exchange data with each other. The meeting also agreed to use the ICAO Information Management Panel (IMP) Controlled Vocabulary as a starting point for the APAC Controlled Vocabulary.

2.40 The service description document needs to provide detail information to consume a service and it should be directly provided, or link or attachment can be provided at a SWIM registry. Contents of the service description document have to offer minimum information set. An APAC SWIM registry needs to provide the basic functionalities, which are defined by the IMP, such as A) service registration, B) search, C) filtering, D) notification. In addition, an APAC SWIM registry also needs to support other functionalities like E) access control that allows a user to find information with an approved manner and F) information exchange (i.e., interoperability) that enables to share information between registries.

2.41 APAC SWIM registry should use a common Uniform Resource Identifier (URI) (i.e., http://registry.swim."civil aviation authority".aero) to easily identify each SWIM registry and improve the discoverability of a SWIM registry. It was clarified that the URI for civil aviation authority would be different and up to decision made by individual State for the concrete name to be used.

FIXM Model Extension to support ATFM Operations and ATFM/A-CDM Integration

2.42 FIXM Extension was developed to support the ATFM information exchange for cross-border ATFM operations and ATFM/A-CDM integration in the Asia/Pacific Region. With the finding that the Calculated Take-Off Time (CTOT) and Calculated Landing Time (CLDT) fields considered necessary to support the cross-border ATFM operations were not included in the FIXM version 4.0 Core, the FIXM version 4.0 Extension including CTOT and CLDT was therefore developed. A system-to-system interconnection test between Singapore and Thailand to validate the exchange of developed FIXM version 4.0 Extension was successfully conducted in August 2017 using the CTOT Distribution and CTOT Cancellation cases designed based on the Web Services (HTTP) messaging protocol. These required ATFM data attributes were still not found in FIXM Version 4.1 in December 2017. In the end of April 2018, the validation of developed FIXM version 4.1 Extension was completed.

2.43 Based on the operational scenarios developed for the SWIM in ASEAN Demonstration, additional data attributes required to be exchanged among stakeholders involving in A-CDM (Airport-Collaborative Decision Making) operation and to support the integration between ATFM and A-CDM were also identified. Considering that these data attributes are flight-specific, FIXM would be the appropriate information exchange model to support the aforementioned operations. Consequently, the FIXM version 4.1 Extension was further enhanced to include these data attributes. In view of the foregoing, the meeting adopted the following Conclusion:

Conclusion APANPIRG/30/12 (CNS SG/23/6-SWIM TF/3/4) - Asia/Pacific Regional FIXM Extension for ATFM	
What: That, noting: 1. the need for interoperable system-to-system information exchange to support the implementation and automation of cross-border ATFM in the Asia/Pacific Region; and 2. the data attributes included in the Asia/Pacific FIXM version 4.1 Extension were endorsed by ATFM/SG.	Expected impact: ☐ Political / Global ☒ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical

The Asia/Pacific FIXM version 4.1 Extension described and provided in **Appendix A** to the Report on agenda item 3.4 be adopted and uploaded to the ICAO APAC Regional Office website for immediate use by Asia/Pacific Administrations, where the capability to do so exists, for cross-border ATFM information exchange.	
Why: To provide the information exchange model necessary to support cross-border ATFM in the Asia/Pacific Region, in order to support the implementation of the performance objectives of the Asia/Pacific Regional Framework for Collaborative ATFM.	Follow-up: ☒Required from States
When: 6-Nov-19	Status: adopted by PIRG
Who: ☒Sub groups ☐APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other	

2.44 The meeting also noted that the FIXM Extension had been forwarded to the FIXM Change Control Board (CCB) for publication on the FIXM official website for use by other stakeholders. Member of CCB from Australia with support from USA facilitated the process for publication of the FIXM Extension.

Test platform related Activities

2.45 In order to support the implementation of FF-ICE/R1, the required services, applications and operational processes need to be validated through SWIM environment. A test platform is constructed for SWIM based services and applications validation. The task is carried out and led by Japan, China, and Republic of Korea in collaboration with technical supporters from Electronic Navigation Research Institute (ENRI), Air Traffic Management Bureau (ATMB), Korea Airports Corporation.

SWIM in ASEAN Demonstration

2.46 The meeting noted that the SWIM in ASEAN demonstration will be held from 12 to 15 November 2019 in both Singapore and Thailand (one day in Bangkok and one day in Singapore). More detailed information for the SWIM in ASEAN Demonstration including the purposes, goals, and scope of the demonstration as well as the high-level information on the technical infrastructure developed under the project was introduced by Thailand during APANPIRG/30 meeting. The meeting was informed that this project is conducted under the cooperation framework between ASEAN (Association of Southeast Asian Nations) and the USA. The meeting was briefed on the operational scenarios to be conducted during the demonstration to exhibit the operational benefits of SWIM. The meeting was also informed that these scenarios cover the operations based on not only current operational concept such as A-CDM and cross-border ATFM but also future operational concept like FF-ICE.

SWIM Project Team of EUR/NAT Region

2.47 The meeting noted that a SWIM Project Team (SWIM PT) was established to deal with SWIM implementation in the ICAO European Region. The first meeting of the SWIM PT was held in September 2018. APAC SWIM TF would keep close liaison and communication with other regional SWIM-related working groups in order to share experience gained and lessons learnt on SWIM implementation.

The Result of APAC SWIM Survey

2.48 The meeting noted a summary of results from the APAC Regional SWIM Survey conducted based on Conclusion CNS SG/22/6 during December 2018 to March 2019. Seventeen (17) States/Administrations had provided responses to the SWIM survey, including Australia, Bhutan, China, Fiji, Hong Kong China, Indonesia, Japan, Lao PDR, Macao China, Mongolia, Nepal, New Zealand, Republic of Korea, Republic of the Philippines, Singapore, Thailand and United States. Many of them provided more than one responses from different group of stakeholder. The recommendations resulted from the survey were reviewed and considered by the SWIMTF/3 meeting.

2.49 Considering the SWIM survey result, the SWIMTF/3 meeting agreed that higher priority should be given to the SWIM implementation for cross-border ATFM and A-CDM operations and the associated required information services.

Launch ceremony of CRV for Asia and Pacific Regions

2.50 At a joint session of SWIMTF/3 and CRV OG/6, Ms. Jeri Groce, Chairperson of SWIM Task Force introduced the work programme of SWIMTF and Mr. Terence Palmer, co-chair of CRV OG introduced the work programme of CRV Operation Group to the joint meeting. The meeting reconfirmed that the CRV will be used to support SWIM implementation in the APAC Region.

SWIM-enabled MET Information Services and related Issues

2.51 The meeting noted that the Hong Kong Observatory (HKO) of Hong Kong China SWIM-enabled MET system supports MET information exchange services to filter, transform and distribute MET information for use in user's SWIM systems. One of two possible issues identified relevant to MET information in SWIM is the required bandwidth of CRV whether large enough to support SWIM enabled information services involving exchange of large volume data such as gridded data, image data and other binary MET data. Most of the APAC States plans to implement CRV with 10MB or below at the moment. Further coordination between IMP and MET/P may be required to define the bandwidth requirement of the SWIM network and work out the recommended solution. In this connection, the meeting recalled the outcome of discussions at CRV OG/5 meeting regarding the required bandwidth "the concern on bandwidth was not a technical issue but a decision of the CRV subscriber to opt for the CRV bandwidth requirements to meet its operational needs"

APAC SWIM Education Materials

2.52 In following up an Action Item of the SWIM TF, SWIM education video and SWIM Brochure had been developed by ICAO APAC Office in cooperation with member States and industry. The SWIMTF/3 meeting endorsed the video for distribution. The brochure had been forwarded to ICAO Headquarters for further review and action. The SWIM Educational video was presented to APANPIRG/30 meeting. It was informed that the video had been also presented to the DGCA Conf/56. The video is posted on the following ICAO APAC Webpage: https://www.icao.int/APAC/Pages/swim.aspx .

Transition to SWIM – Common Benefit to APAC Region

2.53 It is important for each State and/or region to decide what aim for by introducing SWIM. Japan presented following ideas on common value and benefits to promote transition to SWIM in APAC Region.

- One idea is to increase productivity with digital information such as digitalizing the flight plan for sharing with stakeholders related to ATFM and A-CDM using FIXM format; digitalizing NOTAM service using AIXM format and digitalizing weather information using IWXXM format; and

- Another idea to restructure ANS system by less dependency on legacy function which would make it possible to gradually abolish old communication functions while integrating AFTN / AMHS services into SWIM.

IWXXM Distribution over AMHS Coordination

2.54 USA stated that the Common AeRonautical Virtual Private Network (CRV), an underlying Internet Protocol (IP) based network does have enough bandwidth required by IWXXM traffic although IWXXM traffic load is expected to be ten folds over legacy Traditional Alphanumeric Code (TAC) format with compression applied. The respective MET authorities are expected to implement IWXXM version 3.0 prior to November 2020 and implement Extensible Markup Language (XML) gateway or equivalent.

2.55 A quick survey indicated that some MET facilities do not have capability to exchange XML format with other ANSPs over AMHS. In order to have a smooth transition, MET facilities need to implement the following:

a) XML exchange capability with respective AMHS or its XML gateway;
b) allow bi-directional exchange of IWXXM (publication/consuming);
c) underlying network to support the XML exchange;
d) XML schema validation capability;
e) mapping WMO ID to AFTN/AMHS address for transmission of IWXXM; and
f) compression capability

2.56 The IWXXM data currently includes MET data: METAR, SIGMET, TAF, and SPECI. The AMHS infrastructure can support this requirement. However, if the MET data in IWXXM format be expanded in the future to include Volcanic Ash Advisory, Tropical Cyclone Advisory, Space Wx, SIGWX, then further coordination between MET and COM would be required to avoid overloading the AFS network that may cause delay in distributing critical service such Air Traffic Inter-Facility Data Communication (AIDC). It was further clarified that versions of IWXXM should have no much impact on its exchange over AMHS. It should be transparent to AMHS as version 3 and version 2 should have no difference for their exchange over AMHS. However, it should be single attachment of FTBP with agreed max. size of the file. It was noted, the MET Workshop on IWXXM in June 2019 generally agreed that the single file size of FTBP should be less than 2 Mbytes.

3. ACTION BY THE MEETING

3.1 The meeting is invited to note the information contained in this paper and reviewed the actions taken by APANPIRG on the recommendations derived from CRV OG/6 meeting.

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