ICAO

ORGANISATION DE L'AVIATION CIVILE INTERNATIONALE

Seventh Meeting of the APIRG Infrastructure and Information Management Sub-Group (IIM/SG7)

Dakar, Senegal, (5 - 8 August 2024)

Agenda item 3: Achievements in Infrastructure and Information Management

3.3. Implementation of ASBU elements and achievements of IIM Projects

WP3.3C Progress report on the implementation of Air/Ground communication (HF/VHF voice data, CPDLC) Project

(Presented by the IIM COM3 project team)

SUMMARY
This working paper presents the progress of the IIM/SG COM3 on the implementation of Air/Ground communication (HF/VHF voice data, CPDLC) Meeting action in **paragraph 3.**

REFERENCE(S):
 	
  ▪ Annex 10 – Aeronautical Telecommunications (Volumes 1, 2 and 3)
 	
  ▪ Appendix 11 – Air Traffic Services
 	
  ▪ Doc 4444 – Procedures for Air Navigation Services
 	
  ▪ Doc 9694 – Manual of Air Traffic Services (ATS) Data Link Applications
 	
  ▪ IIM/SG5 WP3.1A3 Appendix 2 Level of implementation of ASBU elements in the CNS domain

Relates to **ICAO's Strategic Objectives:** *A – Safety; B – Capacity and efficiency.*

1. Introduction

1.1. Project Objectives
   a) Assist States in implementing the COM3 ASBU COMI, COMS and FICE elements.
   b) In the framework of the technologies Roadmap for Communication defined in the GANP 6th edition and the AFI Communication strategy, assist States in the implementation of Aeronautical Mobile Service through:

   a. High Frequency/Very High Frequency (**HF/VHF**) voice Communication
   b. High Frequency/Very High Frequency Data link communication (**HF/VHF DL**)
   c. Controller/Pilot Data Link Communication (**CPDLC)**

1.2. Project Scope

   a) The provision of air/ground communication between Pilots and ATCOs will cover all Airspaces and Air Traffic Control Centers involved in the provision of air navigation service for international civil aviation. The implementation scheme will be in accordance with the requirements of the provision of Aeronautical Mobile Service (AMS) as defined by the AFI Air Navigation Plan (AFI/RAN Abuja 1997).

   b) The Project benefits to all ESAF and WACAF States and interested Organizations and cover the implementation of the following ASBU COM3 elements.

   • B0/1 - Aircraft Communication Addressing Reporting System (ACARS)

   • B0/3 - VHF Data Link (VDL) Mode O/A

   • B0/4 - VHF Data Link (VDL) Mode 2 Basic

   • B0/5 - Satellite Communication (SATCOM) Class C Data

   • B0/6 - High Frequency Data Link (HFDL)

   • B1/2 - VHF Data Link (VDL) Mode 2 Multi- Frequency

   • B1/3 - SATCOM Class B Voice and Data

   • B1/4 - Aeronautical Mobile Airport Communication System (AeroMACS)

   • B2/2 - Aeronautical Mobile Aircraft Communication System (AeroMACS) aircraft mobile connection

   • B2/3 - Link meeting requirements for non-safety critical communication

   • B0/1 - CPDLC (FANS 1/A & ATN B1) for domestic and procedural airspace

   • B1/1 - PBCS approved CPDLC (FANS 1/A +) for domestic and procedural airspace

   • B1/3 - SATVOICE (incl. routine communication) for procedural airspace

   • B2/3 - PBCS approved SATVOICE (incl.routine communications) for procedural airspace

   • FICE - B2/1 - Planning Service

2. Discussions

   2.1. Project Deliverables /Achievements
      2.1.1. Developed the Questionnaire analysis template and analyzed responses ;
      1.1.1.   AFI HDL/VDL Manual/Guideline
      2.1.2. Development AFI Communication Strategy; and

2.1.3. The project costing.

COM3 Project Deliverables	Planned Delivery Date	Revised Delivery	Objectiv es
Project progress report	After each meeting		To enable the Chair/Vice Chair and the Secretariat to monitor the progress of the project team
Project organization / Plan	31 December 2017	31 May 2018 (Completed)	To outline the tasks for the project organization and coordination. Revised.
Project description	31 December 2017	31 May 2018 (Completed)	To provide a description of the project
Project terms of reference	31 December 2017	31 May 2018 (Completed)	
Project linkage	31 October 2017		
Implementation status of HF &VHF stations (Voice & data Link)	Quarterly		To monitor the HF &VHF stations (Voice & data Link) implementation status and provide assistance or recommendations
Implementation/Operation status of CPDLC Circuits	Quarterly		To monitor the CPDLC implementation status and provide assistance or recommendations
Teleconferences, Workshops/Seminars, meetings (French and English) on VHF/CPDLC systems operation and their implementation scheme	Bi-Monthly		
Implementation/sharing and Operation status of Remote VHF/HF systems	Quarterly		To monitor the HF &VHF stations (Voice & data Link) implementation/sharing status and provide assistance or recommendations
Assessment/Reporting on the operation of Air ground	Quarterly		To provide assistance and recommendations.

communication system and operation			
Detailed guidance provided to States not complying with the AFI AMS Plan	Quarterly		To provide assistance and recommendations.

COM3 Project Deliverables	Planned Delivery Date	Revised Delivery	Objectives
List of States with VHF and CPDLC, implemented	Quarterly		Monitor implementation status and challenges.
Project Costing Estimate	31/03/2022		To develop project costing estimates
HF DL / VDL Requirement (Manual / Guidance)	After 2 years	March 2024	To provide HF DL / VDL Requirement (Manual / Guidance) for AFI states.
AFI Communication Strategy	31/03/2022		To develop the AFI Communication Strategy
ASBU COMI, COMS and FICE elements Implementation status	Quarterly		Not yet started

2.2. Baseline (2022) – Status of the ASBU implementation

2.2.1. The project has not commenced to assist States with the implementation of the COM3 ASBU elements. The status of the implementation of the ASBU elements by these States will be provided in the next project report.

ASBU elements / States	Implementation status of COMI-B0 elements					Comments
	COMI-B0/1	COMI -B0/3	COMI -B0/4	COMI -B0/5	COMI -B0/6	
State A						
State B						
ASBU elements / States	Implementation status of COMI-B1 elements					Comments
	COMI-B1/2	COMI -B1/3	COMI -B1/4			
State A						
State B						
ASBU elements / States	Implementation status of COMI-B2 elements					Comments
	COMI-B2/2	COMI -B2/3				
State A						
State B						
ASBU elements	Implementation status of COMS-B0 elements					Comments
	COMS-B0/1					

States						
State A						
State B						

ASBU elements / States	Implementation status of COMS-B1 elements					Comments
	COMS-B0/1	COMS-B1/3				
State A						
State B						

ASBU elements / States	Implementation status of COMS-B2 elements					Comments
	COMS-B2/1	COMS-B2/3				
State A						
State B						

ASBU elements / States	Implementation status of FICE elements					Comments
	FICE-B2/1					
State A						
State B						

2.3. Status of the implementation of the 2023 Action Plan

Ref. ASBU element	Deliverable	Task/activity	Beneficiary States	Status	Comments
The status of the implementation of the COM3 ASBU elements by these States will be provided in the next project report					

2.4. ASBU Elements implementation status

ESAF States

Ref. ASBU element	Number of ESAF States assisted	Number of States reporting "Completed"	Number of States reporting "Partially completed"	Number of States reporting "Planned"	Number of States reporting "Not yet started"	Comments
The status of the implementation of the COM3 ASBU elements by these States will be provided in the next project report						

WACAF States

Ref. ASBU element	Number of WACAF	Number of States	Number of States reporting	Number of States	Number of States reporting "Not yet started"	Comments

	States assisted	reporting "Completed"	"Partially completed"	reporting "Planned"		
The status of the implementation of the COM3 ASBU elements by these States will be provided in the next project report						

2.5. Summary of ASBU implementation

ESAF Office

Ref. ASBU element	Number of ESAF States assisted	Number of States reporting "Completed"	Number of States reporting "Partially completed"	Number of States reporting "Planned"	Number of States reporting "Not yet started"	Comments
The status of the implementation of the COM3 ASBU elements by these States will be provided in the next project report						

WACAF States

Ref. ASBU element	Number of ESAF States assisted	Number of States reporting "Completed"	Number of States reporting "Partially completed"	Number of States reporting "Planned"	Number of States reporting "Not yet started"	Comments
The status of the implementation of the COM3 ASBU elements by these States will be provided in the next project report						

2.6. Status of air navigation deficiencies

Summary of APIRG air navigation deficiencies in the COM3 field within the project scope

State	COM3 facilities & services	Deficiency ID	Status
The summary of the APIRG air navigation deficiencies in the COM3 field will be provided in the next project report			

2.7. Implementation challenges

2.7.1.   The key challenge faced by the project is related to the project questionnaire survey and State responses.

2.7.2. The received questionnaires have been analyzed; and following general recommendations are noted:

 a) States need to invest in HF system, which is IP compatible, ready for SELCAL

migration and has DL capabilities;

b) Migrate systems including communication links and be IP ready; and

c) Consider deploying renewable energy to address the power outage issues due to lack of backup power.

d) States engage service providers to understand the challenges related to datalink link failures in order to improve availability figures.

e) States should establish relationships with the relevant state communication authority in order to address the challenges of frequency interference on the aeronautical frequency band.

3. ACTION BY THE MEETING

10.1   The meeting is invited to:

a) Take note of the progress made so far regarding the IIMSG Communication Project 3 deliverables and challenges;

b) Encourage State participation in the APIRG projects.