



**Agenda Item 3: Report of activities and deliverables of the INTEROP TF and Subgroups  
b) CNS implementation. Advances of the Subgroups**

**ACTIVITIES CARRIED OUT IN THE INTEROP TF SUBGROUPS**

(Presented by the Secretariat)

<b>SUMMARY</b>	
This working paper presents the activities carried out by the Subgroups of the Interoperability Task Force (INTEROP TF) since the last SAM Region Implementation Group Workshop/Meeting (SAM/IG/29), to date.	
<b>References</b>	
- Final Report GREPECAS/20 Meeting (Salvador-BA/Brazil, November 16 to 18, 2022); and - Final Report of the SAM/IG/29 Meeting (Lima, May 15 to 19, 2023).	
<b>ICAO Strategic Objectives</b>	<i>A – Safety</i> <i>B – Air Navigation Capacity and Efficiency</i>  <i>ASBU: AMET-B0/4 (IWXXM), ASUR-B0/1 (ADS-B), ASUR-B1/1 (SB ADS-B), COMI-B0/7 (AMHS) and FICE-B0/1 (AIDC)</i>

**1. INTRODUCTION**

1.1 The SAM Region Implementation Group (SAM/IG) has formed the Interoperability Task Force (INTEROP TF) to support and promote air navigation services modernization initiatives and ensure interoperability between automated systems used by AIM, ATM, ATFM, CNS and MET users, with a view to:

- a) facilitate the exchange of information between the systems implemented by the States, decreasing interconnection times and problems between systems;
- b) promote a coordinated and homogeneous transition to the new services and elements indicated in the GANP; and
- c) Encourage the multidisciplinary participation of air navigation services professionals in support of the SAM Region Implementation Group (SAM/IG) for the planning and execution of the interconnection work of the systems implemented in the South American Region

1.2 Currently, 6 INTEROP TF Subgroups are activated: ATM/AIDC Subgroup, ATM/FPL Subgroup, CNS/AMHS Subgroup, CNS/ANP Subgroup, CNS/SUR Subgroup and MET/IWXXM Subgroup. The following is a summary of the activities carried out since the SAM/IG/29

Workshop/Meeting (Lima, May 15-19, 2023). The Final Report of the SAM/IG/29 Workshop/Meeting can be accessed through the link below:

<https://www.icao.int/SAM/Documents/2023-RLA06901-SAMIG29/FINAL%20REPORT.pdf>

## 2. DISCUSSION

### 2.1 ATM/AIDC SUBGROUP

#### *Establishment of AIDC between centers using the same automation system*

2.1.1 Based on **Action S29/11** of the SAM/IG/9 Workshop/Meeting Report, Brazil and Paraguay resumed AIDC testing between ACC Asuncion and ACC Curitiba, with support from the manufacturer of the automated system (Atech).

2.1.2 A teleconference was held on August 25, 2023, when the coordinators of Brazil and Paraguay were defined for the establishment of the AIDC connection.

2.1.3 Also, a visit was scheduled for October 15-21, 2023, to the two area control centers, by the ATM/AIDC Subgroup Rapporteur, accompanied by the SAM Office CNS Officer and an expert from the EASA EU-LAC APP II regional cooperation project; with the objective of knowing more in detail the situation of AIDC implementation between the centers and to advance with the pre-operational tests. This visit is expected to develop recommendations and actions for the implementation, as well as to identify areas of harmonization that may be useful for all the States.

2.1.4 Based on **Action S29/12** of the SAM/IG/29 Workshop/Meeting Report, Brazil and Venezuela resumed AIDC testing between ACC Amazonico and ACC Maiquetía, with support from the automated system manufacturer (Atech).

2.1.5 A teleconference was held on 24 August, 2023, where the coordinators for Brazil and Venezuela were defined for the establishment of the AIDC connection.

2.1.6 Likewise, on 24 August, 2023, Colombia and Venezuela resumed the AIDC tests between ACC Barranquilla and ACC Maiquetía which were 95% successful, having found that an error is generated when Barranquilla requests a coordination (CDN), since the CDN message sent from Indra's system to Atech's system contains fields 15 and 18, and the Atech system (SAGITARIO) only handles CDN messages with fields 10 and 14, a situation that indicates the need for Atech to adapt the system, in accordance with the current ICD guidelines, so as not to generate problems in the AIDC connection.

2.1.7 Despite not using the same automated system, in a teleconference held in July, the intention was shared between Chile and Peru to initiate the coordination to start pre-operational tests between the FIR Santiago Oceanico and the FIR Lima. In subsequent meetings it was possible to define the activities to be carried out and the conditions of the tests that should start in October. The details of these activities will be presented by Peru in a working paper.

2.1.8 Based on the task to be developed "5. Operational implementation of new automated ATM systems and integration of the existing ones. 5.2 Conclusion SAM/IG/21 - 03", a tripartite teleconference held on 25 July, 2023, made it possible to share with the focal points of SCEL, SEGU and SPIM the numerous particularities identified in the automated coordinations considering that the transit flow in the Pacific involves, to a large extent, these three States. The participants shared their experiences, lessons learned and doubts on the use of the tool. Peru was able to share details on the recording of errors related to LRM 6 and LRM 7, which finally led to a commitment by the participants to analyze the data and implement appropriate mitigation measures.

## 2.2 ATM/FPL SUBGROUP

2.2.1 Following the First Workshop/Meeting of the ATM/FPL Subgroup (SG ATM/FPL/1) held on March 27-31, 2023, during which the levels of duplication and errors present in flight plans submitted through the appendices by States were identified, the evaluation and implementation of corrective actions has continued in collaboration with the originators of FPL messages and associated messages. The main objective of these actions is to gradually reduce the percentage of flight plans with duplications or errors. To access the information paper of the above mentioned meeting and the summary of the discussions, please click on the following link:

<https://www.icao.int/SAM/Pages/MeetingsDocumentation.aspx?m=2023-RLA06901-SGATMFPL1&t=1>

2.2.2 Some States have taken note of the changes made to the ATM/FPL Roadmap document version 3.0 and are conducting systems checks to consider adopting the recommended format for feedback messages (ACK and REJ) for flight plan originators. Action S29/14.

2.2.3 Following the SAM Implementation Group Workshop/Meeting (SAM/IG/29), two virtual meetings were held in September. During these meetings, the ATM/FPL Subgroup focal points reported on progress related to the development of action plans to mitigate duplication and errors in flight plans. This progress is aligned with the roadmap established for the centralization of flight plans at a single address.

2.2.4 In the virtual meeting of 26 September, 2023, some actions to be taken into account to mitigate errors and duplicity in flight plans were discussed.

- Error-inducing constraints.
- Suggestions for assessing capability and differences in automated flight plan validation systems.
- Outdated databases.
- AIP ENR 1.11 flight plan routing.
- Syntax in box 15 of the FPL regarding coordinates and their validation in the FDP.
- Exchange of information with the focal points of ICAO Groups and Subgroups that carry out activities related to EDE, UPR, FRTO, AIDC, FF-ICE.

2.2.5 The States of Peru and Chile, through their focal points, informed that they have been developing activities related to the review of flight plans and their guidance, for which an information paper for SAM/IG/30 will be submitted by the State of Chile on the results of the activities. On this point, it was considered to take this activity as an example to involve more adjacent States and where the FPL will be directed.

2.2.6 The ATM/FPL subgroup rapporteur Mr. Jorge Zuñiga informed during the meeting that due to the designation of new functions within the DGCA, these make it impossible to have an effective continuity in the development of ATM/FPL Subgroup activities, putting in consideration of the meeting

Mr. Pablo Valenzuela from the State of Chile to continue with this activity, which shall be ratified at the SAM/IG/30 meeting.

2.2.7 On 27 September, 2023, the Chilean and Peruvian focal points exchanged messages with two flight plans with non-collective AMHS addressing. The results of these tests were satisfactory, allowing further evaluation of the effectiveness of configurations to a single address for the FPL.

2.2.8 It has been identified that, despite the fact that the States in the Region use the AMHS system manufactured by Frequentis-Comsoft and implement the CADAS User Agent (UA), they do not have uniformity in terms of capabilities and functionalities due to the different versions of their systems. In this context, the Chilean focal point has been requested to present its system and functionalities in order to exchange information, share best practices and learn about the initiatives undertaken by each State to establish a centralized management of flight plans. This action falls under **Action S29/15** of the SAM/IG/29 Workshop/Meeting Report.

### 2.3 CNS/AMHS SUBGROUP

2.3.1 **Appendix A** of this working paper presents the Intraregional and Interregional (planned and extra-plan) AMHS interconnections of the SAM Region.

2.3.2 Only two AMHS interconnections (P1) are pending: network of the NAM/CAR States, so that the connection with REDDIG can be established through the Network-to-Network Interface (NNI) between the telecommunications providers of the two regional networks.

- Caracas COM Center (SVCA) – Curaçao COM Center (TNCC); and
- Georgetown COM Center (SYCJ) - Piarco COM Center (TTPP).

2.3.3 The first interconnection is pending the implementation of the new CANSNET network of the NAM/CAR States, so that the connection with REDDIG can be established through the Network-to-Network Interface (NNI) between the telecommunications providers of the two regional networks.

2.3.4 The second interconnection has been coordinated for more than two years and the connectivity requirements have already been met, with only the interoperability tests (IOT) and pre-operational tests (POT) remaining to make the interconnection operational. As the two centers already have other operational interconnections with other AMHS centers, it is estimated that the tests will be successfully completed quickly.

#### *AMHS Virtual Workshop 2023*

2.3.5 From September 25 to 27, 2023, the Virtual Workshop 2023 was held with 91 registered participants from all the SAM States, except Suriname. The objective of the event was to review the concepts of the main e-mail protocols (SMTP and X.400), compare the characteristics and functionalities of the two protocols and recognize the importance of adopting the protocols developed in the context of the International Standardization Organization (ISO) for the aeronautical context. Also, during the Workshop the SAM State information available on the Eurocontrol AMC web application was reviewed.

2.3.6 **Appendix B** to this working paper shows The Workshop Content and Tentative Schedule of activities. The Workshop material is available at the following link:

<https://www.icao.int/SAM/Pages/MeetingsDocumentation.aspx?m=2023-RLA06901-VirtualAMHS>

### 2.4 CNS/ANP SUBGROUP

2.4.1 The CNS/ANP Subgroup was activated at the SAM/IG/26 Meeting (Virtual, September 20 to 23, 2021) with the purpose of supporting the review of the information contained in Vol II of the CAR/SAM Air Navigation Plan, as well as providing support in the elaboration of Vol III of the CAR/SAM ANP on CNS topics. Furthermore, after the activation of the GREPECAS Project for the CAR/SAM Regional Management of the Radio Spectrum for Aviation, the CNS/ANP Subgroup began to support the activities developed within the framework of the GREPECAS Project.

2.4.2 Regarding the updating of the information contained in Part III (CNS) of Volume II of the CAR/SAM PNA, a working paper will be presented during the GREPECAS/21 Meeting proposing the consolidation of the information with the CAR States, the adoption of new formats (electronic templates) for the CNS Tables and publication on the ICAO iSTARS/SPACE application web page, after approval by GREPECAS and completion of the Proposal for Amendment (PfA) process jointly by the Regional Offices (NACC and SAM).

2.4.3 It is recommended that the SAM States support the proposal to be presented at the GREPECAS/21 Meeting, during the asynchronous phase of the meeting, for approval of a GREPECAS Conclusion, during the face-to-face phase, to be held in Santo Domingo, November 14-17, 2023. **Appendix C** to this working paper presents the project.

2.4.4 Another working paper will be presented at the asynchronous phase of the GREPECAS/21 Meeting, dealing with the adoption of the Frequency Finder 2023 application as a tool for the management of VHF NAV (COM2 List) and VHF COM (COM3 List) frequencies.

2.4.5 Likewise, it is recommended that the SAM States support the proposal to adopt the Frequency Finder 2023 application as a frequency management tool and consolidate the information in the application's database.

## 2.5 CNS/SUR SUBGROUP

2.5.1 The CNS/SUR Subgroup deals with aeronautical surveillance data exchange issues, and is also responsible for studying and proposing the necessary activities for a regional implementation of space-based ADS-B in the SAM Region, using REDDIG as a platform for information distribution, reducing the cost by contracting telecommunication services.

### *Exchange of aeronautical surveillance data between Chile and Peru*

2.5.2 During the coordination work to establish the exchange of secondary surveillance radar (SSR) data between Chile and Peru, data from the Iquique and Arequipa sensors, the Peruvian representatives indicated that no progress had been made due to the need to install a filter or converter for security reasons.

### *Space-based ADS-B data transmission via REDDIG II*

2.5.3 On 20 April, 2023, the connection via REDDIG II was established, through the MPLS nodes of Ilopingo and Virginia, as one of the channels for the provision of space-based ADS-B service to COCESNA.

2.5.4 During this period, through its REDDIG node in Ilopingo, COCESNA is receiving space-based ADS-B traffic from the REDDIG Aireon node (Virginia, USA). The connection has proven to have

high availability and this indicates that any State that is part of the network can implement this service with Aireon, even at lower costs.

*Working Table during the GREPECAS/21 Meeting*

2.5.5 During the GREPECAS/21 Meeting (Santo Domingo, November 14-17, 2023), a working group will be formed to design a roadmap for the operational and effective use of ADS-B in the CAR/SAM Regions.

2.5.6 The SAM States are encouraged to participate in the working table to be held on 16 November, 2023, being important to have information from each State regarding the planning for operational establishment, space served, number of stations and coverage, status of the fleet in terms of aircraft baggage and adopted versions (version 0, version 1 and version 2) and regulations already published.

2.6 MET/IWXXM SUBGROUP

2.6.1 The MET/IWXXM Subgroup was formed for the purpose of testing and exchanging OPMET messages in the new IWXXM format, via Aeronautical Messaging Service (AMHS).

2.6.2 With the adaptations made to the Regional OPMET Data Bank (RODB) in Brasilia (see IP/3.1) and the regional AMHS implementation, it is estimated that the implementation of the IWXXM format for the exchange of meteorological operational information will make significant progress in the States of the SAM Region during the current year.

**3. SUGGESTED ACTION**

3.1 The Meeting is invited to:

- a) Take note of the activities carried out of the Sub-Groups of the INTEROP TF, and
- b) analyze other considerations that the Meeting deems pertinent.

- END -

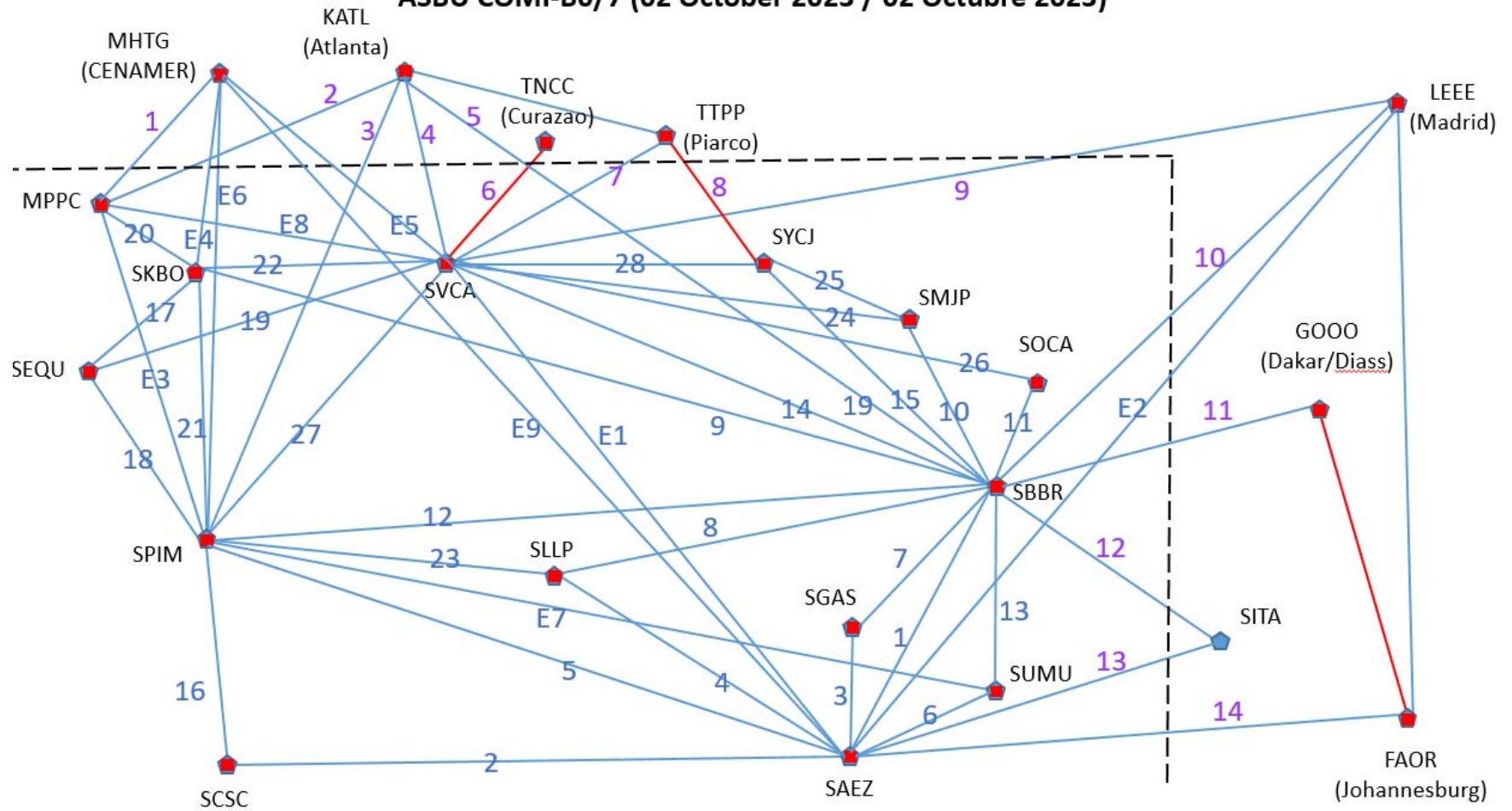
## Interconexiones AMHS – Región SAM / AMHS Interconnection – SAM Region

	Conexión P1 / P1 Connection	Situación / Situation	Operativa en / Operational in	Observaciones / Notes
1	SAEZ – SBBR	Operativa / Operational	04/04/2018	
2	SAEZ – SCSC	Operativa / Operational	21/01/2020	
3	SAEZ – SGAS	Operativa / Operational	30/11/2018	
4	SAEZ – SLLP	Operativa / Operational	10/02/2020	
5	SAEZ – SPIM	Operativa / Operational	10/05/2019	
6	SAEZ – SUMU	Operativa / Operational	30/11/2022	
7	SBBR – SGAS	Operativa / Operational	30/11/2018	
8	SBBR – SLLP	Operativa / Operational	30/07/2019	
9	SBBR – SKBO	Operativa / Operational	22/05/2017	
10	SBBR – SMJP	Operativa / Operational	06/09/2018	
11	SBBR – SOCA	Operativa / Operational	22/01/2020	
12	SBBR – SPIM	Operativa / Operational	14/12/2015	
13	<b>SBBR – SUMU</b>	<b>Operativa / Operational</b>	<b>14/02/2023</b>	
14	SBBR – SVCA	Operativa / Operational	28/02/2018	
15	SBBR – SYCJ	Operativa / Operational	06/07/2017	
16	SCSC – SPIM	Operativa / Operational	14/12/2015	
17	SEQU – SKBO	Operativa / Operational	16/01/2020	
18	SEQU – SPIM	Operativa / Operational	14/07/2012	
19	SEQU – SVCA	Operativa / Operational	11/10/2018	
20	SKBO – MPPC	Operativa / Operational	30/07/2020	
21	SKBO – SPIM	Operativa / Operational	15/11/2010	
22	SKBO – SVCA	Operativa / Operational	01/12/2017	
23	SLLP – SPIM	Operativa / Operational	10/05/2019	
24	SMJP – SVCA	Operativa / Operational	31/03/2019	
25	SMJP – SYCJ	Operativa / Operational	11/10/2018	
26	SOCA – SVCA	Operativa / Operational	22/01/2020	
27	SPIM – SVCA	Operativa / Operational	01/12/2017	
28	SVCA – SYCJ	Operativa / Operational	27/08/2019	

**Interconexiones AMHS – Región SAM / AMHS Interconnection – SAM Region**

	<b>Conexión P1 / P1 Connection</b>	<b>Situación / Situation</b>	<b>Operativa en / Operational in</b>	<b>Observaciones / Notes</b>
1	MPPC – MHTG	Operativa / Operational	2018	
2	MPPC – KATL	Operativa / Operational	2018	
3	SPIM – KATL	Operativa / Operational	02/03/2020	
4	SVCA – KATL	Operativa / Operational	27/01/2021	
5	SBBR – KATL	Operativa / Operational	06/08/2019	
6	SVCA – TNCC			
7	SVCA – TTPP	Operativa / Operational	26/04/2021	
8	SYCJ – TTPP			
9	<b>SVCA – LEEE</b>	<b>Operativa / Operational</b>	<b>23/02/2023</b>	
10	SBBR – LEEE	Operativa / Operational	11/10/2018	
11	SBBR – GOOO	Operativa / Operational	25/06/2020	
12	SBBR – SITA	Operativa / Operational	16/08/2018	
13	SAEZ – SITA	Operativa / Operational	18/07/2019	
14	<b>SAEZ – FAOR</b>	<b>Operativa / Operational</b>	<b>01/06/2023</b>	
E1	SAEZ – SVCA	Operativa / Operational	06/06/2022	Extra plan (Argentina – Venezuela)
E2	<b>SAEZ – LEEE</b>	<b>Operativa / Operational</b>	<b>08/03/2023</b>	<b>Extra plan (ENAIRES)</b>
E3	<b>MPPC – SPIM</b>	<b>Operativa / Operational</b>	<b>24/04/2023</b>	<b>Extra plan (Panamá - Perú)</b>
E4	SKBO – MHTG	Operativa / Operational	15/08/2022	Extra plan (CENAMER)
E5	SVCA - MHTG	Operativa / Operational	06/09/2022	Extra plan (CENAMER)
E6	SPIM – MHTG	Operativa / Operational	30/08/2022	Extra plan (CENAMER)
E7	SPIM – SUMU	Operativa / Operational	07/12/2022	Extra plan (Peru - Uruguay)
E8	<b>MPPC - SVCA</b>	<b>Operativa / Operational</b>	<b>21/06/2023</b>	<b>Extra plan (Panamá - Venezuela)</b>
E9	SAEZ - MHTG	Operativa / Operational	30/09/2022	Extra plan (CENAMER)

**AMHS Interconnections / Interconexiones AMHS  
ASBU COMI-B0/7 (02 October 2023 / 02 Octubre 2023)**



**APPENDIX B****AMHS Workshop 2023****CONTENTS**Day 01 (Monday – September 25, 2023)

- 1) X.400 x SMTP comparison;
- 2) Basic concepts of the SMTP Protocol (RFC 822);
- 3) Multipurpose Internet Mail Extensions (MIME);
- 4) Base64 encoding;
- 5) QuotedPrintable encoding;
- 6) The development of the X.400 Standard;
- 7) Network Architecture – Application; and
- 8) MHS and AMHS.

Day 02 (Tuesday – September 26, 2023)

- 1) AMHS Functional Model;
- 2) Information Model;
- 3) AMHS addresses (CAAS and XF);
- 4) AFTN/AMHS Gateway;
- 5) Specification of Application Protocols;
- 6) Concrete Syntax, Abstract Syntax and Transfer Syntax;
- 7) Abstract Syntax Notation No 1 (ASN.1);
- 8) ASN.1 classes of types;
- 9) Example of specification using ASN.1 (Personnel Register);
- 10) Formal specification of P1 and P2 Protocols.

Day 03 (Wednesday – September 27, 2023)

- 1) Review of concepts; and
- 2) Review of the information in the AMC database.

**TENTATIVE SCHEDULE**

**Session 1:** 13:00 UTC – 13:50 UTC (08:00 – 08:50, Lima time)  
10-minute interval

**Session 2:** 14:00 UTC – 14:50 UTC (09:00 – 09:50, Lima time)  
10-minute interval

**Session 3:** 15:00 UTC – 16:00 UTC (10:00 – 11:00, Lima time)  
Lunch break (60 minutes)

**Session 4:** 17:00 UTC – 17:50 UTC (12:00 – 12:50, Lima time)  
10-minute interval

**Session 5:** 18:00 UTC – 19:00 UTC (13:00 – 14:00 Lima time)