



International Civil Aviation Organization
South American Regional Office - Regional Project RLA/03/901
REDDIG Management System and Satellite Segment Administration
Sixteenth Meeting of the Coordination Committee (RCC/16)
Lima, Peru, 18 to 20 March 2013

Agenda Item 5: Work plan for year 2013

ACTIVITIES FORESEEN FOR THE PERIOD 2013

(Working paper by the Secretariat)

Summary	
This working paper presents information about the activities to be carried out by Project RLA/03/901 - REDDIG Management System and Satellite Segment Administration, during the period 2013.	
References	
<ul style="list-style-type: none">• Report of the Fifteenth REDDIG Coordination Meeting (Lima, Peru, 15-17 August 2012).	
ICAO strategic objectives:	<i>A – Safety; and C – Environmental protection and sustainable development of air transport</i>

1. **Background**

1.1 The main activities scheduled for 2013 are the following:

- a) REDDIG II implementation process;
- b) Implementation of new services; and
- c) 2013 training programme.

2. **Descripción**

REDDIG II implementation process

2.1 The main list of activities (tentative) for REDDIG II implementation is shown in **Appendix A** to this working paper. The carrying out of the activities is subject to the signature of the contract between ICAO and the company recommended as winner of REDDIG II bidding process.

2.2 The conduct of the activities has been late due to delays in the signature of the contract. The postponement was due to the time required to reach agreements during the negotiation phase between ICAO and the company recommended as bid winner.

2.3 18 March 2013 has been considered as the initial date of Phase I of REDDIG II implementation Project, taking into account that the contract would be signed between the first two weeks of March 2013.

2.4 During the first phase, a coordination meeting will be held with all REDDIG II focal points assigned by States in reply to this Regional Office's letter LN 3/20 – SA5889 of 15 October 2012. The meeting is scheduled for 12 to 16 August 2013 and during same, all REDDIG II design documentation (SDD), testing protocols and system monitoring and control documentation, will be reviewed and approved upon.

2.5 Phase II – *Implementation of REDDIG II*, would be starting in September 2014, and in operation by July 2014. For the start of Phase II, all REDDIG member States should have cancelled all quotas corresponding to REDDIG II. The target date for the reception of contributions is 31 March 2013.

Implementation of new services

2.6 The ATS speech circuits between the ATS units located in the frontier areas of Brazil: Guajaramirim (Brazil) – Guayaramirín (Bolivia); Corumbá (Brazil) – Puerto Suárez (Bolivia); Foz do Iguaçu (Brazil) – Cataratas (Argentina); Foz do Iguaçu (Brazil) – Guaraní (Paraguay); and Uruguaiana (Brazil) – Libres (Argentina), are scheduled to finish installation.

2.7 To complete the MEVA II / REDDIG interconnection services, the AFTN circuit between Brazil (Manaos) and United States (Atlanta vía Bogotá) is scheduled for completion.

2.8 As part of the regional AMHS interconnection plans, AMHS interconnection is foreseen at many SAM States. **Appendix B** shows the regional AMHS interconnection plan for those States that have drafted and signed a Memorandum of Understanding (MoU).

2.9 For the interconnection of automated systems, there is a plan to complete the implementation of activities taken under consideration in the MoUs reviewed and signed between Argentina –Brazil, Argentina –Chile, Argentina–Uruguay, Brazil-Peru and Brazil-Venezuela.

2013 training programme

2.10 In view of the success of the COM AMHS Course (Lima, Peru, 16-20 July 2012) and taking into account the comments formulated during the Course, it has been deemed convenient to repeat the Course in Lima, Peru, from 24 to 28 June 2012. For this Course, one fellowship per each REDDIG member State will be offered. The Course's programme is shown in **Appendix C** to this working paper.

2.11 The programme of activities for REDDIG II implementation has an on-factory (France) theoretical/practical training course scheduled for six (6) people, to cover networks design, configuration and operation, aimed for network control centre (NCC) personnel; and courses on operation and maintenance of REDDIG II nodes, to be held in Rio de Janeiro, Brazil, for a total of 30 persons. The dates initially programmed for the mentioned courses are indicated in the REDDIG II implementation activities in Appendix A. The dates of these events could be before or after, depending on the progress in the implementation of REDDIG II.

3. Action suggested

3.1 The Coordination Committee is invited to:

- a) Take note of the information provided herein;
- b) Review the activities foreseen for the 2013 period described in Section 2 and in **Appendix A** to this working paper; and

- c) Review any other matter related to the activities of project REDDIG RLA/03/901 for the period 2013 it may deem necessary.

APPENDIX B

ACTION PLAN FOR THE INTERCONNECTION OF AMHS SYSTEMS IN THE SAM REGION

ITEM	ACTIVITY	RESPONSIBLE	EXPECTED RESULT	STATUS	FINALIZATION DATE
1	2	3	4	5	6
1	Review of the ATN Regional Plan as regards AMHS implementation	Secretariat	Revised ATN ground applications plan (Table CNS 1Bb)	Completed	Jun 2009
2	Review and assignment of intra-regional routers IP addressing	Secretariat	Assignment of IP addressing	Completed	Jun 2009
3	Review of CAAAS addressing plan	SAM States	Revised CAAS addressing Plan	Completed	Jun 2009
4	Prepare interconnection protocol tests to determine bandwidth required for transmission of AMHS messages between MTAs through REDDIG	RLA/06/901 project CNS Expert	Protocol interconnection tests. A guide for the operational interconnection of AMHS systems was drafted	Completed	Dec 2009
5	Preparation of Guide for the Operational Interconnection of AMHS Systems in the SAM Region	RLA/06/901 project CNS Expert	Guide for the operational interconnection of AMHS systems in the SAM Region	Completed	Oct 2009
6	Drafting of a model MoU for the interconnection of AMHS	Argentina	Model MoU for the interconnection of AMHS	Completed	Oct 2009
7	<p>MoU for the interconnection of AMHS currently implemented in the SAM Region:</p> <ul style="list-style-type: none"> a) Argentina-Brazil b) Argentina-Chile c) Argentina-Peru d) Argentina-Paraguay e) Brazil-Colombia f) Brazil-Paraguay g) Brazil-Peru h) Chile-Peru i) Colombia-Peru j) Colombia-Panama k) Colombia-Venezuela l) Peru-Venezuela m) Brazil-Suriname n) Guyana-Venezuela o) Suriname-Venezuela p) Brazil-Guyana q) Guyana-Suriname r) Brazil-Venezuela s) Bolivia-Peru t) Bolivia-Brazil u) Bolivia-Argentina v) Ecuador-Peru w) Ecuador-Colombia x) Ecuador-Venezuela y) Bolivia-Paraguay <p>The AMHS interconnection MoU in French Guiana (France) and Uruguay should be drafted once AMHS installation is completed at national level.</p>	SAM States involved	MoU for interconnection of AMHS systems between SAM States having AMHS implemented	Valid a), b) c), d), f), g), i), l), q) & v) completed	<ul style="list-style-type: none"> h) TBD j) Oct 2013 k) Mar 2013 m) TBD n) TBD o) TBD p) TBD r) TBD s) TBD t) TBD u) TBD w) Mar 2013 x) Mar 2013 y) TBD

ITEM	ACTIVITY	RESPONSIBLE	EXPECTED RESULT	STATUS	FINALIZATION DATE
1	2	3	4	5	6
8	<p>Phase I Interconnection trials between MTAs of:</p> <ul style="list-style-type: none"> a) Argentina-Brazil b) Argentina-Paraguay c) Brazil-Paraguay d) Colombia-Peru e) Argentina-Chile f) Argentina-Peru g) Brazil-Peru h) Guyana-Suriname i) Ecuador-Peru j) Brazil-Colombia k) Perú-Venezuela <p>Types of tests to carry out: Network transportation; Network connectivity; Message exchange; Preparatory phase.</p> <p>Note: Inclusion has been made of only the AMHS interconnected between States having implemented and signed the MoU.</p>	<p>Argentina, Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Suriname, Venezuela and REDDIG Administration</p>	<p>Interconnection trials between Argentina, Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Suriname and Venezuela MTAs</p>	<p>Valid a), f), g) message exchange trials were held between CIPE (Argentina)-Brasilia (Brazil) MTAs; the Manaus (Brazil)-Lima (Peru) MTAs, and the CIPE (Argentina)-Lima (Peru) MTAs. c) MoU was updated, as entrance node to Brazil will be Curitiba, and the network connectivity, and transport and exchange of messages tests will be carried out. b), d), h) and i) Operational interconnection trials completed c), e), j), and k) No tests carried out f) operational trial pending</p>	<ul style="list-style-type: none"> a) Jun 2012 Completed b) Mar 2012 Completed c) Dec 2012 d) Oct 2010 Completed e) Mar 2013 f) Dec 2012 g) Dec 2012 h) Jun 2011 Completed i) Jul 2012 Completed j) Dec 2012 k) Feb 2013
9	<p>Operational interconnection implementation at the following MTAs:</p> <ul style="list-style-type: none"> a) Argentina-Paraguay b) Argentina-Brazil c) Argentina-Chile d) Argentina-Peru e) Brazil-Paraguay f) Brazil-Peru g) Colombia-Peru h) Guyana-Suriname i) Ecuador-Peru j) Brazil-Colombia k) Peru-Venezuela <p>Note: Inclusion has been made of only the AMHS interconnected between States having implemented and signed the MoU.</p>	<p>Argentina, Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Suriname, and Venezuela</p>	<p>Operational implementation of AMHS systems</p>	<p>Valid AMHS interconnection completed between following MTA, using P1 protocol and operational: Colombia-Peru Guyana-Suriname Argentina-Paraguay Ecuador-Peru</p>	<ul style="list-style-type: none"> a) Mar 2012 Operational b) Dec 2012 c) TBD d) Dec 2012 e) Dec 2012 f) Dec 2012 g) Nov 2010 Operational h) Jul 2011 Operational i) Jul 2012 Operational j) Mar 2013 k) Mar 2013

APPENDIX C / APÉNDICE C

**COURSE ON ATS MESSAGE HANDLING SYSTEM (COM-AMHS)
CURSO SOBRE EL SISTEMA DE TRATAMIENTO DE MENSAJES ATS (COM-AMHS)**

MODULE 01: THEORY FOR THE USER

1. INTRODUCTION

Module Objectives
The References for this course

2. DATA COMMUNICATIONS TECHNOLOGY

Seven Layers
Role of Communications in an ATM System
ICAO Data Applications
ATN Upper/Lower Layer Protocols
The move to IP
So, what is ATN?

3. MESSAGING AND E-MAIL

What is a Message?
The Postal Analogy
Point to Point Messaging
Store and Forward / Retrieve Messaging

4. ATC MESSAGING AND AFTN/CIDIN

The ATC Requirement for Messaging
Current Messaging Requirements
Messaging Application - an ATC Example
ICAO Protocols and Standards
Services provided by the AFTN
AFTN Procedures
AFTN Addressing
ICAO Regions
Message Formats
AFTN Inter-Centre Communication
AFTN Limitations
Why migrate to AMHS
Benefits of AMHS
The Way Forward

5. X.400 : DEFINING THE TERMS

What is MHS?
Standards Development
What is a Message Handling System?
Message Structure
MHS Information Objects
MHS Services
The MHS Architecture
(A)MHS components: (ATS) Message Server
(A)MHS components: (ATS) User Agent
(A)MHS Components: The Message Store

(A)MHS Components: Access Units
The Journey of a Message
Management Domains
ADMDs and PRMDs
AMHS Management Domains
'XX' Country Codes
OR-Address Forms
The Need for Directory Services
Directory Overview
Security Threats
The MHS Security Functional Groups

- 6. X.400 - THE COMMUNICATIONS PROTOCOLS**
 - Connecting MHS System Components
 - MHS Protocols
 - Underlying Networks: Physical vs. Logical Connections
 - AMHS Network over underlying network
 - Levels of connectivity in the AMHS architecture
 - Why not SMTP?

- 7. X.400 - MTS AND IPMS**
 - MTS Functional Groups
 - Basic MTS Envelope
 - Delivery Reports
 - Non-Delivery Reports
 - The IPMS Elements of Service & IPM Heading
 - Receipt, Non-Receipt & Other Notifications

- 8. FROM MHS TO AMHS - ICAO ATN SARPS**
 - AMHS SARPs Development
 - Basic and Extended Services
 - Selected Functions of the Extended Services
 - AMHS components: AFTN/AMHS Gateway
 - AMHS Message Formats
 - Message and Report Mappings
 - Message Field Mappings
 - Scenarii for an AFTN SS Message
 - AMHS address types
 - The A in AMHS

- 9. STRATEGY**
 - PENS: Pan European Network Services over IP
 - The PENS - Status
 - PENS contract signed
 - COM05
 - COM05 progress report
 - Where are we today with AMHS?
 - HARE Programme
 - Single European Sky - Messaging
 - AMHS in SESAR
 - SWIM and SESAR
 - Future Communications Infrastructure

- 10. AMHS IN THE WORLD**
 - AMHS in ASIAPAC
 - AMHS ASIAPAC Network
 - Transition - ASIAPAC
 - AMHS in CARSAM

- 11. CONCLUSION**
 - Conclusion
 - Programme

MODULE 02: AMHS SYSTEM DESIGN AND TECHNICAL ISSUES

- 1. INTRODUCTION**
 - Objectives
- 2. DRIVERS FOR AFTN/CIDIN MIGRATION**
 - Reminder: Why migrate to AMHS
- 3. AMHS SYSTEM DESCRIPTION**
 - AMHS System Description
 - General AMHS Overview
 - ATSMHS traffic flows
 - How does an X.400 system work?
 - AMHS information model
 - AMHS Objects
 - Flow of Information Objects in AMHS
 - AMHS activity over underlying networks
 - ATM applications over UNDERLYING NETWORKS
 - Topology of AMHS servers: centralised vs. distributed
 - Network characteristics determined by topology
 - European ATS Messaging Profile
 - AMHS QoS Requirements
- 4. AMHS SYSTEM DESIGN CRITERIA**
 - Phases for AMHS Deployment
 - Transaction Examples
 - Technical Criteria
 - Modular Solution
 - Scalable and Portable Solution

5. AMHS USER TYPES

Evolution/Migration of Users
TYPE of ATM COMs SERVICES
Objectives for the User Migration Process
How does a User Agent Work?
What does the User do?
... and what tools does the user have?
UA: Free Text Format Message
UA: Auto-Formatting AIS Messages
UA: Auto-Formatting ATS Messages
UA: Auto-Formatting MET Messages
UA: Non Delivery Reports (NDR)
UA: Receipt Notifications (RN)
UA: Tracking Sent Messages
UA: Filtering Tool
UA: Message Backup
AU: Access Unit
Logical Connections for the ICARO/AMHS Solution
Access Unit: EAD Solution
EURONOTAM (I): COMMUNICATIONS FLOW
EURONOTAM (II): PHYSICAL TOPOLOGY
Exercises

6. AMHS SYSTEM MANAGEMENT TOOLS

Support Levels
Main AMHS Management Tools
High Level Administration Tool (HILA) (1)
HILA (2): Users and Adjacent MTAs
HILA (3): Local Users Administration
HILA (4): Adjacent MTAs Admin
HILA (5): Routing Table Administration
Local and Central Supervision
SNMP Alarms Supervision
End-to-End View Based on SNMP
Tracking Tool (1)
Tracking Tool (2): Web-based Administration Tool
Tracking Tool (3): Search Criteria
Tracking Tool (4): Results
Messaging Activity Monitor (1)
Messaging Activity Monitor (2): Users' View
Messaging Activity Monitor (3): Adjacent MTA's View
Messaging Activity Monitor (4): Alarms View
Messaging Activity Monitor (5): Global View
UA Archive: Control Position
AMHS Queue Monitoring
Historical Data Storage Manager
Statistics
Time Synchronisation: Network Time Protocol NTP
Remote Monitoring

7. AMHS COMMON FACILITIES

Common Facilities
Pan-European IP Network: PENS
Example: Madrid-Frankfurt IP Connection
PENS current situation
MAIN OBJECTIVES AND BENEFITS OF PENS
POTENTIAL PENS USERS
CONSIDERATIONS About SWIM, AMHS and PENS
Transition Plan IPv4/IPv6
Protocol Stacks for Transition-Phase AMHS Applications
CIDIN Management Center (CMC)
EUR/NAT COM Chart
ATS Messaging Management Centre (AMC)
Directory Services
Name Resolution
Address Conversion
UA: Directory Query
Inter-Regional Gateways
An MTA with Dual Stacks
SITA TYPE B / AMHS Gateway (1) : Initial Situation
SITA TYPE B / AMHS Gateway (2): Message Migration
AMHS Security
Testing and Training Facilities
Examples of Testing Tools
Human resources analysis for IP/AMHS interoperability activities
Platform Standardization Test

MODULE 03: AMHS OPERATIONAL ISSUES

1. AMHS OPERATIONAL ISSUES

Main AMHS Operational Issues
AMHS Addressing: CAAS
AMHS Addressing: XF
AMHS Addressing: CAAS and XF
AMHS Addressing: CAAS vs. XF
How to define a national CAAS scheme
AMHS Addressing Registry
XF Address Conversion: Use of the ICAO registry
CAAS Addr. Conversion: Use of the ICAO registry
Global AMHS Address Registration
International Topology and Routing Strategy
Conversion between an AMHS IPM and an AFTN message
Mapping priorities
Conversion of AFTN Service Messages
Acknowledgement of SS-priority messages
Reception of an AMHS message with ATS-Message-header SS and RN not requested
Reception of an AMHS message with ATS-Message-header no SS and RN requested
Reception of RN with subject message not generated by the AFTN/AMHS GW
AMHS to AFTN Direction (reception of a Non-Receipt-Notification)
Message rejection due to the use of an unknown addressee indicator or recipient
Rejection of an AFTN-to-AMHS message: Transfer of NDR to the control position
Reception of NDR with subject message not generated by the AFTN/AMHS GW
AFTN to AMHS direction: Unsuccessful conversion of addressee indicator in incomi

AFTN to AMHS Direction (unsuccessful conversion of origin OGN indicator)
AMHS to AFTN Direction (unsuccessful conversion)
AMHS to AFTN Direction (non-delivery and out-of-line situations)
Legal AMHS Recording
Legacy Procedures
Management of MTA names and passwords
Replacing CIDIN operator messages with AFTN service messages
Associations between MTAs: Dialogue mode
Simultaneous P1 associations
Application and network timers optimization
AMHS operational issues

2. OPERATIONAL AFTN MIGRATION TO AMHS

AFTN to AMHS Migration
Decisions during AMHS Planning
Pre-requisite tasks
Tasks to be performed with every AMHS COM centre
Testing phases
Preoperational scenario
Details of the preoperational phase
AFTN Flows migration to AMHS: Objectives
AFTN Flows migration to AMHS: Initial situation
AFTN Flows migration to AMHS: Step 1
AFTN Flows migration to AMHS: Step 2
AFTN Flows migration to AMHS: Step 3
AFTN Flows migration to AMHS: Step 4a
AFTN Flows migration to AMHS: Step 4b
Operational AFTN migration to AMHS
Interconnection considerations

3. THE FIRST PROJECT ACTIVITIES

Current Status
FIRST
Outcomes of the FIRST Team
First Operational IP Link: MADRID-FRANKFURT
FIRST Team: Testing Structure
FIRST Team: Testing Development

4. CONCLUSION , DOCUMENTATION AND GLOSSARY

ICAO documentation
AMHS SARPs sub-volume 3
Need for Amendment to SARPS (PDRs)
Glossary
Conclusion