INTERNATIONAL CIVIL AVIATION ORGANIZATION

WESTERN AND CENTRAL AFRICAN OFFICE

Eighteenth Meeting of the AFI Satellite Network Management Committee (SNMC/18)
(Ouagadougou, Burkina Faso, 1-4 June 2010)

Agenda Item 6: Review of the report of the Joint Technical Team

(Presented by the secretariat)

SUMMARY

The purpose of this paper is to:
1) Remind the meeting of the Terms of reference, the work programme and the composition of the AFISNET Joint Technical evaluation and re-engineering Team as defined by previous SNMC meetings
2) Analyze the conclusions of the first meeting of the Joint Technical Team for AFISNET evaluation and re-engineering.

Action by the meeting in paragraph 3

References: SNMC/16 & 17 reports;
APIRG/16 Report;
Conclusions of the of first meeting of the Joint Technical Evaluation and Re-engineering Team
SPI AFI RAN Report
WACAF State letter SR3/76-01999 dated 22 March 2010

1. Introduction

The regional SPI AFI/ RAN (**Conclusion 6/18:** AFISNET Technical Evaluation and re-engineering) meetings recommended that AFISNET States execute the joint technical evaluation and re-engineering of AFISNET. Consequently, at the SNMC/17 meeting concerned States took the commitment to complete this task by the end of October 2009. Unfortunately, due to the lack of coordination and the day-to-day engagements of Network managers, this deadline was not respected.

2. Discussion

2.1 *Terms of reference, work programme and composition of the AFISNET Joint Technical evaluation and re-engineering Team*

The SNMC/17 meeting reviewed the Terms of reference, work programme and composition of the AFISNET Joint Technical evaluation and re-engineering Team as presented in **Appendix A**.
As per SNMC/17 Conclusion 17/02, technical teams were set up and the principle of identifying Ghana (GCAA), Roberts FIR and ASECNA as Team leaders/Focal points was adopted as presented in **Appendix B** to this working paper.

The WACAF Office coordinated the process of implementing this Conclusion and Leaders were nominated as presented in **Appendix C.**

2.2 Conclusions fg the first meeting of the Joint Technical Team for AFISNET Evaluation and Re-engineering

Furthermore WACAF proposed a coordinating meeting held in Dakar Office from 13 to 14 April 2010 to examine the practical way to perform the joint technical evaluation and re engineering exercise.
The conclusion of the meeting are presented in **Appendix D**

3. Action by the meeting

The meeting is invited to:

a) Take note of the information here given above

b) Adopt the relevant conclusions of the first meeting of the AFISNET Joint Technical Evaluation and Re- engineering Team and;

c) Complete the AFISNET Joint Technical Evaluation and Re- engineering exercise.

Appendix A

AFI SATELLITE TELECOMMUNICATION NETWORK (AFISNET)

Joint Technical Evaluation of the network

Terms of Reference

1 –Objectives:

1.1 The main objectives of the joint technical evaluation are to:

a) identify deficiencies and non-ICAO, WMO and ITU compliant elements/features;

b) make recommendations and proposals concerning the short-term, mid-term and long-term solutions and strategies to be implemented, such as using appropriate human resource management, training policies and modern technologies, for achieving an enhanced, efficient, high performance, secure, CNS/ATM capability and cost-effective network, meeting interoperability and seamlessness requirements ; and

c) evaluate the anticipated costs in view of a comprehensive project document to support a collective financing mechanism.

2 - Network functionalities

Functionalities

2.1 The network was originally designed to support the following communication services in accordance with the Air navigation plan for the Africa-Indian Ocean (AFI) Region:

1) ATS Direct Speech between adjacent FIRs;
2) Aeronautical Fixed Telecommunications Network (AFTN);
3) Operational meteorological data exchanges (OPMET);
4) Operational Aeronautical Information Services exchanges.
5) Support for remote VHF voice;
6) Aeronautical Administrative support (AAC);

2.2 In addition to these services, the following communications will also be progressively supported by the network:

1) Aeronautical Telecommunications Network (ATN)
   - Air/ground data link applications : ADS/CPDLC, ADS-B, DFIS, VDL or SSR Extended Squitter - ES1090
   - Ground-ground applications: AMHS, AIDC.

2) Computer-to-computer data exchange (ICC) between ATS Flight Data Processing Systems (FDPS); and

3) GNSS augmentation data transmission.

3 – Reference documentation

3.1 The joint technical evaluation shall be conducted using relevant provisions contained in ICAO, WMO and ITU standards, recommendations, regulations, manuals and procedures (ICAO Annexes, WMO Technical Manual on GTS – Doc 386, ITU Radio regulations), AFI Air navigation plan (Doc 7474), AFI CNS/ATM plan (Doc 003), APIRG Reports, SNMC Meeting Reports, European Union Evaluation Mission Report (2003), and Report on Technical Evaluation of AFISNET Network, ICAO Special Implementation Project (2006).

4 – Expectations

4.1 The joint technical evaluation shall provide a detailed description and analysis of the current network features, performance and operating/maintenance costs. The following constituents shall be addressed:

a - Technical

- Availability, continuity and reliability requirements;
- System maintainability;
- Frequency plan;
- Spectrum management;
- Adequacy of available bandwidth for AFTN, ATS/DS, service channels and other voice services;
- Architecture, satellite access techniques, protocols;
- Configuration management;
- Interoperability requirements;
- Ability to accommodate CNS/ATM emerging technologies (ATN applications) and SADIS operations;
- Bit-oriented protocols (BOPs).

b - Operational

This part of the joint technical evaluation shall clearly show up the advantages and disadvantages associated with the current network. In this connection, the following issues shall particularly be analyzed:

- Quality of service for ground-to-ground applications and air-to-ground applications, based on ICAO and WMO requirements;
- Network security, confidentiality and data integrity;

- AFTN transit times against the agreed requirements;
- Implementation of TCP/IP protocol stack.

The joint technical evaluation shall clearly establish the extent to which the network performances are SARPs-compliant and meet users' needs.

System configuration and performance assessment

4.2 The joint technical evaluation shall assess and provide advice on, and not limited to, the following:

- **AFTN/GTS**
  - Suitability of network topology taking into consideration ICAO specifications concerning continuity of services;
  - Routing tables;
  - Message switch performance assessment (dialogue, conflicts, etc.);
  - Congestion, loss of AFTN messages, propagation times and quality of service (QoS).
- **ATS/DS**
  - Topology conformance to ICAO specifications to ensure continuity of services
  - Implementation of voice links using Frame relay protocol stack.
  - Priority management, connection time, and quality of service.
- **AMS**
  - Extended VHF coverage
- **CNS/ATM**
  - Possibility of implementing a number of CNS/ATM functionalities (AMHS, AIDC, ADS/CPDLC, D-FIS, etc.) and meeting availability, reliability integrity and continuity performance criteria using the network infrastructure.

Enhancements

4.3 After a critical analysis of the network, showing the network capabilities and limitations, the joint technical evaluation shall propose corrective measures and/or adequate solutions to rectify any reported deviations (as required), and formulate proposals for the network re-engineering. These shall include use of appropriate human resource management policies, suitable technologies and topologies for ATS communications (ATSC) and aeronautical administrative correspondence (AAC), system reliability, data integrity, as well as network management, administration, operations, monitoring and maintenance policies, including development of a common software tool for technical statistics.

5 – Project requirements

Duration

5.1 The joint technical evaluation shall be completed within three (3) months.

Work programme

5.2 The work programme for the conduct of the joint technical evaluation shall include the following site visits, taking into consideration their roles in the regional communication infrastructure (AFTN main centres) and/or air traffic management system (flight information centres, area control centres), or associated interface problems**.**

Appendix B

The Joint Technical Team for AFISNET Network Evaluation and Re-engineering composition

Group(*)	Centers to evaluate	Focal point
1	Dakar Roberts Abidjan	ROBERTS FIR
2	Niamey Accra Lagos Ouagadougou	GCAA
3	Brazzaville Douala Kano Libreville N'Djamena	ASECNA

APPNDIX C
TEAMS LEADER FOR AFISNET JOINT TECHNICAL EVALUATION

Family name	Name	E-Mail	P hone	E-Mails
ROBERTS FIR				
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APPENDIX D

INTERNATIONAL CIVIL AVIATION ORGANIZATION
WESTERN AND CENTRAL AFRICAN OFFICE

AFISNET JOINT TECHNICAL EVALUATION AND RE-ENGINEERING TEAM LEADERS MEETING

(Dakar, Senegal, 13-14 April 2010)

Draft Conclusions

Conclusion 1: Implementation of the previous regional meetings conclusions (APIRG/16 Report, SPI/AFI/RAN Report, SNMC/16 &17 Reports)

That:
SNMC States/organization endeavor to implement the joint Technical evaluation and re engineering pertaining to AFISNET in the framework of the conclusions of APIRG, SPI/AFI/RAN, SNMC/16 & 17) before the next SNMC/18 meeting scheduled for 1-3 June 2010.

Conclusion 2: Terms of Reference and work programme of AFISNET Joint Technical Team

That:
The joint technical team conducts the evaluation of AFISNET as agreed in the reviewed Terms of reference and work programme as presented in appendix XXX.

Conclusion 3: Evaluation charts

That:

The joint technical evaluation be conducted using the charts presented in Appendix xxx in order to harmonize the evaluation process of the teams.

Conclusion 4 : Evaluation Report Framework

That:

The joint technical evaluation be conducted using the report framework adopted as Appendix xxx in order to harmonize the reports of the evaluation teams.

Conclusion 5: Evaluation planning

That:
The joint technical evaluation be conducted within the plan adopted as Appendix xxx and to adhere to the given time frame.

<u>Conclusion 6</u>: Expert availability for the evaluation period

That:

SNMC States/Organization should take the appropriate actions to ensure the availability of the experts within the stated time frame.

<u>Conclusion 7:</u> Evaluation funding

That:
Each SNMC State/Organization funds their experts for their participation to the evaluation process as mandated by the regional and sub regional meetings (APIRG, SPI/AFI/RAN, SNMC) within the stipulated plan as presented in appendix xxxx

<u>Conclusion 8:</u> Final Report Meeting

That:
The Joint Technical Team should meet in Dakar WACAF on the 17 th & 18th of May 2010 in order to harmonize and finalize their findings for submission to the next SNMC meeting scheduled for 1-3 June 2010.