



International Civil Aviation Organization

COM Co-ordination Meeting

6 – 7 March 2013, Kunming, China



Agenda Item 5: Letter of agreement for technical and operational trial

SAMPLE MEMORANDUM OF COOPERATION (TMC)

(Presented by the Secretariat)

SUMMARY

A sample Technical Memorandum of Cooperation (TMC) for ATN/AMHS trials was developed for facilitating the States in reaching an agreement about conducting trials required

1. Introduction

1.1. A sample Technical Memorandum of Cooperation (TMC) for ATN/AMHS trials was developed by ATN Implementation Coordination Group for facilitating the States in reaching an agreement about conducting trials required to evaluate the basic connectivity, interoperability, functionality and integrity of the ATNAMHS connection. The APANPIRG/23 meeting held in September 2012 adopted the following Conclusion formulated by the ATNICG meeting:

Conclusion 23/19 – Sample TMC for ATN/AMHS Interconnection Trials

That, the sample Technical Memorandum of Cooperation (TMC) for ATN/AMHS interconnection trial between States, provided in **Appendix B** to the report on Agenda Item 3.4 be adopted as regional guidance material for reference by the States.

2. Discussion

- 2.1 The adopted TCM is provided in the Attachment to this paper for review by the meeting.
- 2.2 The material is provided as guidance. The meeting is invited to discuss its suitability for Beijing/Kathmandu ATN/AMHS connection test.
- 2.3 Target date of implementation and milestone is expected to be developed by the meeting.

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3. Action by the meeting

3.1 The meeting is invited to:

- a) review and discuss the sample TCM for technical trail provided in the attachment;
and
- b) develop implementation plan and milestone for Beijing/Kathmandu ATN/AMHS circuit.

SAMPLE TMC ON ATN/AMHS TESTING

TECHNICAL MEMORANDUM OF COOPERATION

BETWEEN

[To be filled in (Organisation 1)]

AND

[To be filled in (Organisation 2)]

ATN/AMHS

**BETWEEN [To be filled in (State 1)] AND [To be filled in (State
2)]**

[To be filled in (Date of TMC)]

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TECHNICAL MEMORANDUM OF COOPERATION (TMC)

THIS AGREEMENT is made between the [To be filled in (Organisation 1)] and [To be filled in (Organisation 2)] as two air navigation services providers, hereinafter collectively referred to as “Parties” and individually as “Party”.

WHEREAS the Parties wish to jointly establish an Air Traffic Service Message Handling Service (AMHS) between [To be filled in (State 1)] and [To be filled in (State 2)] in support of the International Civil Aviation Organisation (ICAO) Aeronautical Telecommunication Network (ATN)/AMHS implementation plans for the Asia/Pacific Region.

AND WHEREAS the Parties have successfully completed the ATN/AMHS Trial hereinafter described in preparation for a smooth ATN/AMHS implementation.

NOW THEREFORE the Parties AGREE as follows:

ARTICLE 1 - CITATION

- 1.1 This Agreement will hereinafter be referred to as the ATN/AMHS Technical Memorandum of Cooperation (TMC).
- 1.2 For avoidance of doubt, this TMC (including its annexes and appendices) supersedes all prior draft versions of the TMC.

ARTICLE 2 – PURPOSE

- 2.1 This TMC defines the scope of the ATN/AMHS between [To be filled in (State 1)] and [To be filled in (State 2)] which the Parties are establishing on the terms of this TMC.
- 2.2 This TMC also sets out the ATN/AMHS Trial which the Parties have completed to enable the establishment of the ATN/AMHS between [To be filled in (State 1)] and [To be filled in (State 2)].

ARTICLE 3 – FINANCIAL TERMS

- 3.1 Each Party will be responsible respectively for all the costs and expenses arising from the ATN/AMHS connection from its local terminal to the international connection points provided by its telecom carriers and all equipment, software and associated costs required for the ATN/AMHS operation.

ARTICLE 4 – SCOPE OF ATN/AMHS

- 4.1 The ATN/AMHS will be based on the ATN Standards and Recommended Practices (SARPs) contained in ICAO Annex 10 Volume III Part 1 Chapter 3 and the Technical Provisions contained in ICAO Doc 9705 Volume III and/or ICAO Doc 9880 Part II.
- 4.2 The ATN/AMHS connection will be based on the existing ICAO AFTN routing directory for the Asia/Pacific Region and will be between the connection points in [To be filled in (State 1)] and [To be filled in (State 2)].
- 4.3 The AMHS traffic to be routed via this ATN/AMHS connection will be as follows:

<u>From</u> <u>(Originating/Relaying</u> <u>Station)</u>	<u>To</u> <u>(Connection Point)</u>	<u>For</u> <u>(Intended destination of AMHS traffic)</u>
[To be filled in (State 1)]	[To be filled in (State 2)]	[To be filled in by State 1]
[To be filled in (State 2)]	[To be filled in (State 1)]	[To be filled in by State 2]

- 4.4 If amendments to the ICAO AFTN/ATN routing plan are made by ICAO Regional Office, the Parties may agree to revise the intended destinations for AMHS traffic set out in paragraph 4.3 to allow for the consequent change in the AMHS traffic or destinations.

ARTICLE 5 – CONTINGENCY ARRANGEMENTS

- 5.1 The Parties will ensure that fallback procedures in the event of circuit or other failure affecting the flow of AHMS traffic between them are established and supported by their respective routing partners:

	Routing Partners
[To be filled in (State 1)]	[To be filled in by State 1]
[To be filled in (State 2)]	[To be filled in by State 1]

- 5.2 The Parties will, through regular meetings and other appropriate means, review and exchange information on their respective procedures and the support arrangements and assist each other to strengthen these contingency arrangements.

ARTICLE 6 – ATN/AMHS TRIAL

- 6.1 The ATN/AMHS Trial to enable the establishment of the AMHS under this TMC was conducted to evaluate the basic connectivity, interoperability, functionality and integrity of the ATN G/G Routers, AMHS systems and AMHS/AFTN Gateway Systems between the Parties.
- 6.2 The ATN/AMHS Trial consisted of the following tests:

Tests	Test Dates
ATN Connectivity Bilateral Tests A. ATN Router Configuration - SNDCF over X.25 B. ATN Router Configuration - SNDCF over IP C. X.400 P1 Configuration – TP0 over TCP/IP	<i>[To be filled in]</i>
ATN/AMHS Inter-Operability Tests	<i>[To be filled in]</i>
ATN/AMHS Pre-Operational Tests	<i>[To be filled in]</i>

6.3 The test cases for the tests conducted under the ATN/AMHS trial are as follows:

I. ATN Connectivity Bilateral Tests

Bilateral Test Procedures	
ATN Router Configuration (SND CF over X.25)	
PTA101	Private X.25 Network Connectivity Test
PTA102	CLNP Connectivity Test
PTA103	IDRP Connectivity Test
PTA104	BIS Disconnection/Re-connection Test
PTA105	Failure/Restoration of Carrier Media/ATN Router
ATN Router Configuration (SND CF over IP)	
PTA201	Private IP Network Connectivity Test
PTA202	CLNP Connectivity Test
PTA203	IDRP Connectivity Test
PTA204	BIS Disconnection/Re-connection Test
PTA205	Failure/Restoration of Carrier Media/ATN Router
X.400 P1 Configuration (X.400 P1 TP0 over TCP/IP)	
PTA301	Private IP Network Connectivity Test
PTA302	Network Disconnection/Re-connection Test
PTA303	Failure/Restoration of Carrier Media

II. ATN/AMHS Inter-Operability Tests

A. Test Cases from Annex E of ICAO Asia/Pacific Guidance for AMHS Conformance Testing (AMHS Manual) version 3.0 Sep 2009

Bilateral Test Procedures	
Submission, Transfer and Delivery Operation (AMHS to AMHS)	
IT101	Submit, transfer and deliver an IPM (UA IUT-A to UA IUT-B)
IT102	Submit, transfer and deliver an IPM (UA IUT-B to UA IUT-A)
Gateway Operations (AFTN to AMHS)	
IT201	Convert an AFTN message to AMHS format (IUT-A)
IT202	Convert an AFTN message to AMHS format (IUT-B)

Bilateral Test Procedures	
Gateway Operations (AMHS to AFTN)	
IT301	Convert an IPM generated by UA of IUT-A to AFTN format (IUT-B)
Gateway Operations (AFTN to AMHS to AFTN)	
IT401	Convert an AFTN message to AMHS and back to AFTN format (IUT-A)
IT402	Convert an AFTN message to AMHS and back to AFTN format (IUT-B)
Gateway Operations – Special case scenarios	
IT501	Distribute an IPM to AMHS and AFTN users
IT502	Expand a DL addressing both AMHS and AFTN users
IT503	Convert an IPM, if the ATS-message-text contains more than 1800 characters
IT504	Split an incoming IPM addressing more than 21 AFTN users
IT505	Probe Conveyance Test
Stress traffic situations	
IT601	Stress load
Trilateral Test procedures – optional	
Submission/Transfer/Delivery and Relay operations	
IT701	Submission/Transfer/Delivery between the partner MTAs
IT702	Relay operations
Test of special situations	
IT801	Alternate MTA routing
IT802	Loop detection

B. Additional selected and bilaterally agreed interoperability tests cases.

III. ATN/AMHS Pre-Operational Tests

A. Test Cases from Annex F of Guidance Document for AMHS Conformance Testing (AMHS Manual) version 3.0 Sep 2009

	Test Function
PRE001	Go-NoGo test Test partner1 to Test partner 2
PRE002	Go-NoGo test Test partner 2 to Test partner 1
PRE003	Exchange of duplicated Operational messages, check of integrity
PRE004	Stress/Load Test (queued data)

B. Additional selected and bilaterally agreed pre-operational tests cases.

- 6.4 The details of the tests and the test procedures for the test cases are set out in **Annex 1**.
- 6.5 The test results for each of the test cases conducted according to the test procedures in **Annex 1** are recorded and compiled in the test report provided in **Annex 2**.
- 6.6 The achievements, problems, and lessons learnt from the tests-related activities are also set out in **Annex 2**.

ARTICLE 7 – COMMITMENT

- 7.1 The Parties will use all reasonable endeavours to carry out their respective responsibilities and will cooperate to ensure the effectiveness and reliability of the ATN/AHMS between [To be filled in (State 1)] and [To be filled in (State 2)] established under this TMC.
- 7.2 In furtherance of this commitment, the Parties will conduct additional tests using additional test cases as may be agreed between them. The details of such additional tests and test cases and their test procedures and test results when agreed to between the Parties may be added to Annexes 1 and 2 as Addenda attachments in sequential running numbers, referencing this TMC as follows;
- (a) “TMC Annex 1 - Addendum No. 1”
- (b) “TMC Annex 2 – Addendum No. 1”, etc.
- 7.3 If a Party assesses that a test or any change in AMHS requirement or service detail is not affordable or not cost effective to implement, that Party may decline to undertake that test or carry out that requirement or service detail but will nevertheless continue to cooperate with the other Party to reach a mutually acceptable outcome.

ARTICLE 8 – AMENDMENTS

- 8.1 This TMC may be amended by agreement of the Parties in writing and in particular to effect any amendment necessitated by changes in ICAO’s recommendations on AMHS requirements or service details.
- 8.2 The agreed amendments in writing will take effect when signed by the duly authorised representatives of the Parties unless otherwise provided for in the written amendments.

ARTICLE 9 – ATN/AMHS COMMENCEMENT DATE

- 9.1 The ATN/AMHS between [To be filled in (State 1)] and [To be filled in (State 2)] under this TMC will commence one (1) month from the date this TMC comes into force under Article 11.1.

ARTICLE 10 - RESOLUTION OF DISAGREEMENTS

- 10.1 Any disagreement regarding the interpretation or application of this TMC or its annexes and appendices shall be resolved in good faith by mutual consultations between the Parties and will not be referred to any court, international tribunal or third party for settlement.

ARTICLE 11 - ENTRY INTO FORCE

- 11.1 This TMC will enter into force on the date of the last signature by the parties named below.

ARTICLE 12 - SIGNATURE IN COUNTERPARTS

- 12.1 To facilitate execution, this TMC and each of its annexes and addenda may be executed in counterparts, each of which will be an original, but all of which together will constitute one and the same agreement.

ARTICLE 13 - AUTHORITY

13.1 The Parties agree to the provisions of this TMC as indicated by the signatures of their duly authorised representatives below.

[To be filled in (State 1/Organisation 1)] Authorised Representative	[To be filled in (State 2/Organisation 2)] Authorised Representative
<hr/> <p>[To be filled in by State 1/Organisation 1]</p> <hr/> <p>Date</p>	<hr/> <p>[To be filled in by State 2/Organisation 2]</p> <hr/> <p>Date</p>