ATNP/WG3 WP/18-16 Part 1

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AERONAUTICAL TELECOMMUNICATIONS NETWORK PANEL(ATNP)

WG 3 - APPLICATIONS AND UPPER LAYERS – 18TH MEETING

Tokyo, 1st December – 3rd December 1999 (eighteenth meeting)

Presentation of the (Extended Service) ATSMHS SARPs

Presented by Jean-Marc Vacher

Summary

This paper provides a brief overview of the amendments proposed to the specification of the ATSMHS application, to complement the description of the Basic ATS Message Service with the description of the Extended ATS Message Service.

1. INTRODUCTION

Sub-Volume 3, Chapter 1 of the Technical Provisions for the ATN, as included in ICAO Document 9705 (hereafter referred to as ATSMHS SARPs) has been subject to a significant upgrade by the appropriate ATN Panel Working Group and Subgroups since the ATNP/2 and in preparation for the ATNP/3 meeting. This upgrade is proposed for inclusion in Edition 3 of the ICAO Document 9705.

2. DESCRIPTION OF THE PROPOSED AMENDMENT

2.1. General

This amendment includes the specification of the Extended ATS Message Service, in contrast with Editions 1 and 2 of ICAO Document 9705 which provided the specification of the Basic ATS Message Service. The Extended ATS Message Service is obtained by the addition to the Basic Service of the following functionalities :

- provision of security features in an approach consistent with the overall ATN security framework ;
- use of the ATN Directory ;
- additional features and message formats, to provide :
  - adequate transfer mechanisms for messages originated at / directed to a CIDIN station ;
  - use of fully standard features to replace the use of the (ATN-specific) ATS-Message-Header included in the message body with the use of standard MHS heading fields ;
- inclusion of the specification of the CIDIN/ATN Gateway taking the form of a CIDIN/AMHS Gateway.

Additionally the requirement for backward compatibility has been taken into account, so as to allow users of the Basic ATS Message Service to communicate with users of the Extended ATS Message Service, and vice-versa.

Like for the Basic ATS Message Service, the Extended ATS Message Service specified in the draft (Extended Service) ATSMHS SARPs makes use of the MHS standards and ISPs.

In order to ascertain correct reference to the latest AMHS features as well as to all the published Technical Amendments and Corrigenda (particularly with respect to security), reference is made in the Extended ATS Message Service to the 1999 editions of the MHS base standards and ISPs, whereas the Basic ATS Message Service made reference to the 1990 edition of the base standards and to the 1994/95 edition of the ISPs. However this causes no interoperability issue as explained in sections 2.2 and 3.

2.2. Detailed changes

2.2.1. ATS Message User Agent

The ATS Message User Agent is the AMHS system where the major additions have taken place with the Extended ATS Message Service, since it was very considered mostly as a local matter in the Basic ATS Message Service, and therefore very loosely specified. The new parts in the specification include :

- the specification of 4 possible profiles at the P3/P7 MHS protocol level, for either MTS-access or MS-access, by reference to the appropriate ISPs. For a given ATS Message User Agent, one single profile is generally used. Within a given AMHS Management Domain, or for the attachement to each ATS Message Server, one or several profiles can be selected among these. It should be noted that use of these profiles was suggested in a Note in the Basic ATS Message Service, but not with the status of a requirement nor of a recommendation. The main reason for this specification is to ensure a consistent framework for the application of AMHS Security;

- the specification of AMHS Security, by means of the ISP Security (SEC) functional group (FG), implementing security class S0 (end-to-end authentication and content-integrity), and defining user requirements for the use of the MHS security elements of service offered by this FG;

- the use of (standard) P2 heading extensions including authorization-time, originator-reference and precedence, as an eventual replacement for the (ATN-specific) ATS-Message-Header specified in the Basic ATS Message Service, by means of the ISP Business Class (BC) FG;

- the use of Directory, to enable an Extended ATS Message Service user to determine the level of service supported by its intended message recipients, and to allow specification of recipient by Directory Name, by means of the ISP Use of Directory (DIR) FG;

- the support of bilaterally-defined body and bodyparts, to be able to receive and generate messages with a bit-oriented body such as weather charts generated by or directed to CIDIN stations operating as indirect AMS users.

2.2.2. ATS Message Server

The ATS Message Server has been only slightly impacted by the specification of the Extended ATS Message Service. The changes include:

- the specification of 4 possible profiles at the P3/P7 MHS protocol level, for either MTS-access or MS-access, by reference to the appropriate ISPs. For a given ATS Message Server, the profiles implemented depend on the inclusion (or not) of a Message Store in the ATS Message Server, and on the version of the base standards which is supported. Several profiles can be supported by means of different application-contexts, for the attachment of different ATS Message User Agent configurations. Within a given AMHS Management Domain, or for the attachement to each ATS Message Server, it is a local implementation/procurement matter to select one or several profiles, all of them providing a level of service acceptable for the AMHS. Most COTS MHS products implementing a Message Store would for example support one of the MS-Access (P7) specified profiles;

- the use of Directory, to allow specification of recipient by Directory Name, by means of the ISP Use of Directory (DIR) FG;

- the addition of encoding constraints to provide canonicity of the BER encoding, thereby enabling the ATS Message Server to produce CER or DER. (This item is still under consideration as part of the Extended ATS Message Service validation exercises).

2.2.3. AFTN/AMHS Gateway

The amendments to the AFTN/AMHS Gateway to upgrade it to the Extended ATS Message Service capability are similar to some of the amendments to the ATS Message User Agent, i.e. to those amendments which have a relationship to the P2 messages constructed and received by the gateway. Therefore, these amendments are:

- the use of (standard) P2 heading extensions including authorization-time, originator-reference and precedence, as an eventual replacement for the (ATN-specific) ATS-Message-Header specified in the Basic ATS Message Service, by means of the ISP Business Class (BC) FG;

- the use of Directory, to enable an Extended ATS Message Service Gateway to determine the level of service supported by its intended message recipients;

- the handling in reception of Security elements belonging to AMHS Security, by means of the ISP Security (SEC) functional group (FG), implementing security class S0 (end-to-end authentication and content-integrity).

2.2.4. CIDIN/AMHS Gateway

This section is a complete insertion presented separately to WG/3.

3. BACKWARD COMPATIBILITY ISSUES

Backward compatibility must be envisaged at two different levels in the AMHS:

- at P1 MHS protocol level, between an ATS Message Server supporting the Extended ATS Message Service and an ATS Message Server supporting the Basic ATS Message Service only;

- at P2 message format level, between an ATS Message User Agent (or AFTN/AMHS Gateway) supporting the Extended ATS Message Service and an ATS Message User Agent (or AFTN/AMHS Gateway) supporting the Basic ATS Message Service only.

3.1. ATS Message Server to ATS Message Server

The Extended ATS Message Service places additional requirements on the ATS Message Server in terms of additional user access profiles (not MTA-to-MTA), use of Directory and encoding constraints. Access profiles are out of the scope of ATS Message Server to ATS Message Server communication, and hence they have no impact on backward compatibility. Use of Directory is (in MHS terms) local to a MTA, it mandates support of name resolution. So an Extended ATS Message Service MTA will convert an O/R name taking the form of a Directory Name into an O/R address, thereby making ot possible to a Basic ATS Message Service MTA to transfer the message.

Concerning encoding, an Extended ATS Message Service MTA will be capable of decoding the BER-encoded PDUs generated by a Basic ATS Message Service MTA. The use of CER or DER (with the goal of canonical encoding) only

places additional constraints on top of BER, thereby restricting its use to certain encoding forms. In doing so, decoding by a "BER-only" MTA is still possible, providing backward compatibility between an ATS Message Server supporting the Extended ATS Message Service and an ATS Message Server supporting the Basic ATS Message Service only.

3.2. ATS Message User Agent (or Gateway) to ATS Message User Agent (or Gateway)

For the ATS Message User Agent to ATS Message User Agent backward compatibility, only Extended ATS Message Service additions with end-to-end significance are to be analysed.

Concerning the use of the BC FG (heading extensions), an ATS Message User Agent supporting the Extended ATS Message Service also maintains the Basic ATS Message Service capability. In reception, it can interpret both the ATS-Message-Header andd the heading extensions and thus proerly interworks with an ATS Message User Agent implementing the Basic ATS Message Service only. In origination, the user (potentially supported by a "smart" user interface) needs to select whteher to generate an ATS-Message-Header, for communication with Basic ATS Message Service users, or the Heading Extensions, for communication with Extended ATS Message Service users. In case of a mixed (Basic / Extended) set of message recipients, the generation of the ATS-message-Header takes precedence, to ensure interworking with Basic ATS Message Service users. The ATN Directory includes all Extended ATS Message Service users and it may include Basic ATS Message Service users. A specific attribute indicatees whether a given AMHS user is a Basic ATS Message Service or Extended ATS Message Service user. In case of absence of an AMHS user in the Directory, Basic ATS Message Service support is assumed.

Concerning AMHS security, protection against identifed potential attacks is obtained in the Extended ATS Message Service by the inclusion of digital signatures in the messages, conveyed in addition to th elements (in clear) subject to signature. Thus, in the direction from a Basic ATS Message Service user, there is obviously no difficulty to interwork. In the opposite direction, the Basic ATS Message Service user will still be able to interpret the messagee components in clear, and will simply discard the digitalsignature which it is unable to interpret and verify.

This demonstrates that backward compatibility between the Basic ATS Message Service and the Extended ATS Message Service has been obtained as far as ATS Message User Agents (and AFTN/AMHS Gateways) are concerned.

4. RECOMMENDATION

The Working Group is invited to endorse the proposed ATSMHS specification for the Extended ATS Message Service, and to submit it to the Tokyo WGW as the proposed Edition 3 of Document 9705, Sub-Volume 3, Chapter 1.

ATNP/WG3 WP/18-16 – Part 2

01/12/99

AERONAUTICAL TELECOMMUNICATIONS NETWORK PANEL(ATNP)

WG 3 - APPLICATIONS AND UPPER LAYERS – 18TH MEETING

Tokyo, 1st December – 3rd December 1999 (eighteenth meeting)

(Extended Service) ATSMHS SARPs Validation Report

Presented by Jean-Marc Vacher

Summary

This paper provides the first version (end of 18th WG3 meeting, Tokyo) of the validation report associated with the proposed update of the Technical provisions for the ATN, Chapter 3.1 including the Extended ATS Message Service specification.

Appendix G: Sub-Volume 3.1 Validation report

Appendix G: Sub-Volume 3.1 Validation report

Table of Contents

1. INTRODUCTION

1.1. Scope

Sub-Volume 3, Chapter 1 of the Technical Provisions for the ATN, as included in ICAO Document 9705 (hereafter referred to as ATSMHS SARPs) have been subject to a significant upgrade by the appropriate ATN Panel Working Group and Subgroups since the ATNP/2 and in preparation for the ATNP/3 meeting. This upgrade is proposed for inclusion in Edition 3 of the ICAO Document 9705.

It includes the specification of the Extended ATS Message Service, in contrast with Editions 1 and 2 of ICAO Document 9705 which provided the specification of the Basic ATS Message Service. The Extended ATS Message Service is obtained by the addition to the Basic Service of the following functionalities :

- provision of security features in an approach consistent with the overall ATN security framework ;
- use of the ATN Directory ;
- additional features and message formats, to provide :
  - adequate transfer mechanisms for messages originated at / directed to a CIDIN station ;
  - use of fully standard features to replace the use of the (ATN-specific) ATS-Message-Header included in the message body with the use of standard MHS heading fields ;
- inclusion of the specification of the CIDIN/ATN Gateway taking the form of a CIDIN/AMHS Gateway.

Additionally the requirement for backward compatibility has been taken into account, so as to allow users of the Basic ATS Message Service to communicate with users of the Extended ATS Message Service, and vice-versa.

The purpose of this document is to report on the results of the exercises which have been performed so far with the goal of validating this new version of technical provisions created by the inclusion of the Extended ATS Message Service.

Like for the Basic ATS Message Service, the Extended ATS Message Service specified in the draft (Extended Service) ATSMHS SARPs makes use of standards which have been stable and mature for long, with numerous known independent industry implementations. A controlled evolution process has alloweed these standards to evolve and include up-to-date functionalities, e.g. in the field of information technology security.

Thus, benefit is fully taken from using ISO MHS standards and ISPs that are pre-validated, i.e. studied and approved by national standards bodies, implemented and for which interoperability has been demonstrated between independent implementations.

Note.- The terms « base standard » and « base ISP » used hereafter in this document refer to the ISO/IEC MHS Standard or ISO/IEC MHS ISP which are relevant in the context in which they are employed.

1.2. Background

The (Extended Service) ATSMHS SARPs were developed as a set of changes to the existing Sub-Volume 3.1 of ICAO Document 9705 Edition 2. These changes were identified by revision marks and allowed a close configuration control of the new specification. A table has been prepared for logging of all comments and defect reports received, including cross-reference to each comment and position adopted with respect to the comment. However at this stage no feedback has been received from beyond the ATN Panel Working Groups and Subgroups.

It is therefore proposed to put the (Extended Service) ATSMHS SARPs under formal configuration control after the Tokyo WGW meeting, starting with the proposed Edition 3 of Document 9705.

The document change history from the ICAO Document 9705 is as follows:

Date	Engineering Version	Relationship to Document 9705	Comments
May 1999	0.1	based on Edition 1	Submission to the 18th WG3/SG1 meeting, Naples
October 1999	0.2	based on Edition 2	Submission to the 17th WG3 and 19th WG3/SG1 meetings, Gran Canaria
26th November 1999	0.3	based on Edition 2	Submission to the 18th WG3 meeting, Tokyo
5th December 1999	proposed 1.0	proposed Edition 3	Output of the 18th WG3 meeting, input to the Tokyo WGW meeting

2. HIGH LEVEL VALIDATION OBJECTIVES

The following are the high level validation objectives for the ATSMHS applications, based upon the WG3 common list of VOs for ATN applications. These have been slightly adapted from the validation objectives defined for the CNS/ATM-1 Package.

VO	Description
SVO1	To determine which System Level Requirements are satisfied by the functional descriptions in combination with the user requirements and recommended practices of the SARPs.
SVO2	To determine if the ATN applications specifications are mutually consistent.
FVO1	To determine if the functional descriptions in the SARPs are compatible with the technical requirements.
FVO2	To determine if the user requirements and recommended practices are compatible with the technical requirements.
FVO3	To determine if the SARPs are complete.
FVO4	To determine if the SARPs are unambiguous.
FVO5	To determine if the SARPs are consistent.
FVO6	To determine if there are requirements in the SARPs which would have no effect if removed.
FVO7	To determine if provision has been made to ensure that the SARPs are implementation independent.
TVO1	To determine if the protocol description supports the end-to-end services.
TVO2	To determine if the protocol description has any unacceptable behaviour.
TVO3	To determine if the abstract service interface parameters are mapped appropriately to PDU fields and/or communication service interface parameters, and vice versa.
TVO4	To determine if protocol errors in the peer application entity are correctly handled.
TVO5	To determine if the SARPs are consistent with the upper layer architecture to the extent that this is a requirement, e.g. use of the Dialogue Service, application of the control function.
TVO6	To determine if the APDUs are correctly specified.
TVO7	To determine if provision for QoS management has been addressed.
TVO8	To determine if provision for future migration has been addressed.

TVO9	To determine if efficiency requirements have been addressed, e.g. minimising size of data transfer, appropriate maintenance of dialogue.
TVO10	To determine that the functionality described in the SARPs is implementable.
TVO11	To determine that independent implementations built in accordance with the SARPs will be able to interoperate.

3. VALIDATION MEANS

The following generic means of validation have been identified for all ATN applications:

a) Two or more independently developed interoperating implementations, validated by two or more States/ Organisations.

b) Two or more independently developed interoperating implementations, validated by one State/ Organisation.

c) One implementation, validated by more than one State/ Organisation.

d) One implementation, validated by one State/ Organisation.

e) Partial implementation, validated by one or more State/ Organisation.

f) Simulation, analysis using tools e.g. ASN.1 compiler, modelling tools.

g) Analysis and inspection.

For the sake of the ATSMHS validation, an additional validation means has been defined as follows, based on the definition of means "a":

a-) Two or more independently developed interoperating partial implementations, validated by two or more States/ Organisations.

4. APPLICATION FUNCTIONALITY VALIDATION ACHIEVED BY STATES / ORGANISATIONS

The following table summarises the validation activities that have been completed until the end of the 18th WG3 meeting (Tokyo) or are expected to be completed shortly. The letters in the table correspond to the validation means given in section 3.

Application Functionality (group of « shalls » or part of the SARPs)	Participating States / Organisations				
	ATNP/ WG3/ SG1	European Region			Summary
Extended ATS Message Service (AMHS)	g	(a-, d or e expected end of 2Q2000)			g (a-, d or e expected end of 2Q2000)
ATS Message Server	g	(a-, d or e expected end of 2Q2000)			g (a-, d or e expected end of 2Q2000)
ATS Message User Agent	g	(a-, d or e expected end of 2Q2000)			g (a-, d or e expected end of 2Q2000)
AFTN/AMHS Gateway	g				g
CIDIN/AMHS Gateway	g, partly	d			g, partly (d, date unknown)

5. SUMMARY OF ACTIVITIES SUPPORTING VALIDATION

The objective of this section is to briefly describe the activities undertaken by States / Organisations which have contributed to the ATSMHS SARPs validation.

5.1. ATNP/WG3/SG1

Inspection and analysis of the ATSMHS Draft SARPs has been performed by ATNP/WG3/SG1 members. This has involved close reading of the text with the specific aim of checking to make certain that there are no defects in the SARPs. This was performed for the Extended ATS Message Service specification, and for the available part of the CIDIN/AMHS Gateway specification. However, the latter not being complete at this stage, full inspection has not been possible in the indicateed timeframe.

A special care has been granted to consistency between various sub-volumes, i.e. between Sub-Volume 3 and Sub-Volumes 7 (ATN Directory) and 8 (ATN Security).

Once the validation objectives listed in Section 2 were created, inspection has used these objectives as a measure of the validity of the Draft SARPs.

5.2. European region

Apart from the Aena AMHS implementation, which has been operational for more than 12 months, a number of AMHS projects are underways in the European region, either for the development of AMHS Operational Systems or Centres or of prototyping platforms.

The DFS project called ANDRA, the NATS project for the replacement of the national COM Centre are part of this move towards AMHS in Germany and United Kingdom, respectively. Eurocontrol is also completing contractual agreements for the development of the ECG Core Software Package, which will be available for provision to ECAC (European Civil Aviation Conference) States under a licensing agreement. To date, more than 15 States have expressed their interest in the ECG project.

At present these systems all implement the Basic ATS Message Service. However, they form a suitable basis for experimenting and validating the additional provisions included in the Extended ATS Message Service. This is the reason for the expectation of reaching either level a-), d) or e) in the course of year 2000.

The ECG Core Software specification includes the provision of an X.500 Directory in support of AMHS, which will be based on the technical provisions for the ATN Directory (as far as AMHS is concerned). It also requests an evolution capability towards the Extended ATS Message Service capability and towards the integration of a CIDIN/AMHS Gateway.

In France, STNA is currently implementing a prototype AMHS platform, including Directory, which will be used for validation of AMHS use of Directory, and which might be used for AMHS security validation.

Finally the provision of a SARPS-compliant CIDIN/AMHS Gateway is included in the scope of an on-going project. This cannot be further detailed due to commercial confidence constraints, but will be reported as soon as information can be publicly released (tbc).

5.2. Asia/Pacific region

Air Services Australia has set up a fully-compliant AMHS implementation, including ATS Message Server and AFTN/AMHS Gateway.

The Japanese Civil Aviation Bureau (JCAB) and the United States Federal Aviation Administration (FAA) have announced their intention to implement AMHS for operational use on the international aeronautical messaging links between Japan and USA, starting in year 2000.

Like in Europe these projects all implement the Basic ATS Message Service. However they may also form a convenient evolutionary platform towards the Extended ATS Message Service.

6. DEFECT REPORT SUMMARY

The following Table is a summary of potential defect reports raised during the validation programme against the ICAO baseline version 1.0 (proposed Edition 3 of Document 9705).

PDR ref.	Status	Version	Section	Summary

7. ANALYSIS AND CONCLUSIONS

7.1. SVO1

VO Description: To determine which System Level Requirements are satisfied by the functional descriptions in combination with the user requirements and recommended practices of the SARPs.

The following System Level Requirements are fulfilled by the Draft SARPs for ATS Message Handling Services:

OSI Standards	The ATS Message Service is based on ISO OSI Standards for Message Handling Services (ISO/IEC 10021) and on the associated International Standardized Profiles (ISO/IEC ISP 10611 and 12062). This was already true for the Basic ATS Message Service and it is further reinforced in the Extended ATS Message Service, through the possible replacement of the (specific) ATS-Message-Header with standard MHS heading fields.
AFTN Transition to ATN	The ATS Message Service is an essential piece in the AFTN to ATN transition strategy. It offers a level of service and functionality which is at least equivalent to that of the AFTN, and includes transparent conversion mechanisms at AFTN/AMHS Gateways to make interworking possible between AMHS users and AFTN users (and vice-versa), as well as to allow the transparent conveyance of AFTN messages from an AFTN station to another through the ATN. This capability is now expanded to the transition from CIDIN to ATN, thanks to the specification of the CIDIN/ATN gateway in the form of a CIDIN/AMHS Gateway. A special care has been granted to the support of the multiple CIDIN applications defined in the ICAO CIDIN Documentation.
Policy Based Routing	The AMHS being a store-and-forward messaging service, routing is also performed at the application level. AMHS Routing is policy based between AMHS Management Domains. [no change to Basic ATS Message Service]
Authorized Paths	No preference is expressed in terms of ATS traffic types for the ATSC communications in the ATS Message Service, as allowed by the ATN, since these applications employ only ground subnetworks and are therefore not subject to major bandwidth restrictions. [no change to Basic ATS Message Service]
Priorities	The ATS Message Service includes a priority mechanism at the application level allowing to prioritize message transmission based on the category of communications to which the message pertains. This was already present in the Basic ATS Message Service. The Extended ATS Message Service additionally includes an AMHS precedence policy allowing to map CIDIN priorities in full consistency with AFTN or ATS message priorities.

Peer Information Exchange Peer-to-peer information exchange is possible at two levels in the AMHS, i.e. end-to-end (at P2 message level) from ATS Message User Agent to ATS Message User Agent, still allowing different communication profiles for increased flexibility, and from ATS Message Server to ATS Message Server at P1 protocol level. Gateways behave in such exchanges like a combination of ATS Message Server and ATS Message User Agent. The ATN Pass-Through Service enables the peer-to-peer exchange of AFTN messages over the ATN Internet, when an authorized path exists between two AFTN/ATN Type A Gateways.

Store-and-forward Information Exchange The ATS Message Service enables the store-and-forward exchange of information when authorized paths exist between the ATS Message Servers and, if required, the AFTN/AMHS or CIDIN/AMHS Gateways forming the AMHS.

Lack of Path Notification In the ATS Message Service, the service user, either a human at a user interface or an Application Process at an API is informed of a message non-delivery by means of a non-delivery report. Positive acknowledgements are also transferred for messages with the highest priority. [no change to Basic ATS Message Service]

Unambiguous Addressing In the ATS Message Service, all involved systems, either ATS Message User Agents, ATS Message Servers or AFTN/AMHS Gateways, are ATN End Systems addressed as such by means of NSAPs and transport, session and presentation selectors. Furthermore every user of the ATS Message Service is individually identified at the application level by means of an O/R name. [no change to Basic ATS Message Service]

Originator Identification In the ATS Message Service, the originator identification accompanies the ATS message and it is given to the message recipient by means of the originator O/R name indication. Furthermore the security features of the Extended ATS Message Service allow message origin authentication.

Addressing and Name Assignments At the application level, the AMHS is organized in Management Domains of two categories respectively named Administrative Management Domains (ADMD) and Private Management Domains (PRMD) within which the aforementioned O/R names are assigned. The ATN Directory may also additionally provide unique Directory Names for users of the Extended ATS Message Service.

ATSMHS Associations The applications defined in these SARPs are the actual CNS/ATM-1 applications for ATS Message Handling Services. [no change to Basic ATS Message Service]

UTC Reference All dates and times referenced in the ATS Message Service are expressed as UTC. The Y2K dependency inherent to the ASN.1 type UTCTime are resolved by an additional interpretation convention aligned on the base AMHS

standards. When the ASN.1 GeneralizedTime type is used (which provides four digits for encoding of the year) the UTC time conventions are used.

7.2. SVO2

VO Description: To determine if the ATN Package applications specifications are mutually consistent.

This validation objective may be considered as being partly achieved, with the conclusion that the applications specifications in the SARPs are consistent with other applications, specifically between the ATSMHS and the ATN Directory. The terminology and concepts used in the ATN Directory in support of AMHS are directly derived from AMHS concepts.

Further inspection is needed in the area of SV1 (Introduction and System Level Requirements), SV4 (registration of OID values) and SV8 (security), based on the latest versions of these documents (g, partial).

7.3. FVO1

VO Description: To determine if the functional descriptions in the SARPs are compatible with the technical requirements.

This validation objective may be considered as being achieved, with the conclusion that the functional descriptions in the SARPs are compatible with the technical requirements. Upon completion of the SARPs inspection and analysis process, no incompatibility has been reported, nor has any defect report been generated in this area (g).

For the Extended ATS Message Service, additions to the Basic ATS Message Service have been made mostly by reference to functional groups (FGs) as defined in the base ISPs. These FGs define the technical requirements aligned on functional needs and provide a "building block" approach to specifications.

7.4. FVO2

VO Description: To determine if the user requirements and recommended practices are compatible with the technical requirements.

This validation objective may be considered as being achieved, with the conclusion that the user requirements and recommended practices are compatible with the technical requirements. Upon completion of the SARPs inspection and analysis process, no incompatibility has been reported, nor has any defect report been generated in this area (g).

For the CIDIN/AMHS Gateway, the use of the ISPICS Proforma included in the base ISPs has allowed an easy verification of the compatibility between the gateway specification and the technical requirements related to the use of the base standards (g).

7.5. FVO3

VO Description: To determine if the SARPs are complete.

This validation objective may be considered as being partly achieved. After a first SARPs inspection and analysis process by several parties, the comments expressed in relation with this VO are currently under consideration and will be further investigated during the next validation stages (g, partial).

The main point still under consideration relates to the encoding requirements for security features, at the level of ATS Message User Agent and of ATS Message Servers. The issue also relates to the encoding of ATN certificates used to store and convey AMHS users' public keys.

7.6. FVO4

VO Description: To determine if the SARPs are unambiguous.

This validation objective may be considered as being partly achieved, with the conclusion that the SARPs are unambiguous. Upon completion of the SARPs inspection and analysis process, no ambiguity has been reported, nor hass any defect report been expressed in relation with this VO. (g, partial)

However practical experience shows that only implementation by independent parties can really demonstrate this VO.

7.7. FVO5

VO Description: To determine if the SARPs are consistent.

This validation objective may be considered as being achieved, with the conclusion that the SARPs are consistent. Upon completion of the SARPs inspection and analysis process, no inconsistency, nor any defect report have been expressed in relation with this VO (g).

A special focus has been placed on the integration of the new material needed to accommodate the CIDIN/AMHS Gateway and messages generated at / directed to CIDIN stations.

7.8. FVO6

VO Description: To determine if there are requirements in the SARPs which would have no effect if removed.

This validation objective may be considered as being achieved, with the conclusion that there are no requirements in the SARPs which would have no effect if removed. Upon completion of the SARPs inspection and analysis process, no defect has been reported in this area (g).

7.9. FVO7

VO Description: To determine if provision has been made to ensure that the SARPs are implementation independent.

This validation objective may be considered as being partly achieved, with the conclusion that the SARPs are implementation independent (g, partial).

The Basic ATS Message Service specification has already been demonstrated as being implementation-independent. The existence of off-the-shelf MHS products already provides a high level of independence. The additional functions

included in the Extended ATS Message Service being specified by means of references to ISP FGs, there is little or no risk that implementation dependencies would have been created.

The use for the CIDIN/AMHS Gateway specification of the same principles as for the AFTN/AMHS Gateway also provides good confidence that this specification is implementation-independent.

Finally, upon completion of the SARPs inspection and analysis process, no defect has been reported in this area. However, only an actual implementation can allow to fully achieve this VO.

7.10. TVO1

VO Description: To determine if the protocol description supports the end-to-end services.

This validation objective may be considered as being achieved, with the conclusion that the protocol description supports the end-to-end services. This is an intrinsic feature of the base standards (g).

7.11. TVO2

VO Description: To determine if the protocol description has any unacceptable behaviour.

This validation objective may be considered as being achieved, with the conclusion that the protocol description has no unacceptable behaviour. This is an intrinsic feature of the base standards (g).

7.12. TVO3

VO Description: To determine if the abstract service interface parameters are mapped appropriately to PDU fields and/or communication service interface parameters, and vice versa.

This validation objective may be considered as being achieved for the ATS Message Service, with the conclusion that the abstract service interface parameters are mapped appropriately to PDU fields and/or communication service interface parameters, and vice-versa. This is an intrinsic feature of the base standards (g).

7.13. TVO4

VO Description: To determine if protocol errors in the peer application entity are correctly handled.

This validation objective may be considered as being achieved, with the conclusion that protocol errors in the peer application entity are correctly handled. This is an intrinsic feature of the base standards (g).

7.14. TVO5

VO Description: To determine if the SARPs are consistent with the upper layer architecture to the extent that this is a requirement, e.g. use of the Dialogue Service, application of the control function.

This validation objective may be considered as being achieved, with the conclusion that there is no possible inconsistency since it is not a requirement for the ATS Message Service to use the ATN Upper Layer Communications

Service. The ATS Message Service uses a full functionality OSI Upper Layer Architecture, in compliance with the MHS base standards (g).

7.15. TVO6

VO Description: To determine if the APDUs are correctly specified.

This validation objective may be considered as being achieved, with the conclusion that APDUs are correctly specified. This is an intrinsic feature of the base standards (g).

7.16. TVO7

VO Description: To determine if provision for QoS management has been addressed.

This validation objective may be considered as being achieved, with the conclusion that the QoS management has been addressed. Upon completion of the SARPs inspection and analysis process by several parties, no defect report has been generated in this area (g).

QOS management is not a function of the ATSMHS SARPs. The specifications in the SARPs have been inspected with the specific aim of checking that the QoS parameters to be passed to the ATN Transport Service are properly specified (g).

7.17. TVO8

VO Description: To determine if provision for future migration has been addressed.

This validation objective may be considered as being achieved, with the conclusion that provision for future migration has been addressed. Upon completion of the SARPs inspection and analysis process by several parties, no defect report has been generated in this area (g).

For the ATS Message Service, this is an intrinsic feature of the base standards, which have already been to subject to extensions from their initial version to the current version. Extension mechanisms are in place to allow for additional components to be integrated in the protocol elements or message body parts.

7.18. TVO9

VO Description: To determine if efficiency requirements have been addressed, e.g. minimising size of data transfer, appropriate maintenance of dialogue.

This validation objective may be considered as being achieved, since the AMHS efficiency is pre-determined by the efficiency of the base MHS standards, and the requirements used have been limited to the ISP basic requirements (except when absolutely necessary) thus minimizing the exchange of information (e, g).

7.19. TVO10

VO Description: To determine that the functionality described in the SARPs is implementable.

This validation objective is not yet achieved for the Extended ATS Message Service.

Only actual implementations, even partial, can truly allow to achieve this VO. However, there is good confidence that this VO will be achieved, thanks to the strong framework (base standards and ISPs) upon which the SARPs are based.

7.20. TVO11

VO Description: To determine that independent implementations built in accordance with the SARPs will be able to interoperate.

This validation objective is not yet achieved for the Extended ATS Message Service. For the reasons expressed above, there is a high degree of confidence that independent implementations will be able to interoperate.

However the complete achievement of this VO is subject to independent prototype implementations being developed and tested in an interworking configuration.