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PART IIB

MANUAL ON DETAILED TECHNICAL SPECIFICATIONS FOR THE AERONAUTICAL TELECOMMUNICATION NETWORK (ATN) using ISO/OSI standards and protocols

PART IIB – GROUND-GROUND APPLICATIONS
ATS message handling service (ATSMHS)
1st edition *(unedited)*

(See mapping table for conversion of current paragraph numbers of Doc 9705 – 3rd edition into paragraph numbers of Doc 9880)

NOTICE TO USERS

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Advance edition *(unedited)*

Foreword

This manual replaces the *"Manual of technical provisions for the Aeronautical Telecommunication Network (ATN)",* Doc 9705 – third edition. Amendments to Doc 9705 are incorporated. These amendments were necessary as a result of ongoing validation, and operational experience gained during implementation of elements of the ATN. These amendments were reviewed at the ACP Working Group of the Whole #1 meeting in June 2005 and further updated at the ACP Working Group N/06 meeting held in July 2006. Relevant background material is available in the reports of these meetings, which can be accessed at www.icao.int/anb/panels/acp.

The different parts of this manual will be published as and when the relevant sub-volumes of Doc 9705 have been updated and completed.

This manual contains the detailed technical specifications for the ATN, based on relevant standards and protocols established by the International Organization for Standardization (ISO) and the Telecommunication Standardization Sector of the International Telecommunication Union (ITU-T) for Open Systems Interconnection (OSI). A separate manual, addressing detailed technical specifications for the ATN, based on standards developed by the Internet Society (ISOC) for the Internet Protocol Suite (IPS) is in preparation, together with draft Standards and Recommended Practices (SARPs) for the ATN/IPS. Where necessary and to avoid duplication of essential material, the IPS manual will refer to this manual, as required.

This manual will be published in the following parts:

Part I Air-ground applications (Doc 9705/sub-volume II)
Part IIA Ground-ground applications AIDC (Doc 9705/sub-volume III)
Part IIB Ground-ground applications – AMHS (Doc 9705/sub-volume III)
Part III Internet communication service, including upper layer communications service (Doc 9705/sub-volumes IV and V)
Part IV Directory service, security services, systems management, Identifier registration and definitions. (Doc 9705/sub-volumes I, VI, VII, VIII and IX).

With the publication of each part of this manual, the relevant sub-volumes of Doc 9705 will become obsolete.

ATS MESSAGE HANDLING SERVICE APPLICATION (ATSMHS)

1 INTRODUCTION

Part IIB of this manual replaces and updates the ICAO *Manual of technical provisions for the Aeronautical Telecommunication Network (ATN)* (Doc 9705; third edition) , Sub-Volume III, Chapter 1

Structure of this document:

Chapter 1: INTRODUCTION contains the overview, a summary of the functionalities offered by the ATS Message Handling Service and the terminology applied in this Chapter.

Chapter 2: SYSTEM LEVEL PROVISIONS, provides a high level specification of the application and of the environment in which it operates;

Chapter 3: ATS MESSAGE HANDLING SERVICE SPECIFICATION, provides the detailed specification of the service and protocol requirements for each type of ATN End System (ATS Message User Agent and ATS Message Server) implementing the ATS Message Handling Service;

Chapter 4: AFTN/AMHS GATEWAY SPECIFICATION, provides the detailed specification of an AFTN/AMHS Gateway and of the related functional requirements such as conversion.

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1.1 Overview of the application

1.1.1 The ATS (Air Traffic Services) Message Handling Service (ATSMHS) application, also formerly known as ATS Message Service, allows ATS Messages to be exchanged between service users.

1.1.2 The ATS Message Handling Service application aims at providing generic message services over the Aeronautical Telecommunication Network (ATN) Internet. It may in turn be used as a communication system by user-applications communicating over the ATN. This may be achieved e.g. by means of application program interfaces to the ATS Message Handling Service.

1.1.3 The ATS Message Handling Service is provided by the implementation over the ATN Internet Communication Services of the Message Handling Systems specified in ISO/IEC (International Organization for Standardization/ International Electrotechnical Commission) 10021 and CCITT (Consultative Committee of International Telegraph and Telephone) or ITU-T (International Telecommunication Union - Telecommunications Standards) X.400, and complemented with the additional requirements specified in this document. The two sets of documents, the ISO/IEC MOTIS (Message-Oriented Text Interchange System) International Standards and the CCITT X.400 Series of Recommendations (1988 or later) are in principle aligned to each other. However there are a small number of differences International Standards, and International Standardized Profiles (ISP) where applicable. Where necessary, e.g. for reasons of interworking or to point out differences, reference is also made to the relevant X.400 Recommendations.

1.1.4 Two levels of service are defined within the ATS Message Handling Service:

a) the Basic ATS Message Handling Service; and

b) the Extended ATS Message Handling Service.

1.1.5 The Basic ATS Message Handling Service. In this Document, reference is made to the relevant ISO is based on the first version of the ISO/IEC ISPs, published in 1994 and based on the ISO/IEC 10021:1990 set of standards. The Extended ATS Message Handling Service is based on the third version of the ISO/IEC ISPs, published in 2003 and based on the ISO/IEC 10021:2003 set of standards.

1.1.6 Both levels of service are compatible with one another. The Extended ATS Message Handling Service is functionally a superset of the Basic ATS Message Handling Service, and it is backward compatible with the Basic ATS Message Handling Service.

1.1.7 The Basic ATS Message Handling Service meets the basic requirements of the Message Handling Systems Profiles published by ISO/IEC as ISPs (International Standardized Profiles), and it incorporates additional features to support the service offered by the AFTN. The Extended ATS Message Handling Service includes supplementary functions to provide a secure message service, to allow for the use of the ATN Directory. The ATS Message Handling Service is further specified in Chapter 3. This includes the specification of which ISPs apply in this context.

1.1.8 It is intended that eventually the Extended ATS Message Handling Service will be supported by all ATS Message Handling Service users, so that the Basic ATS Message Handling Service will not be required anymore. However the latter may be maintained for transition purposes as long as required.

1.2 End systems performing the ATS Message Handling Service

1.2.1 The set of end systems providing the ATS Message Handling Service is collectively denominated as the ATS Message Handling System (AMHS).

1.2.2 Three types of ATN End Systems are defined in this Document:

a) an ATS Message Server;

b) an ATS Message User Agent; and

c) an AFTN/AMHS Gateway (Aeronautical Fixed Telecommunication Network / ATS Message Handling System).

1.2.3 Connections may be established over the ATN Internet Communications Service or using the Internet Protocol Suite between any pair constituted of these ATN End Systems and listed in Table 1-1.

Table 1-1. Communications between ATN End Systems implementing ATS Message Handling Service

ATN End System 1	ATN End System 2
ATS Message Server	ATS Message Server
ATS Message Server	AFTN/AMHS Gateway
ATS Message Server	ATS Message User Agent
AFTN/AMHS Gateway	AFTN/AMHS Gateway

1.2.4 The CIDIN/AMHS gateway defined in earlier editions of ATN technical provisions can be implemented by means of an AFTN/AMHS gateway, when the CIDIN is used in support of the AFTN application only. For this reason the specification of the CIDIN/AMHS gateway has been removed from the ATN detailed technical specifications.

1.3 Terminology

1.3.1 The following terminology applies in this Document:

a) **AFTN acknowledgement message**: an AFTN service message acknowledging the receipt of an AFTN message, of which priority indicator has the value "SS".

b) **direct AMHS user**: an ATS Message Handling Service user who engages in the ATS Message Handling Service at an ATS Message User Agent. A direct AMHS user may belong to two subgroups as follows:

1) human users who interact with the ATS Message Handling Service by means of an ATS Message User Agent connected to an ATS Message Server; and

2) host users which are computer applications running on ATN end systems and interacting with the ATS Message Handling Service by means of application programme interfaces.

c) **indirect AMHS user**: an ATS Message Handling Service user at an AFTN station, using an AFTN/AMHS Gateway to communicate with other ATS Message Handling Service users.

d) **subject AFTN message**: an AFTN message which causes an AFTN service message or an AMHS report to be generated.

e) **subject AMHS message**: an AMHS message which causes an AFTN service message or an AMHS report to be generated.

f) **subject IPM**: the IPM which is the content of an AMHS message and which causes an AMHS Receipt Notification to be generated.

g) **unknown address AFTN service message**: an AFTN service message requesting correction by the originator of a message received with an unknown addressee indicator.

1.3.2 The classifications defined in the ISPs apply for expressing conformance requirements - i.e. static capability - in this Document. The ISP classifications refine the ISO/IEC 9646-7 classification to include different levels of mandatory support, depending on the level of functionality to be supported by the considered Message Handling System. These classifications include the following elements, of which the complete definition may be found in each referenced ISP:

a) **mandatory full support** (M);

b) **mandatory minimal support** (M-);

c) **mandatory O/R name minimal support** (M1) (see ISO/IEC ISP 12062-2);

d) **optional support** (O);

e) **conditional support** (C);

f) **out of scope** (I);

g) **not applicable** (-);

1.3.3 The following classification applies for expressing dynamic behaviour requirements - i.e. the action performed by the ATN end system - related to parameters or elements in the Profile Requirement Lists (PRLs) included in Chapter 4, for the specification of the AFTN/AMHS Gateway:

a) **generated** (G): used to describe the generation of an AMHS or AFTN information object. It means that the element is generated by the AFTN/AMHS Gateway, and that its value does not depend on the value of an element of the information object received by the AFTN/AMHS Gateway which caused the current generation of an information object, but that the value of the element is based on parameters related to the AFTN/AMHS Gateway itself or takes a pre-determined value. If an element comprises several components, then the element is classified as generated if at least one of its components is generated, and the others are either generated or excluded. The generation of MHS parameters applies to abstract-values and does not constrain the ASN.1 encoding. In particular, elements generated with ASN.1 DEFAULT abstract-values may, but need not, be encoded;

b) **optionally generated** (G1): used with the same meaning as generated, with the exception that the generation of the element is optional, the decision being a matter of policy local to the Management Domain operating the AFTN/AMHS Gateway;

c) **conditionally generated** (G2): used only to describe the generation of an AMHS report or RN (Receipt Notification) element. It means, for a report generation, that the element is generated in the report or RN based on some condition related to the subject AMHS message being true. If the element is generated, it takes a value derived from elements present in the received AMHS information object which caused the generation of the report or RN;

d) **translated** (T): used to describe either the generation of an AMHS or AFTN information object or the use of a received information object. It means that the element is translated by the AFTN/AMHS Gateway, using a dependence relationship between the value of an element of the received information object and the value of the translated element in the generated information object. If an element comprises several components, then the element is classified as translated if at least one of its components is translated, and the others are either generated or excluded in generation, discarded or out of scope in reception;

e) **conditionally translated** (T1): used with the same meaning as Atranslated@, with the exception that the translation of the element is subject to some condition being true, e.g. the presence of an optional element in the received information object;

f) **discarded** (D): used to describe the use of a received AMHS or AFTN information object. It means that the value of the element is not used by the Message Transfer and Control Unit when generating the elements of the information object converted from the received information object, and that the semantic information conveyed in the element is discarded during the process of conversion in the AFTN/AMHS Gateway. However the presence or value of the element may be used by the Message Transfer and Control Unit for purposes other than conversion, such as report generation and logging;

g) **excluded** (X): used to describe either the generation of an AMHS or AFTN information object or the use of a received information object. Upon generation of an information object, it means that the element is not used nor present in the generated information object. Upon reception of an AMHS information object, it means that the presence of the element causes rejection of the information object, and generation of an AMHS non-delivery report as appropriate;

h) **out of scope** or **not-applicable** (-): used to describe the use of a received information object, when the element is either a format element which cannot be processed in any way or an element which is not in the scope of the section, but which presence is included in the ISPICS (ISP Implementation Conformance Statement) serving as a basis for the mapping specification.

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2 SYSTEM LEVEL PROVISIONS

The ATS Message Handling Service shall be implemented in conformity with this Document.

2.1 ATS Message Handling Service Users

2.1.1 Direct AMHS users shall use either the Basic ATS Message Handling Service or the Extended ATS Message Handling Service at an ATS Message User Agent.

2.1.2 Indirect AMHS users shall use only that part of the ATS Message Handling Service which corresponds to AFTN functionalities, by using the interworking capability provided by an AFTN/AMHS Gateway as specified in Chapter 4.

2.2 AMHS Model

2.2.1 AMHS functional model

2.2.1.1 Model components

The systems comprising the AMHS shall themselves be comprised of the following functional objects, the general role of which is described in ISO/IEC 10021-2 and in ISO/IEC 9594-2:

a) message transfer agent(s) (MTA),

b) user agent(s) (UA),

c) message store(s) (MS),

d) access unit(s) (AU), and

e) directory user agent(s) (DUA).

2.2.1.1.1 The ISO/IEC 10021 Elements of Service and Protocols used by these functional objects are specified in Chapter 3 and Chapter 4.

2.2.1.1.2 The ISO/IEC 9594 Services and Protocols used by these functional objects are specified in Doc 9705 Sub-Volume VII / Doc 9880 Part IV.

2.2.1.1.3 Directory User Agents are an intrinsic part of the Extended ATS Message Handling Service. However they also belong to the ATN Directory as specified in Doc 9705 Sub-Volume VII / Doc 9880 Part IV.

2.2.1.2 ATS Message Server

2.2.1.2.1 An ATS Message Server shall include a MTA and optionally one or several MSs, as specified in 3.2.2 to 3.2.4.

2.2.1.2.2 For the support of the Extended ATS Message Handling Service, an ATS Message Server shall include a DUA as specified in 3.2.5.

2.2.1.3 ATS Message User Agent

2.2.1.3.1 An ATS Message User Agent shall include a UA as specified in 3.1.2 to 3.1.4.

2.2.1.3.2 For the support of the Extended ATS Message Handling Service, an ATS Message User Agent shall include a DUA as specified in 3.1.5.

2.2.1.4 AFTN/AMHS Gateway

2.2.1.4.1 An AFTN/AMHS Gateway shall include a MTA, which is part of the ATN Component of the AFTN/AMHS Gateway, and an AU, as specified in Chapter 4.

Note.— The AU is the Message Transfer and Control Unit of the AFTN/AMHS Gateway.

2.2.1.4.2 For the support of the Extended ATS Message Handling Service, an AFTN/AMHS Gateway shall include a DUA as specified in 4.2.7.

2.2.2 AMHS information model

The following three categories of AMHS information objects shall be used:

a) messages;

b) probes; and

c) reports.

2.2.2.1 Messages

Note.— The provisions in Chapter 3 and Chapter 4 concerning ISO/IEC 10021 envelopes apply to Transfer Envelopes only.

In the Basic ATS Message Handling Service, each AMHS message shall correspond unequivocally to an ATS Message.

2.2.2.2 Probes

Only direct AMHS users shall be able to submit AMHS probes.

2.2.2.3 Reports

AMHS reports shall be delivered only to direct AMHS users.

2.2.3 Security model

2.2.3.1 **Recommendation.—** *In the Basic ATS Message Handling Service, security should be obtained by procedural means rather than by technical features inherent to the AMHS.*

Note.— In the Basic ATS Message Handling Service, the security at each AMHS System is deemed a local issue to be addressed by the authority in charge of the system.

2.2.3.2 In the Extended ATS Message Handling Service, a general AMHS security policy shall be implemented from ATS Message User Agent to ATS Message User Agent, providing the following security services:

a) message origin authentication;

b) content integrity; and

c) message sequence integrity.

2.2.3.2.1 The general AMHS security policy aims at protecting ATS Message exchanges against the identified threats which are masquerade, modification and replay.

2.2.3.2.2 The general AMHS security policy is aligned on the general ATN Security Framework as defined in Document 9705 Sub-Volume VIII / Document 9880 Part IV.

2.2.3.2.3 The general AMHS security policy is a common minimum which does not prevent specific communities of AMHS users from implementing more stringent security policies in case of additional user requirements.

2.2.3.3 The use of AMHS security services shall apply to:

a) communications between direct AMHS users supporting the Extended ATS Message Handling Service; and

b) communications from direct AMHS users to AFTN/AMHS Gateways supporting the Extended ATS Message Handling Service.

2.2.3.3.1 The use of an asymmetric algorithm makes it possible to use security with indirect users in the direction from AMHS to AFTN only. Asymmetric signature mechanisms cannot be originated at an intermediate device such as a gateway.

2.2.3.4 The AMHS security policy shall make use of the Elliptic Curves Digital Signature Algorithm (ECDSA) as specified in Document 9705 Sub-Volume VIII / Document 9880 Part IV.

2.2.4 Management model

2.2.4.1 In the Extended ATS Message Handling Service, the AMHS management shall include:

a) logging provisions which are defined for the ATS Message User Agent, for the ATS Message Server and for the AFTN/AMHS Gateway;

b) storage of management information about ATS Message Servers and AFTN/AMHS Gateways in the ATN Cross-Domain Management Information Base (XMIB), as specified in Document 9705 Sub-Volume VI / Document 9880 Part IV.

2.2.4.1.1 In the Basic ATS Message Handling Service, management is limited to the logging provisions which are defined for the ATS Message User Agent, for the ATS Message Server and for the AFTN/AMHS Gateway. No provision is made for retrieval or exchange of this information, which is deemed a local issue to be addressed by the authority in charge of the system.

2.3 Organization of the AMHS

2.3.1 The AMHS shall be organizationally composed of AMHS Management Domains.

2.3.1.1 An AMHS Management Domain may elect to operate as either an ADMD (Administration Management Domain) or a PRMD (Private Management Domain), depending on the national telecommunications regulation in force in the country(ies) where it operates and on its relationships with other Management Domains.

2.3.1.2 A PRMD which is subordinate to one or several AMHS ADMDs may qualify as AMHS Management Domain if it satisfies the provisions of this document.

2.4 AMHS Management Domain configurations

2.4.1 Minimal set of systems

The minimal set of systems implemented and operated by an AMHS Management Domain shall be one of the following:

a) an ATS Message Server and one or several ATS Message User Agents;

b) an AFTN/AMHS Gateway; or

c) any combination of a) and b).

2.4.2 Interconnection between two AMHS Management Domains

An interconnection between two AMHS Management Domains shall be implemented as one of the following:

a) a connection between two ATS Message Servers;

b) a connection between an ATS Message Server and an AFTN/AMHS Gateway; or

c) a connection between two AFTN/AMHS Gateways.

2.4.3 AMHS systems management

2.4.3.1 For the purpose of AMHS systems management, ATN cross-domain management as considered in Document 9705 Sub-Volume VI / Document 9880 Part IV shall apply between AMHS Management Domains.

2.4.3.2 Only AMHS systems which support interconnection between AMHS Management Domains as listed in 2.4.2 shall be subject to ATN cross-domain management.

2.4.3.2.1 The way in which management information is exchanged between the managed AMHS systems and the ATN XMIB is a matter of local policy internal to the AMHS Management Domain.

2.5 Naming and addressing principles

2.5.1 AMHS Naming and Addressing

2.5.1.1 AMHS O/R Names

2.5.1.1.1 For the support of the Basic ATS Message Handling Service, the O/R (originator/recipient) name of an AMHS user shall comprise:

a) the O/R address of the AMHS user, called an MF-address; and

b) optionally the directory name of the AMHS user, if the policy of the AMHS Management Domain, to which the AMHS user belongs, includes the local support of directory-names.

2.5.1.1.1.1 With regard to 2.5.1.1.1 b), as a matter of policy local to an AMHS Management Domain, the directory name component of an O/R name may be used by the implementation of the Optional DIR (Use of Directory) FG (Functional Group).

2.5.1.1.2 For the support of the Extended ATS Message Handling Service, the O/R (originator/recipient) name of an AMHS user shall comprise:

a) the O/R address of the AMHS user, called an MF-address; and

b) the directory name of the AMHS user.

2.5.1.2 Structure of a MF-Address

The MF-Address (MHS-form address) of an AMHS user shall comprise:

a) a set of attributes as specified in 2.5.1.3, identifying the AMHS Management Domain of which the AMHS user, either direct or indirect, is a service-user; and

b) a set of attributes as specified in 2.5.1.4, identifying uniquely the AMHS user within the AMHS Management Domain, in compliance with the AMHS addressing scheme

implemented by the AMHS Management Domain.

2.5.1.2.1 The attributes present in the identifier defined in 2.5.1.2 b) may include any standard or domain-defined attribute among those specified in section 18 of ISO/IEC 10021-2, other than country-name, administration-domain-name and private-domain-name.

2.5.1.3 AMHS Management Domain identifier

2.5.1.3.1 The attributes identifying an AMHS Management Domain shall include the following standard attributes as specified in ISO/IEC 10021-2, section 18.3:

a) *country-name*, taking the value "XX" as authorized by ITU-T to ICAO under the regime of Recommendation X.666 for International Registered Organizations,

b) *administration-domain-name*, taking the value "ICAO" as registered by ITU-T for ICAO under the same regime,

c) *private-domain-name*.

2.5.1.3.2 An AMHS Management Domain identifier shall be unique and declared to ICAO for insertion in the ICAO Register of AMHS Management Domains, by the ICAO Member State or Organisation in which it operates.

2.5.1.3.3 The ICAO Register of AMHS Management Domains shall include at least one record for each ICAO Member State composed of the following attribute values to be used in case no other AMHS Management Domain identifier has been declared by the considered State:

a) *country-name*, taking the value "XX",

b) *administration-domain-name*, taking the value "ICAO", and

c) *private-domain-name*, taking one of the following values:

1) the one or two ICAO Nationality Letters as specified in Document 7910, chapter 2, if there is a one-to-one relationship between the Nationality Letters and the considered State;

2) one of the pairs of ICAO Nationality Letters as specified in Document 7910, chapter 2, uniquely allocated upon initiative of the ICAO Secretariat, if there are several pairs of Nationality Letters allocated to the considered State; or

3) an ICAO designator made of two to four letters, comprising the Nationality Letters and 0 to 2 additional letters, allocated upon initiative of the ICAO Secretariat so as to create a unique identifier, if the considered State has the same Nationality Letters as other States.

2.5.1.3.4 To ensure the applicability of 2.5.1.3.3, private-domain-name values corresponding to ICAO Nationality Letters specified in Document 7910 shall be reserved for use, if desired, by the designated State.

2.5.1.3.5 The declaration of an AMHS Management Domain identifier shall:

a) take precedence over the attribute-values specified in 2.5.1.3.3, provided that it does not contradict 2.5.1.3.4,

b) cause overriding of the attribute-values specified in 2.5.1.3.3 by the declared attribute-values in the ICAO Register of AMHS Management Domains.

2.5.1.4 MF-Addressing Schemes

2.5.1.4.1 General provisions

2.5.1.4.1.1 It is a matter of policy local to each AMHS Management Domain to implement either a MF-Addressing Scheme, or a locally defined AMHS Addressing Scheme, or a combination of these. Two MF-Addressing Schemes are defined in the present version of this document, which are the Common AMHS Addressing Scheme, and the XF-Addressing Scheme. Additional MF-Addressing Schemes may be defined in the future.

2.5.1.4.1.2 Aeronautical Industry X.400 Addressing Schemes are defined in appropriate Aeronautical Industry Standards.

2.5.1.4.1.3 Each AMHS Addressing Scheme includes the set of attributes identifying the AMHS Management Domain as specified in 2.5.1.3.3.

2.5.1.4.1.4 **Recommendation**.- *An AMHS Management Domain should implement the Common AMHS Addressing Scheme at the earliest opportunity to allocate MF-addresses to AMHS users within its domain of responsibility.*

2.5.1.4.1.5 **Recommendation**.- *An AMHS Management Domain should avoid deviating from the Common AMHS Addressing Scheme and refrain from implementing locally defined AMHS Addressing Scheme unless specific (e.g. regulatory) unavoidable constraints apply to the AMHS Management Domain.*

2.5.1.4.1.6 When an ICAO contracting State has not declared its use of the Common AMHS Addressing Scheme, nor of a locally defined AMHS Addressing Scheme, then use of the XF-Addressing Scheme shall be assumed for indirect and direct AMHS users in this State.

2.5.1.4.2 XF-Addressing Scheme

The XF-Address (translated-form address) of a direct or indirect AMHS user shall be composed exclusively of the following:

a) an AMHS Management Domain identifier as specified in 2.5.1.3.3, composed of the attribute-values found for the State or Organization of the user in the ICAO Register of AMHS Management Domains, using the following character combinations extracted from the user's AF-Address, with an increasing order of preference from 1) to 4) in case of multiple matches:

1) a two-letter designator identifying a country as specified in ICAO Document 7910 (characters 1 and 2 of the AF-Address);

2) a four-letter designator identifying a country or a location as specified in ICAO Document 7910 (characters 1 to 4 of the AF-Address);

3) a combination of an element as in items 1) or 2) above with a three-letter designator as specified in ICAO Document 8585, identifying an organization within a country; or

4) a combination of a four-letter designator as specified in ICAO Document 7910 with a three-letter designator as specified in ICAO Document 8585, identifying an organization at a location;

b) an *organization-name* attribute:

1) as specified in ISO/IEC 10021-2, Section 18.3,

2) taking the 4-character value "AFTN", and

3) encoded as a Printable String; and

c) an *organizational-unit-names* attribute:

1) as specified in ISO/IEC 10021-2, Section 18.3,

2) comprising a sequence of one single element, which takes the 8-character alphabetical value of the AF-Address (AFTN-form address) of the user, and

3) encoded as a Printable String.

2.5.1.4.2.1 An XF-Address is a particular MF-Address of which the attributes identifying the user within an AMHS Management Domain (i.e. those attributes other than country-name, administration-domain-name and private-domain-name) may be converted by an algorithmic method to and from an AF-Address. The algorithmic method requires the additional use of look-up tables which are limited, i.e. which include only a list of AMHS Management Domains rather than a list of individual users, to determine the full MF-address of the user.

2.5.1.4.2.2 No distinction is made between upper case and lower case in an XF-Address.

2.5.1.4.3 Common AMHS Addressing Scheme

2.5.1.4.3.1 The MF-Address of a direct or indirect AMHS user complying with the Common AMHS Addressing Scheme shall be composed exclusively of the following:

a) an AMHS Management Domain identifier as specified in 2.5.1.3.3, composed of the attribute-values found for the State or Organization of the user in the ICAO Register of

AMHS Management Domains, using the following character combinations extracted from the user's AF-Address, with an increasing order of preference from 1) to 4) in case of multiple matches:

1) a two-letter designator identifying a country as specified in ICAO Document 7910 (characters 1 and 2 of the AF-Address);

2) a four-letter designator identifying a country or a location as specified in ICAO Document 7910 (characters 1 to 4 of the AF-Address);

3) a combination of an element as in items 1 and 2) above with a three-letter designator as specified in ICAO Document 8585, identifying an organization within a country; or

4) a combination of a four-letter designator as specified in ICAO Document 7910 with a three-letter designator as specified in ICAO Document 8585, identifying an organization at a location; and

b) an *organization-name* attribute, as specified in ISO/IEC 10021-2, Section 18.3, taking a value representing a geographical unit;

c) an *organizational-unit-names* attribute, as specified in ISO/IEC 10021-2, Section 18.3, comprising a sequence of one single element, which takes the 4-character alphabetical value of the ICAO Location Indicator included in the AF-Address (AFTN-form address) of the user, and

d) a *common-name* attribute, as specified in ISO/IEC 10021-2, Section 18.3, which takes the 8-character alphabetical value of the AF-Address of the user.

2.5.1.4.3.1.1 No distinction is made between upper case and lower case.

2.5.1.4.3.2 The organization-name attribute values selected by an AMHS Management Domain shall be supplied to ICAO for publication in the ICAO Register of AMHS Management Domains, in association with the ICAO Location Indicators included in the geographical unit represented by each organization-name attribute value.

2.5.1.5 AMHS Naming Schemes

For the support of the Extended ATS Message Handling Service, the directory name of an AMHS user shall comply with the provisions of Document 9705 Sub-Volume VII / Document 9880 Part IV.

2.5.2 Upper Layer Naming and Addressing

2.5.2.1 Application Process Titles

2.5.2.1.1 **Recommendation.—** *The Application Process Title of an ATS Message Server should be as specified in 4.3.2.2 of Document 9705 Sub-Volume IV / Document 9880 Part III.*

2.5.2.1.2 **Recommendation.—** *The Application Process Title of an AFTN/AMHS Gateway should be as specified in 4.3.2.2 of Document 9705 Sub-Volume IV / Document 9880 Part III.*

2.5.2.1.3 **Recommendation.—** *The Application Process Title of an ATS Message User Agent should be as specified in 4.3.2.2 of Document 9705 Sub-Volume IV / Document 9880 Part III.*

2.5.2.2 Application Entity Qualifiers

2.5.2.2.1 **Recommendation.—** *The Application Entity Qualifier of an ATS Message Server should be "AMS" (integer value 7).*

2.5.2.2.2 **Recommendation.—** *The Application Entity Qualifier of an AFTN/AMHS Gateway should be "GWB" (integer value 8).*

2.5.2.2.3 **Recommendation.—** *The Application Entity Qualifier of an ATS Message User Agent should be "AUA" (integer value 9).*

2.5.2.3 Transport, Session and Presentation Addresses

The TSAP (Transport Service Access Point) of an ATS Message Server or of an ATS Message User Agent shall comply with the provisions of 5.4 of Document 9705 Sub-Volume V / Document 9880 Part III.

2.5.2.3.1 The assignment of a transport selector value is a matter local to an AMHS Management Domain.

2.5.2.3.2 The format and encoding of a session selector in the AMHS is specified in ISO/IEC ISP 11188-1, section 9.3.

2.5.2.3.3 The assignment and administration of session selectors is a matter local to an AMHS Management Domain.

2.5.2.3.4 The format and encoding of a presentation selector in the AMHS is specified in ISO/IEC ISP 11188-1, section 7.2.

2.5.2.3.5 The assignment and administration of presentation selectors is a matter local to an AMHS Management Domain.

2.6 AMHS Routing and rerouting

2.6.1 The definition of AMHS routing shall be subject to multilateral agreements.

2.6.2 The MTAs implemented by an AMHS Management Domain shall be collectively able to route on *country-name*, *ADMD-name*, *PRMD-name*, *organization-name* and *organizational-units-name* attributes.

2.7 AMHS Traffic logging upon origination

2.7.1 An AMHS Management Domain shall be responsible for long-term logging of all messages in their entirety which are originated by its direct AMHS users, for a period of at least thirty days.

2.7.1.1 This requirement implies the logging of the entire BER-encoded ASN.1 messages.

3 ATS MESSAGE HANDLING SERVICE SPECIFICATION

3.1 ATS Message User Agent Specification

3.1.1 Overview of the specification

3.1.1.1 For the support of the Basic ATS Message Handling Service, an ATS Message User Agent complies with:

a) the UA profile specified in 3.1.2, based on AMH21 as specified in ISO/IEC ISP 12062-2:1995 (1st or later Edition) and supporting the requirements of Repertoire Group A, for messages including a body part whose type is an Extended Body Part Type of general-text-body-part type; and

b) the provisions related to traffic logging as specified in 3.1.3.

3.1.1.2 For the support of the Extended ATS Message Handling Service, an ATS Message User Agent additionally complies with:

a) the specification of 3.1.4.2, which mandates the support of the IPM Business Class (BC) Functional Group (FG) as specified in ISO/IEC ISP 12062-2:2003 (3rd Edition), and the support of bilaterally defined body-parts, in addition to the Message Content profile specification defined for the Basic ATS Message Handling Service;

b) the UA profile specified in 3.1.4.3, based on either of the following profiles, and depending on the inclusion of a MS in the attachment ATS Message Server, and on the application-contexts supported by the attachment ATS Message Server:

   1) AMH23 (MTS Access - P3) as specified in ISO/IEC ISP 12062-4:2003;

   2) AMH25 (MTS 94 Access - P3) as specified in ISO/IEC ISP 12062-4:2003;

   3) AMH24 (Enhanced MS Access - P7) as specified in ISO/IEC ISP 12062-5:2003; or

   4) AMH26 (Enhanced MS 94 Access - P7) as specified in ISO/IEC ISP 12062-6:2003.

c) the DUA profile specified in 3.1.5 and referring to Document 9705 Sub-Volume VII / Document 9880 Part IV.

3.1.2 UA profile specification in support of the Basic ATS Message Handling Service

3.1.2.1 In the Basic ATS Message Handling Service, there is no profile specification for the ATS Message

User Agent at the level of the access protocol, i.e. at the level of the communication with the associated ATS Message Server, as this is considered to be a matter local to each AMHS Management Domain. If it is desired to use standard ISO/IEC 10021 protocols for this communication, then profile AMH23 (for P3) or profile AMH24 (for P7) as specified in ISO/IEC ISP 12062-4:1995 (or a later edition) or ISO/IEC ISP 12062-5:1995 (or a later edition), respectively, may be implemented.

3.1.2.2 Message Content Profile Specification

In an ATS Message User Agent, the content of the Inter-Personal Messages conveyed in support of the Basic ATS Message Handling Service shall conform to the basic requirements of AMH21 as specified in Clause A.1 of ISO/IEC ISP 12062-2:1995 (or a later edition), Annex A and to the additional requirements described in Table 3-1 which are specific to the Basic ATS Message Handling Service.

3.1.2.2.1 Table 3-1 specifies the additional requirements in the form of a PRL (Profile Requirement List) expressing restrictions to a set of rows of the AMH21 profile, which are referred to using their reference in ISO/IEC ISP 12062-2.

3.1.2.2.2 The specified requirements imply the use of Interpersonal Messaging as specified in 1988 or later.

Table 3-1. Requirements specific to the Basic ATS Message Handling Service in addition to profile AMH21

Ref	Element	Origination		Reception		Basic ATS Message Service Support	ATN reference	ISP 12062-2 Notes/ References
		Base	ISP	Base	ISP			
PART 1 : AMH21/A.1.3 IPM BODY								
1	ia5-text	O	O	O	M	O/M		
1.2	data	M	M	M	M	M/M	3.3.3	
PART 2 : AMH21/A.1.3.1 EXTENDED BODY PART SUPPORT								
1	ia5-text-body-part	O	O	O	M	O/M		see AMH21/ A.1.3/1
11	general-text-body-part	O	M	O	M	M/M	3.3.3 and Table 3-1 Part 4	
PART 3 : AMH21/A.1.5 COMMON DATA TYPES								
1	RecipientSpecifier							
1.2	notification-requests	O	O	M	M	M/M	3.3.6	

Ref	Element	Origination		Reception		Basic ATS Message Service Support	ATN reference	ISP 12062-2 Notes/ References
		Base	ISP	Base	ISP			
1.2.1	rn	O	O	O	O	M/M	3.3.6	
1.2.2	nrn	O	O	M	M	M/M		
2	ORDescriptor							
2.1	formal-name	M	M1	M	M1	M1/M1	3.3.2.1	
PART 4 : AMH21/A.1.3.2 GENERAL TEXT REPERTOIRE SUPPORT								
1	Basic (ISO 646) (repertoire identifiers {1, 6})	M	M	M	M	M/M		Repertoire Group A
2	Basic-1 (ISO 8859-1) (repertoire identifiers {1, 6, 100}	O	M	O	M	O/O		Repertoire Group B

Legend : see 1.3

M = mandatory support

M1 = mandatory O/R name minimal support

O = optional support

3.1.2.3 Additional requirements upon MT-Elements of Service at an ATS Message User Agent

3.1.2.3.1 For the support of the Basic ATS Message Handling Service, the *priority* element of an AMHS Message generated at an ATS Message User Agent shall take the value "urgent" if, and only if, the value of the priority-indicator in the ATS-Message-Priority as specified in 3.3.3.3.2 is "SS".

3.1.2.3.2 For the support of the Basic ATS Message Handling Service, the *priority* element of an AMHS Message generated at an ATS Message User Agent shall take the value "urgent" only if it is ascertained that the MF-Addresses identifying the message recipients do not specify a Distribution List name.

3.1.2.3.2.1 Failure to meet this dynamic behaviour requirement may result in the absence of receipt-notification, even if the message has been properly delivered to the DL.

3.1.2.3.2.2 In the Basic ATS Message Handling Service, the way to determine that a MF-Address does not specify a DL-name is considered a local matter.

3.1.2.4 Interpretation of UTC Time values

When generating and interpreting UTC Time values, an ATS Message User Agent shall associate dates up to ten years prior to the current time and up to forty years ahead of the current time with the corresponding century, with the interpretation of the remaining 49 values being implementation dependent.

3.1.2.4.1 This requirement is aligned on the convention used in ISO 10021-4:1997/Cor. 1:1998 and in ISO 10021-7:1997/Cor. 1:1998 for equivalent purposes.

3.1.3 Traffic logging requirements at an ATS Message User Agent

3.1.3.1 The requirement in 2.7 may be implemented in the ATS Message User Agent.

3.1.4 Additional UA profile specification in support of the Extended ATS Message Handling Service

3.1.4.1 An ATS Message User Agent supporting the Extended ATS Message Handling Service also needs to maintain the Basic ATS Message Handling Service capability. Therefore the requirements in 3.1.4 are in addition to those in 3.1.2.

3.1.4.2 Message Content Profile Specification

3.1.4.2.1 An ATS Message User Agent supporting the Extended ATS Message Handling Service shall conform to:

a) the requirements of 3.1.2.2;

b) the requirements additional to AMH21, described in Clause A.2.5 of ISO/IEC ISP 12062-2:2003 for the support of the IPM Business Class (BC) Functional Group; and

c) the additional requirements described in Table 3-2.

3.1.4.2.1.1 Table 3-2 specifies the additional requirements in the form of a PRL (Profile Requirement List) expressing restrictions to a set of rows of the AMH21 profile, which are referred to using their reference in ISO/IEC ISP 12062-2:2003.

3.1.4.2.1.2 The use of the bilaterally-defined body part as specified in Table 3-2/AMH21/A1.3.1 enables the exchange of unstructured binary data. In accordance with ISO/IEC 10021-7 7.3.10 and the subsequent Note, its use is now discouraged.

3.1.4.2.1.3 The use of the file-transfer body part as specified in Table 3-2/AMH21/A1.3.1 is the preferred means of conveying unstructured binary data in IPMs exchanged between ATS Message User Agents.

3.1.4.2.1.4 The requirements in 3.1.4.2.1 imply the use of Interpersonal Messaging as specified in 1988 or later.

Table 3-2. Requirements specific to the Extended ATS Message Handling Service in addition to the Basic ATS Message Handling Service

Ref	Element	Origination		Reception		Extended ATS Message Service Support	ATN reference	ISP 12062-2 Notes/References
		Base	ISP	Base	ISP			
PART 1 : AMH21/A.1.2 IPM HEADING FIELDS								
17	extensions	M	M	M	M	M/M	3.3.4.1	
17.6	authorization-time	O	O	O	O	M/M	3.3.4.2	
17.12	originators-reference	O	O	O	O	M/M	3.3.4.3	
17.13	precedence-policy-identifier	O	O	O	O	M/M	3.3.4.4	
PART 2 : AMH21/A.1.3 IPM BODY								
10	bilaterally-defined	O	O	O	M	O/M	3.3.5	
PART 3 : AMH21/A.1.3.1 EXTENDED BODY PART SUPPORT								
9	bilaterally-defined-body-part	O	O	O	O	O/M	3.3.5.1	
12	file-transfer-body-part	O	O	O	O	M/M	0 and 3.3.5.2	AMH21/ A.1.3.3
PART 4 : AMH21/A.1.5 COMMON DATA TYPES								
1	RecipientSpecifier							
1.4	recipient-extensions	O	M	O	M	M/M	3.3.4.1	
1.4.3	precedence	O	O	O	O	M/M	3.3.4.5	

Legend : see 1.3.2

M = mandatory support

M1 = mandatory O/R name minimal support

O = optional support

3.1.4.2.1.5 For the encoding of a file-transfer-body-part, the octet-aligned EXTERNAL encoding shall be used as specified in ISO/IEC ISP 12062-2:2003. Only one EXTERNAL component shall be used. Where the file to be conveyed contains a compound structure, this may be represented as a SEQUENCE OF

EXTERNALS; the primary data shall be placed in the first EXTERNAL. Receiving systems may ignore all but the first EXTERNAL in the SEQUENCE.

3.1.4.3 Requirements upon MT-Elements of Service at an ATS Message User Agent

3.1.4.3.1 For the support of the Extended ATS Message Handling Service, an ATS Message User Agent shall support either of the following, depending on the inclusion of a MS in the attachment ATS Message Server, and on the application-contexts supported by the attachment ATS Message Server :

a) a profile based on profile AMH23 (MTS Access - P3), as specified in ISO/IEC ISP 12062-4:2003, conforming to:

   1) the basic requirements of AMH23, as specified in Clause B.1 of the referenced ISP,

   2) the additional requirements described in Clause B.2.7 of the referenced ISP for the support of the IPM Security (SEC) Functional Group, implementing Security-Class S0, and

   3) the additional requirements described in Clause B.2.8 of the referenced ISP for the support of the IPM Use of Directory (DIR) Functional Group;

b) a profile based on profile AMH25 (MTS 94 Access - P3), as specified in ISO/IEC ISP 12062-4:2003, conforming to:

   1) the basic requirements of AMH25, as specified in Clause B.1 of the referenced ISP,

   2) the additional requirements described in Clause B.2.7 of the referenced ISP for the support of the IPM Security (SEC) Functional Group, implementing Security-Class S0, and

   3) the additional requirements described in Clause B.2.8 of the referenced ISP for the support of the IPM Use of Directory (DIR) Functional Group;

c) a profile based on profile AMH24 (Enhanced MS Access - P7), as specified in ISO/IEC ISP 12062-5:2003, conforming to:

   1) the basic requirements of AMH24, as specified in Clauses A.1 and B.1 of the referenced ISP for a MS-user,

   2) the additional requirements described in Clause B.2.7 of the referenced ISP for the support by a MS-user of the IPM Security (SEC) Functional Group, implementing Security-Class S0,

   3) the additional requirements described in Clause B.2.8 of the referenced ISP for the support by a MS-user of the IPM Use of Directory (DIR) Functional Group, and

4) the additional requirements described in Clause B.2.9 of the referenced ISP for the support by a MS-user of the IPM Business Class (BC) Functional Group; or

d) a profile based on profile AMH26 (Enhanced MS 94 Access - P7), as specified in ISO/IEC ISP 12062-6:2003, conforming to:

1) the basic requirements of AMH26, as specified in Clauses A.1 and B.1 of the referenced ISP for a MS-user,

2) the additional requirements described in Clause B.2.7 of the referenced ISP for the support by a MS-user of the IPM Security (SEC) Functional Group, implementing Security-Class S0,

3) the additional requirements described in Clause B.2.8 of the referenced ISP for the support by a MS-user of the IPM Use of Directory (DIR) Functional Group, and

4) the additional requirements described in Clause B.2.13 of the referenced ISP for the support by a MS-user of the IPM Business Class (BC) Functional Group.

3.1.4.3.1.1 Due to the structure of ISO/IEC ISPs, provision 3.1.4.3.1 implicitly places requirements concerning the P3 or P7 implementation for the support of:

a) the basic requirements of AMH12, AMH13, AMH14, AMH15 specified for Common Messaging in annex A.1 of ISO/IEC ISP 10611-4:2003, 10611-5:2003, 10611-4:2003, or 10611-6:2003, respectively;

b) the additional requirements specified for the Common Messaging Security SEC Functional Group (implementing Security-Class S0) in annex A.2 of these ISPs for a MTS-user or MS-user, as appropriate; and

c) the additional requirements specified for the Common Messaging Use of Directory DIR Functional Group in annex A.2 of these ISPs for a MTS-user or MS-user, as appropriate.

3.1.4.3.2 Security requirements

3.1.4.3.2.1 For the support of security in the context of the Extended ATS Message Handling Service, an ATS Message User Agent shall make use of the Elliptic Curves Digital Signature Algorithm (ECDSA) as specified in Document 9705 Sub-Volume VIII / Document 9880 Part IV, for the signature algorithm.

3.1.4.3.2.2 For the generation of a secure AMHS message in compliance with the AMHS security policy defined in 2.2.3.2, an ATS Message User Agent supporting the Extended ATS Message Handling Service shall include in the *per-recipient-extensions* of the message envelope, for each intended recipient, a *message-token*:

a) generated as specified in Table 3-3; and

b) with a *criticality* field of the extension element taking the abstract-value "non-critical".

3.1.4.3.2.2.1 Table 3-3 specifies the generation of the message token in the form of a PRL (Profile Requirement List) expressing requirements on both static support and dynamic use of the Message Token components. The rows, references and ISP requirements are extracted from the AMH12 - MTS Access (P3) profile, as specified in ISO/IEC ISP 10611-4:2003. The specification applies identically if the ATS Message User Agent implements another P3 or P7 profile, since the Message Token description is common to all P3/P7 profiles.

Table 3-3.Use of Security Elements (Message Token) in the Extended ATS Message Handling Service

Ref	Element	Static Support Requirements			Dynamic action upon	ATN Reference
		Base	ISP (with support of SEC S0 FG)	Exten-ded ATS Mess. Service	generation of a secure message	
PART 1 : AMH12/A.1.9/4 EXTENSION DATA TYPES (MESSAGE TOKEN)						
4	MessageToken	O	M	M	G	
4.1	token-type-identifier	M	M	M	G	3.1.4.3.2.2.2
4.2	asymmetric-token	M	M	M	G	3.1.4.3.2.2.3
4.2.1	signature-algorithm-identifier	M	M	M	G	3.1.4.3.2.2.4
4.2.2	Name	M	M	M	G	3.1.4.3.2.2.5
4.2.3	Time	M	M	M	G	3.1.4.3.2.2.6
4.2.4	signed-data	O	M	M	G	
4.2.4.1	content-confidentiality-algorithm-identifier	O	C1	O	O	see Note
4.2.4.2	content-integrity-check	O	M	M	G	3.1.4.3.2.2.7
4.2.4.3	message-security-label	O	O	O	O	see Note
4.2.4.4	proof-of-delivery-request	O	O	O	O	see Note
4.2.4.5	message-sequence-number	O	O	O	O	see Note
4.2.5	encryption-algorithm-identifier	O	O	O	O	see Note
4.2.6	encrypted-data	O	O	O	O	see Note

Ref	Element	Static Support Requirements			Dynamic action upon generation of a secure message	ATN Reference
		Base	ISP (with support of SEC S0 FG)	Exten-ded ATS Mess. Service		
4.2.6.1	content-confidentiality-key	O	O	O	O	see Note
4.2.6.2	content-integrity-check	M	M	M	O	see Note
4.2.6.3	message-security-label	O	O	O	O	see Note
4.2.6.4	content-integrity-key	O	O	O	O	see Note
4.2.6.5	message-sequence-number	O	O	O	O	see Note

Legend (see 1.3):
M = mandatory support
O = optional static support or optional dynamic use
C1 = if S0C then M else O
G = generated
Note: this element is not required as part of the AMHS security policy

3.1.4.3.2.2.2 In a secure AMHS message, the element *token-type-identifier* shall take the abstract value "asymmetric-token".

3.1.4.3.2.2.3 In a secure AMHS message, each *asymmetric-token* element shall be computed as specified in ISO/IEC 10021-4 by application of an ASN.1 SIGNED macro using DER as specified in ISO/IEC 9594-8 / X.509, where the signature is generated by application of the ATN Signature Generation Primitive (ASP) specified in Document 9705 Sub-Volume VIII / Document 9880 Part IV.

3.1.4.3.2.2.3.1 There is no requirement to encode the full message using DER, but for the ASN.1 SIGNED and SIGNATURE macros the use of encoding rules providing canonicity is mandated by X.509.

3.1.4.3.2.2.4 In a secure AMHS message, the *signature-algorithm-identifier* element of each *message-token* shall contain the algorithm OID value corresponding of the ATN signature scheme ("ecdsa-with-SHA1"), as specified in Document 9705 Sub-Volume VIII / Document 9880 Part IV, and NULL parameters.

3.1.4.3.2.2.5 The *name* element of each *message-token* shall contain either the MF-address or the Directory Name of the intended recipient.

3.1.4.3.2.2.6 The *time* element of each *message-token* shall contain the time at which the message was generated.

3.1.4.3.2.2.7 The *content-integrity-check* extension element of each *message-token* shall contain:

a) a digital signature applied to the concatenation of the OID value corresponding of the

ATN signature scheme and of the *message-content*; and

b) a *criticality* field of the extension element taking the abstract-value "non-critical".

3.1.4.3.2.3 Upon reception of an AMHS message containing security elements, an ATS Message User Agent supporting the Extended ATS Message Handling Service shall make use of a valid originator's certificate to decode and verify the contained security elements by application of the ATN Signature Verification Primitive (AVP) specified in Document 9705 Sub-Volume VIII / Document 9880 Part IV.

3.1.4.3.2.3.1 The originator's certificate may be obtained from the ATN Directory, or from the subject AMHS message itself if the originator included its certificate as a per-message-extension field of the message envelope, or from a local source.

3.1.4.3.2.3.2 The validity of the originator's certificate may be checked using the mechanisms defined in Document 9705 Sub-Volume VIII / Document 9880 Part IV which may include the use of ATN Certificate Revocation Lists (CRLs).

3.1.4.3.2.3.3 The verification of the digital signature may require DER re-encoding of the elements in clear which had been signed, prior to the application of the hashing-function for verification.

3.1.5 For the support of the Extended ATS Message Handling Service, an ATS Message User Agent shall include a Directory User Agent:

a) supporting the DAP Profile specified in Document 9705 Sub-Volume VII / Document 9880 Part IV; and

b) supporting the DUA Object-Classes and Attribute Types specified in Document 9705 Sub-Volume VII / Document 9880 Part IV.

3.1.5.1 The communication and interworking between the (MHS) UA and the DUA included in an ATS Message User Agent are considered to be a local implementation matter, and as such they are not specified in this document.

3.2 ATS Message Server Specification

3.2.1 Overview of the specification

3.2.1.1 For the support of the Basic ATS Message Handling Service, an ATS Message Server shall comply with:

a) the profile specification expressed in 3.2.2; and

b) the provisions related to traffic logging as specified in 3.2.3.

3.2.1.2 For the support of the Extended ATS Message Handling Service, an ATS Message Server shall additionally comply with:

a) one or several of the MTS-access and/or MS-access profiles specified in 3.2.4, based

on the following profiles, depending on the inclusion of a MS in the ATS Message Server, and on the application-contexts supported by the ATS Message Server:

1) AMH12 (MTS Access - P3) as specified in ISO/IEC ISP 10611-4:2003;

2) AMH14 (MTS 94 Access - P3) as specified in ISO/IEC ISP 10611-4:2003;

3) AMH13 (Enhanced MS Access - P7) as specified in ISO/IEC ISP 10611-5:2003; and

4) AMH15 (Enhanced MS 94 Access - P7) as specified in ISO/IEC ISP 10611-6:2003.

b) the DUA profile specified in 3.2.5 and referring to Document 9705 Sub-Volume VII / Document 9880 Part IV.

3.2.2 Profile Specification in support of the Basic ATS Message Handling Service

3.2.2.1 P1 and Upper Layer Requirements

In an ATS Message Server, the Message Transfer (P1) implementation of the IPM Service in support of the Basic ATS Message Handling Service shall conform to:

a) the basic requirements of AMH22 as specified in Clause B.1 of ISO/IEC ISP 12062-3:1995, Annex B; and

b) the additional requirements described in Clause B.2.2. for the support of the IPM Distribution List Functional Group.

3.2.2.1.1 Provision 3.2.2.1 implicitly places the following requirements upon the P1 implementation:

a) the basic requirements of AMH11 specified for Common Messaging in annex A.1 of ISO/IEC ISP 10611-3:1994, implying the mandatory support of the AMH111 Profile implementing the mts-transfer application context; and

b) the additional requirements specified for the Common Messaging DL (Distribution List) Functional Group in annex A.2.2 of ISO/IEC ISP 10611-3:1994.

3.2.2.1.2 As a consequence of 3.1.1.2, the optional implementation of Message Stores (MS) in an ATS Message Server, being related to the access protocol from an ATS Message User Agent to an ATS Message Server, is a matter local to each AMHS Management Domain.

3.2.2.1.3 The additional support by an ATS Message Server of the AMH112 Profile as specified in ISO/IEC ISP 10611-3:1994, for conformance to CCITT X.400 in order to interconnect with public ADMDs is a matter of policy local to each AMHS Management Domain.

3.2.2.1.4 For the use of the Association Control Service Element (ACSE) by an AMHS application, the

application-context name which is used as a parameter in an A-ASSOCIATE is defined in the base standards (see ISO/IEC 10021-6).

3.2.2.1.5 The specification in 3.2.2.1 places no requirements for the Reliable Transfer Service Element (RTSE) and for ACSE other than conformance with ISO/IEC ISP 10611-2:1994 in accordance with the P1 application-context(s) for which conformance is claimed.

3.2.2.1.6 The specification in 3.2.2.1 places no requirements for the Presentation and Session Layers other than conformance with ISO/IEC ISP 10611-2:1994 in accordance with the P1 application-context(s) for which conformance is claimed.

3.2.2.2 Use of the Transport Service

3.2.2.2.1 The Basic ATS Message Handling Service shall make use of the Connection Mode Transport Service in either or both or the following configurations:

a) provided by the Internet Communications Service (ATN ICS) as generally specified in Doc 9705 Sub-Volume V / Doc 9880 Part III, with the additional provisions of 3.2.2.2.2; or

b) provided by the Internet Protocol Suite as generally specified in the "ICAO Manual on detailed technical specifications for the Aeronautical Telecommunication Network using ISOC standards for the Internet Protocol Suite (ATN/IPS)" (Document 9896), with the additional provisions of 3.2.2.2.3.

3.2.2.2.1.1 For the support of the Basic ATS Message Handling Service, the use of the expedited data option at the establishment of the transport connection is a local matter which may depend on the implemented application-context.

3.2.2.2.2 Transport Service over the ATN ICS

3.2.2.2.2.1 For the support of the Basic ATS Message Handling Service over the ATN ICS, the Connection Mode Transport Service provided by the ATN Connection-Oriented Transport Protocol (COTP) as specified in 5.5 of Document 9705 Sub-Volume V / Document 9880 Part III shall be used.

3.2.2.2.2.2 For the support of the Basic ATS Message Handling Service, transport connections shall be established over the ATN Transport Service between systems belonging to the AMHS using the Residual Error Rate (RER) abstract-value "high".

3.2.2.2.2.3 For the support of the Basic ATS Message Handling Service, transport connections shall be established over the ATN Transport Service between systems belonging to the AMHS using the Transport Connection Priority abstract-value "6", which corresponds to the message category "flight regularity communications".

3.2.2.2.2.4 For the support of the Basic ATS Message Handling Service, transport connections shall be established over the ATN Transport Service between systems belonging to the AMHS using the value of the ATN Security Label as specified in 5.6 of Document 9705 Sub-Volume V / Document 9880 Part III, which corresponds to:

a) the ATN Traffic Type "ATN Operational Communications";

b) the Sub-Type "Air Traffic Services Communications" (ATSC); and

c) "No Traffic Type Policy Preference".

3.2.2.2.3 Transport Service over the ATN IPS

3.2.2.2.3.1 For the support of the Basic ATS Message Handling Service over the ATN IPS, the Connection Mode Transport Service provided by the IPS Transmission Control Protocol (TCP) shall be used.

3.2.2.2.3.2 When the IPv4 protocol version is used, the Connection Mode Transport Service over TCP shall be provided as specified in RFC1006.

3.2.2.2.3.3 When the IPv6 protocol version is used, the Connection Mode Transport Service over TCP shall be provided as specified in RFC2126.

3.2.2.3 Interpretation of UTC Time values

When generating and interpreting UTC Time values, an ATS Message Server shall associate dates up to ten years prior to the current time and up to forty years ahead of the current time with the corresponding century, with the interpretation of the remaining 49 values being implementation dependent.

Note.— This requirement is aligned on the convention used in ISO 10021-4:1997/Cor. 1:1998 for equivalent purposes.

3.2.3 Traffic logging requirements at an ATS Message Server

3.2.3.1 The ATS Message Server shall perform a long-term logging, for a period of at least thirty days, of the actions taken with respect to every message received at the ATS Message Server, whether from an ATS Message User Agent or from another ATS Message Server, and to every report received or generated at the ATS Message Server.

3.2.3.2 For the long-term logging of information related to a message submitted to or received by an ATS Message Server, the following parameters related to the message shall be logged:

a) *message-identifier*;

b) *priority*;

c) *content-type*;

d) *originator-name*;

e) *recipient-name* elements on responsibility list, which identifies recipients whose *perRecipientIndicator responsibility* bit has the abstract-value "responsible";

f) message-content-size;

g) last element of the *trace-information* (if any);

h) *arrival-time* or *submission-time*;

i) transfer destination (if any);

j) transfer time (if any);

k) *this-recipient-name* (if message delivery is performed by the ATS Message Server);

l) *delivery-time* (if any);

m) delivery and/or non-delivery reports generated (if any); and

n) event date/time.

3.2.3.3 For the long-term logging of information related to a report generated or received by an ATS Message Server, the following parameters related to the report shall be logged:

a) *report-identifier*;

b) *subject-identifier*;

c) *actual-recipient-name* elements;

d) *report-type* elements;

e) *report-destination-name*;

f) last element of the *trace-information* (if any);

g) *arrival-time* in the ATS Message Server or generation time;

h) transfer destination (if any);

i) transfer time (if any);

j) *OR-name* of the report recipient (if report delivery is performed by the ATS Message Server);

k) *delivery-time* (if any); and

l) event date/time.

3.2.4 Additional profile specification in support of the Extended ATS Message Handling Service

3.2.4.1 An ATS Message Server supporting the Extended ATS Message Handling Service also needs to maintain the Basic ATS Message Handling Service capability. Therefore the profile requirements in this section are in addition to those in 3.2.2.

3.2.4.2 Additional requirements for the P1 profile

For the support of the Extended ATS Message Handling Service, an ATS Message Server shall conform to the additional requirements described in Clause A.2.8 of ISO/IEC ISP 10611-3:1994 (or a later edition), for the support by a MTA of the DIR Functional Group.

3.2.4.3 MTA Profile specification for MTS-Access

For the support of the Extended ATS Message Handling Service, an ATS Message Server shall support one or two profiles based on profiles AMH12 and/or AMH14 as specified in ISO/IEC ISP 10611-4:2003, conforming to:

a) the basic requirements of AMH12 and/or AMH14, as specified in Clause A.1 of the referenced ISP for a MTA,

b) the additional requirements described in Clause A.2.7 of the referenced ISP for a MTA, for the support by a MTA of the SEC Functional Group, implementing Security-Class S0, and

c) the additional requirements described in Clause A.2.8 of the referenced ISP for a MTA, for the support by a MTA of the DIR Functional Group.

3.2.4.4 MS Profile specification for MS-Access

For the support of the Extended ATS Message Handling Service, if it includes one or several MS, an ATS Message Server shall support one or two profiles based on profile AMH13 as specified in ISO/IEC ISP 10611-5:2003 and/or AMH15 as specified in ISO/IEC ISP 10611-6:2003 conforming to:

a) the basic requirements of AMH13 and/or AMH15, as specified in Clause A.1 of the referenced ISPs for a MS,

b) the additional requirements described in Clause A.2.5 of the referenced ISPs for the support by a MS of the SEC Functional Group, implementing Security-Class S0, and

c) the additional requirements described in Clause A.2.6 of the referenced ISPs for the support by a MS of the DIR Functional Group.

3.2.5 For the support of the Extended ATS Message Handling Service, an ATS Message Server shall include a Directory User Agent:

a) supporting the DAP Profile specified in Document 9705 Sub-Volume VII / Document 9880 Part IV; and

b) supporting the DUA Object-Classes and Attribute Types specified in Document 9705 Sub-Volume VII / Document 9880 Part IV.

3.2.5.1 The communication and interworking between the MTA and the DUA included in an ATS Message Server are considered to be a local implementation matter, and as such they are not specified in this document.

3.3 Parameters

3.3.1 General characteristics

3.3.1.1 The parameters used upon creation of an IPM depend upon:

a) the level of service, Basic or Extended, supported by the originator;

b) the nature of data (text or binary) which is intended to be exchanged; and

c) the level of service, Basic or Extended, supported by the intended recipients.

3.3.1.2 A direct AMHS user may determine from the information stored in the AMHS Directory, what is the level of service supported by the intended recipients of the message.

3.3.2 AMHS Addresses

3.3.2.1 In the AMHS, the O/R address of a direct AMHS user belonging to an AMHS Management Domain shall be a MF-Address.

3.3.3 Text

3.3.3.1 ia5-text body or body parts shall be used only for IPMs in support of textual data exchange.

3.3.3.2 The body of an Inter-Personal Message (IPM) shall comprise a single body part carrying IA-5 characters and structured as depicted in Table 3-4.

3.3.3.2.1 The body part structure of an IPM and its components which are described in 3.3.3 are specific to the Basic ATS Message Handling Service.

3.3.3.2.2 Section 3.3.3 places no constraint on the implementation of an IPM, which may take place at the level of the user-interface.

3.3.3.2.3 This requirement relates to the static capability of an ATS Message User Agent to generate such a structured body part.

Table 3-4. Structure of an IPM ia5-text body part in the ATS Message Handling Service

Ref	Element	Basic ATS Message Handling Service Support		Value	IA-5 Encoding
		Orig	Rec		
1	ATS-Message-Header	M	M	see 3.3.3.3	
1.1	start-of-heading	M	M	(SOH)	(0/1)
1.2	ATS-Message-Priority	M	M		
1.2.1	priority-prompt	M	M	PRI:(single space)	(5/0)(5/2)(4/9)(3/10)(2/0)
1.2.2	priority-indicator	M	M	see 3.3.3.3.2	see 3.3.3.3.2
1.2.3	priority-separator	M	M	(CR)(LF)	(0/13)(0/10)
1.3	ATS-Message-Filing-Time	M	M		
1.3.1	filing-time-prompt	M	M	FT:(single space)	(4/6)(5/4)(3/10)(2/0)
1.3.2	filing-time	M	M	see 3.3.3.3.3	see 3.3.3.3.3
1.3.3	filing-time-separator	M	M	(CR)(LF)	(0/13)(0/10)
1.4	ATS-Message-Optional-Heading-Info	O	M		
1.4.1	OHI-prompt	M	M	OHI:(single space)	(4/15)(4/8)(4/9)(3/10)(2/0)
1.4.2	optional-heading-information	M	M	see 3.3.3.3.4	see 3.3.3.3.4
1.4.3	OHI-separator	M	M	(CR)(LF)	(0/13)(0/10)
1.5	start-of-text	M	M	(STX)	(0/2)
2	ATS-Message-Text	M	M	see 3.3.3.4	see 3.3.3.4

Legend (see 1.3):
M = mandatory support
O = optional support

3.3.3.3 ATS Message Header

3.3.3.3.1 The ATS Message Header shall be generated by the originating user if:

a) the originator supports only the Basic ATS Message Handling Service; or

b) at least one of the intended recipients of the message supports only the Basic ATS Message Handling Service.

3.3.3.3.1.1 This requirement relates to the dynamic behaviour of the user upon origination.

3.3.3.3.2 ATS Message Priority

Each message shall be assigned to one of five priority groups which are designated by the priority indicators SS, DD, FF, GG and KK, and are contained in the priority-indicator element if the ATS Message Header is generated by the originating user.

3.3.3.3.3 ATS Message Filing Time

Each message shall include a filing-time element, designated as a date-time group consisting of six numerical characters, the first two digits representing the date of the month and the last four digits the hours and minutes in UTC, if the ATS Message Header is generated by the originating user.

3.3.3.3.4 ATS Message Optional Heading Info

3.3.3.3.4.1 It shall be possible to associate an optional heading information with each message, contained in the optional-heading-information element if the ATS Message Header is generated by the originating user.

3.3.3.3.4.2 The value of the optional-heading-information element shall comprise a character string with a maximum length of either:

a) 53 characters if the message priority differs from "SS"; or

b) 48 characters if the message priority is "SS".

3.3.3.3.4.3 The ATS-Message-Optional-Heading-Info shall be absent if the optional-heading-information is empty.

3.3.3.4 ATS Message Text

The ATS-Message-Text element shall be composed of IA-5 characters with no further restriction.

3.3.4 Use of IPM elements in support of the Extended ATS Message Handling Service

3.3.4.1 The following IPM Heading fields and recipient extensions shall be generated by an originating Extended ATS Message Handling Service user if all the intended recipients of the message support the Extended ATS Message Handling Service:

a) *authorization-time*;

b) *originators-reference*;

c) *precedence-policy-identifier*; and

d) *precedence*.

3.3.4.2 Authorization-time

Each message generated by an originating Extended ATS Message Handling Service user shall include an authorization-time IPM heading field, as specified in ISO/IEC 10021-7:2003, section A.1.6, whose value will be equivalent to that of a filing time in the Basic ATS Message Handling Service, if all the intended recipients of the message support the Extended ATS Message Handling Service.

3.3.4.3 Originators-reference

3.3.4.3.1 It shall be possible to associate an optional heading information with each message generated by an originating Extended ATS Message Handling Service user, contained in the *originators-reference* IPM heading field, as specified in ISO/IEC 10021-7:2003, section A.1.12, if all the intended recipients of the message support the Extended ATS Message Handling Service.

3.3.4.3.2 The value of the optional heading information shall comprise a character string with a maximum length of either:

a) 53 characters if the message priority differs from "SS"; or

b) 48 characters if the message priority is "SS".

3.3.4.4 Precedence-policy-identifier

3.3.4.4.1 In support of the Extended ATS Message Handling Service, a precedence policy, as defined in ISO/IEC 10021-7:2003, shall apply as follows:

a) the only authorized values for the IPM precedence are those listed in the column "precedence value" of Table 3-5; and

b) the mapping between the IPM precedence and the AFTN priority is as stated in Table 3-5.

Table 3-5: Correspondence between IPM precedence and ATS message priority indicator

ATS message priority indicator	precedence value (integer)
SS	107
DD	71
FF	57
GG	28
KK	14

3.3.4.4.2 Each message generated by an originating Extended ATS Message Handling Service user shall include a *precedence-policy-identifier* IPM heading field, as specified in ISO/IEC 10021-7:2003, section A.1.13, if all the intended recipients of the message support the Extended ATS Message Handling Service.

3.3.4.4.3 The *precedence-policy-identifier* IPM heading field shall have the object-identifier value {iso (1) identified-organisation (3) icao (27) atn-amhs (8) parameters (0) amhs-precedence-policy (0)}.

3.3.4.5 Precedence

Each *recipient-specifier* element in a message generated by an originating Extended ATS Message Handling Service user shall include a *recipient-extensions* field in which the *precedence* recipient extension, as specified in ISO/IEC 10021-7:2003, section A.2.2, is present and has one of the values specified in Table 3-5, if all the intended recipients of the message support the Extended ATS Message Handling Service.

3.3.5 Binary data exchanges

3.3.5.1 **Recommendation.—** *The use of bilaterally-defined body parts for IPMs in support of binary data exchanges should be avoided.*

3.3.5.2 File-transfer body parts shall be used only for IPMs in support of the data exchanges that contain any binary data.

3.3.5.3 For the support of file-transfer body parts, an ATS Message User Agent shall comply with the requirements of ISO/IEC ISP 12062-2:2003 (AMH21) section A.1.3.3 (file transfer parameters).

3.3.6 Notification requests

The *notification-requests* element in a RecipientSpecifier in an IPM Heading shall take the abstract-value "rn" if, and only if, the value of the priority-indicator is "SS", and the message is not an acknowledgement message as specified in Annex 10, Volume II, 4.4.10.1.6.1 and 4.4.15.6.

Note.— This provision places no constraint on its implementation, which takes place at the level of the user-interface.

3.4 Subsetting rules

3.4.1 An implementation of an ATS Message User Agent or of an ATS Message Server claiming conformance to this Document for either the Basic ATS Message Handling Service or the Extended ATS Message Handling Service shall support the ATSMHS functional groups as shown in Table 3-6.

Table 3-6: Classification of ATSMHS Functional Groups

Functional Group	Status (Basic Service)	Status (Extended Service)	Associated Predicate
Basic ATS Message Handling Service	M	M	Basic
Use of File Transfer Body Parts for Binary data exchange	O	M	FTBP
Use of IPM Heading Extensions	O	M	IHE
AMHS Security	O	M	SEC
Use of Directory	O	M	DIR

3.4.2 An implementation of an ATS Message User Agent or of an ATS Message Server claiming conformance to this Document for a subset of the Extended ATS Message Handling Service shall support one configuration among those defined in Table 3-7.

Table 3-7: Definition of ATSMHS subsets

List of Configurations: ATSMHS subsets	Doc 9880 Status (Bas)	Doc 9880 Status (Ext)
I. Basic ATS Message Handling Service (Basic)	M	C.1
II. Basic + FTBP	-	C.1
III. Basic + IHE	-	C.1
IV. Basic + DIR	-	C.1
V. Basic + DIR + FTBP	-	C.1
VI. Basic + DIR + IHE	-	C.1
VII. Basic + DIR +SEC	-	C.1
VIII. Basic + IHE + DIR + SEC	-	C.1
IX. Basic + IHE + DIR + FTBP	-	C.1
X. Basic + IHE + DIR + FTBP + SEC	-	C.1

C.1 Only one configuration must be supported.

4 AFTN/AMHS GATEWAY SPECIFICATION

4.1 General

4.1.1 An AFTN/AMHS Gateway shall provide for an interworking between the AFTN and the ATN such that communication with other AFTN/AMHS Gateways and with ATS Message Servers is possible.

4.1.2 An AFTN/AMHS Gateway shall consist of the following logical components:

a) AFTN Component;

b) ATN Component;

c) Message Transfer and Control Unit;

d) Control Position; and

e) Directory User Agent, if the Gateway supports the Extended ATS Message Handling Service.

4.1.2.1 This division into logical components is a convenient way of specifying functions of a gateway. There is no requirement for an AFTN/AMHS Gateway to be implemented according to this structure.

4.1.3 An AFTN/AMHS Gateway shall be able to perform actions upon receipt of any category of AMHS information object by its ATN Component.

4.1.4 An AFTN/AMHS Gateway shall be able to perform actions upon receipt of any type of AFTN message by its AFTN Component.

4.1.5 An AFTN/AMHS Gateway supporting the Extended ATS Message Handling Service shall be able to retrieve information about AMHS users from ATN Directory System Agents.

4.2 AFTN/AMHS Gateway components

4.2.1 AFTN component

4.2.1.1 The AFTN component shall handle the interface to the AFTN and provide an interface to the Message Transfer and Control Unit, implementing:

a) all the applicable requirements of Annex 10, Volume II in a manner so as to be indistinguishable from an operational AFTN station by the AFTN centre to which the gateway is connected; and

b) additional requirements which are necessary due to the AFTN Component pertaining to an AFTN/AMHS Gateway.

4.2.1.2 If an AFTN/AMHS Gateway is connected to an AFTN centre which is capable of using only ITA-2 (International Telegraph Alphabet No 2) format, the AFTN component shall convert messages to/from the IA-5 format.

Note.— This allows the Message Transfer and Control Unit to use IA-5 characters internally, as specified in 4.2.3.2.

4.2.1.3 The AFTN Component shall incorporate an AFTN procedure handler providing for all AFTN functions prescribed for the interface to the AFTN.

4.2.1.4 When received by the AFTN Component, AFTN service messages as generally specified in Annex 10, Volume II, 4.4.1.1.9 and sub-paragraphs, shall be handled by the AFTN Component of the Gateway in one of four mutually exclusive manners, depending on the category of the service message:

a) transfer to the Message Transfer and Control Unit to be processed as specified in 4.4 if the service message is an AFTN acknowledgement message, as specified in Annex 10, Volume II, 4.4.10.1.6.1 and 4.4.15.6;

b) transfer to the Message Transfer and Control Unit to be processed as specified in 4.4 if the service message is an AFTN service message requesting correction of a message received with an unknown addressee indicator as specified in Annex 10, Volume II, 4.4.11.13.3;

c) processing as specified in 4.2.1.12 if the service message is an AFTN service message requesting from the originator repetition of an incorrectly received message when it is detected that a message has been mutilated, as specified in Annex 10, Volume II, 4.4.11.1 and 4.4.16.2.2; or

d) processing in compliance with the provisions of Annex 10, Volume II, without being passed to the Message Transfer and Control Unit, if the service message belongs to any other category of AFTN service message.

4.2.1.5 When received by an AFTN/AMHS Gateway, AFTN channel-check transmissions as specified in Annex 10, Volume II, 4.4.9.3 and 4.4.15.5 shall:

a) be handled by the AFTN Component in compliance with the provisions of Annex 10, Volume II; and

b) be prevented from being passed to the Message Transfer and Control Unit.

4.2.1.6 The AFTN Component shall pass all messages, other than those referred to in 4.2.1.4 c) and d), and in 4.2.1.5, received from the AFTN to the Message Transfer and Control Unit for processing as specified in 4.4, and provided that the conditions of 4.2.1.7 are met.

4.2.1.7 The processing by the AFTN Component shall ensure that all messages and service messages received from the AFTN and passed to the Message Transfer and Control Unit for further processing by the AFTN/AMHS Gateway are constructed in strict accordance with the provisions of Annex 10, Volume II, paragraphs 4.4.15.1 through 4.4.15.3.12 and 4.4.15.6.

4.2.1.8 The AFTN Component shall perform short-term retention of all messages transmitted towards the AFTN in a manner equivalent to that specified for an AFTN communication centre in Annex 10, Volume II, 4.4.1.7.

4.2.1.9 The AFTN Component shall perform long-term retention of the heading, address and origin parts of all messages received from the AFTN, with the message receipt-time and the action taken thereon, for a period of at least thirty days.

4.2.1.10 The AFTN Component shall perform long-term retention of all AFTN messages, in their entirety, that it generates, for a period of at least thirty days.

4.2.1.11 The AFTN Component shall perform long-term retention of the heading, address and origin parts of all messages received from the Message Transfer and Control Unit and the action taken thereon, for a period of at least thirty days.

4.2.1.12 Upon reception by an AFTN/AMHS Gateway of an AFTN service message requesting repetition by the originator of an incorrectly received message as specified in Annex 10, Volume II, 4.4.11.1 or 4.4.16.2.2, the AFTN Component shall perform one of the following actions:

a) terminate the procedure and report an error situation to a control position if the referenced subject AFTN message did not pass through the gateway or if the AFTN Component is not in possession of an unmutilated copy of the subject AFTN message; or

b) reassume responsibility for the mutilated message and repeat the message in compliance with the provisions of Annex 10, Volume II, 4.4.11.3, if the mutilated message is detected as having passed through the gateway and if the AFTN Component is in possession of an unmutilated copy of the message.

4.2.1.12.1 The determination whether the AFTN Component is in possession of an unmutilated copy of the message, as mentioned in items a) and b) above, may require the assistance of a control position.

4.2.1.13 If, for any reason, the Message Transfer and Control Unit is unable to accept AFTN messages passed by the AFTN Component, then the AFTN Component shall handle this situation in compliance with the provisions of Annex 10, Volume II, 4.4.1.5.2.3.

4.2.1.13.1 Such a condition may be caused by the inability of the Message Transfer and Control Unit to pass AMHS messages to the ATN Component.

4.2.1.14 The AFTN Component shall ensure that all information objects constructed by the Message Transfer and Control Unit for transmission over the AFTN are handled in accordance with the AFTN procedure, in application of 4.2.1.3 above.

4.2.1.15 If the AFTN Component is unable to handle an AFTN service message or an AFTN channel-check transmission in compliance with the provisions of Annex 10, Volume II, as specified in 4.2.1.4 d) or 4.2.1.5, then the error condition shall be logged and reported to a control position.

4.2.1.16 An AFTN address shall be allocated to the AFTN Component.

4.2.2 ATN Component

4.2.2.1 The ATN Component shall allow the AFTN/AMHS Gateway to function as an end system on the ATN.

4.2.2.2 The ATN Component shall handle the interface to the AMHS, and provide an interface to the Message Transfer and Control Unit as specified in 4.2.4, implementing a MTA complying with the profile specification included in 3.2.2, and with the additional profile specification included in 3.2.4 if the gateway supports the Extended ATS Message Handling Service, so as to be externally indistinguishable from an ATS Message Server by the ATS Message Server(s) or other Gateway(s) to which it is connected.

4.2.2.3 If, for any reason, the Message Transfer and Control Unit is unable to accept messages or probes passed by the ATN Component, then the ATN Component shall behave as follows:

a) attempt to reroute the message or probe as specified in ISO/IEC 10021-4, 14.3.4.4;

b) if no alternate route is available in the MTA-routing tables or all such routes cannot be successfully used, reject the message for all the message recipients, whose *responsibility* element in the *per-recipient-indicators* has the abstract-value "responsible" in the received message, with the *non-delivery-reason-code* and *non-delivery-diagnostic-code* elements of the non-delivery report taking the abstract-values specified in the base standards (ISO/IEC 10021-4, 14.3.4.4., item 1).

4.2.2.3.1 Such a condition may be caused by the inability of the Message Transfer and Control Unit to pass AFTN messages to the AFTN Component.

4.2.2.4 If the AMHS Management Domain operating an AFTN/AMHS Gateway desires to implement Message Handling System optional functional groups in addition to the specification of 4.2.2.2 above, this shall be performed in the ATN Component.

4.2.2.4.1 This applies in particular to the Redirection Functional Group. If implemented, redirection may be performed by the ATN Component, caused by a failure situation as envisaged in 4.2.2.3 above for example.

4.2.2.5 The ATN Component shall ensure that all information objects constructed by the Message Transfer and Control Unit for transfer in the AMHS are handled in accordance with the procedures specified in the base standards for a relaying MTA implementing the profile specified in 3.2.2, in application of 4.2.2.2 above.

4.2.2.6 The ATN Component shall implement a traffic logging function identical to that of the MTA included in an ATS Message Server as specified in 3.2.3.

4.2.2.7 The ATN Component shall ensure that all AMHS information objects passed to the Message Transfer and Control Unit comply with the base standards.

4.2.2.8 **Recommendation.-** *In an AFTN/AMHS Gateway supporting the Extended ATS Message Handling Service, the ATN Component should interface with the DUA component to perform DL-expansion using the*

ATN Directory Service, for the implementation of the DL FG.

4.2.3 Message Transfer and Control Unit

4.2.3.1 The Message Transfer and Control Unit in an AFTN/AMHS Gateway shall provide a bi-directional conversion facility between the AFTN component and the ATN component, consisting of:

a) a set of general functions as specified in 4.3; and

b) AFTN/AMHS conversion functions as respectively specified in 4.4 for the AFTN to AMHS conversion and in 4.5 for the AMHS to AFTN conversion.

4.2.3.2 The Message Transfer and Control Unit shall use IA-5 characters internally.

4.2.3.3 The Message Transfer and Control Unit in an AFTN/AMHS Gateway shall pass all the AMHS information objects which it constructs in application of 4.4 and 4.5.6 to the ATN Component of the gateway, for further conveyance in the AMHS.

4.2.3.4 For the generation of AMHS messages and reports, and for the processing of received AMHS messages, probes and reports, the Message Transfer and Control Unit shall have the capability to interpret the semantics and to perform actions related to the ISO/IEC 10021 Elements of Service which are part of the basic requirements of the MT service as specified in ISO/IEC ISP 12062-3:1995 (or a later edition).

4.2.3.5 The Message Transfer and Control Unit in an AFTN/AMHS Gateway shall pass all the AFTN messages which it constructs in application of paragraphs 4.5 and 4.4.2.1.4.2 to the AFTN Component of the AFTN/AMHS Gateway, for further conveyance in the AFTN.

4.2.3.6 The Message Transfer and Control Unit shall ensure that all the AMHS information objects which it constructs comply with section 7 (for IPMs) and section 8 (for RNs) of ISO/IEC 10021-7, complemented with the additional requirements included in 3.3, and with the section 12.2.1.1 of ISO/IEC 10021-4 (for messages) and section 12.2.1.3 of ISO/IEC 10021-4 (for reports).

4.2.3.7 The Message Transfer and Control Unit shall ensure that all the AFTN information objects which it constructs comply with Annex 10, Volume II, 4.4.15.

4.2.3.8 The Message Transfer and Control Unit of an AFTN/AMHS Gateway supporting the Extended ATS Message Handling Service shall interface with the DUA Component of the gateway:

a) to determine the level of ATS Message Handling Service supported by the intended recipients of the AMHS IPMs which it constructs.

b) to allow retrieval of security information from the ATN Directory.

4.2.3.9 The Message Transfer and Control Unit of an AFTN/AMHS Gateway supporting the Extended ATS Message Handling Service shall have the capability to interpret the semantics and perform actions related to the ISO/IEC 10021 Security Elements of Service forming part of the AMHS security policy as specified in 2.2.3.2 and 3.1.4.3.2.

4.2.3.10 **Recommendation**.- *The Message Transfer and Control Unit of an AFTN/AMHS Gateway supporting the Extended ATS Message Handling Service should interface with the DUA Component of the gateway to allow retrieval of address information from the ATN Directory for the purpose of address conversion.*

4.2.4 Interface between the ATN Component and the Message Transfer and Control Unit

4.2.4.1 The ATN Component shall exchange information objects with the Message Transfer and Control Unit via its MTA transfer-port as specified in ISO/IEC 10021-4, section 12.2.

4.2.4.2 The ATN Component shall invoke the Message-transfer, Report-transfer and Probe-transfer abstract operations, respectively, to pass AMHS messages, reports and probes to the Message Transfer and Control Unit.

4.2.4.3 The Message Transfer and Control Unit shall invoke the Message-transfer and Report-transfer abstract operations, respectively, to pass AMHS messages and reports to the ATN Component.

4.2.5 Interface between the AFTN Component and the Message Transfer and Control Unit

4.2.5.1 An AFTN message or service message passed by the AFTN Component to the Message Transfer and Control Unit in application of 4.2.1.4 items a) and b), 4.2.1.6 and 4.2.1.7 shall be:

a) transferred according to the table of priorities as specified in Annex 10, Volume II, 4.4.1.2.1; and

b) passed as received by the AFTN Component from the adjacent AFTN centre, with the possible exception of an ITA-2 to IA-5 conversion performed in application of 4.2.1.2, and including the unaltered AFTN heading if present in the received message.

4.2.5.2 An AFTN message or service message passed by the Message Transfer and Control Unit to the AFTN Component in application of 4.2.3.5 shall be:

a) transferred according to the table of priorities as specified in Annex 10, Volume II, 4.4.1.2.1; and

b) passed as constructed by the Message Transfer and Control Unit, and thus without message heading as specified in Annex 10, Volume II, 4.4.15.1.1.

4.2.5.3 The AFTN Component shall return to the Message Transfer and Control Unit, as the result of the transfer operation described in 4.2.5.2, the Transmission Identification, if any, constructed by the AFTN Component for the transmission of the message or service message over the AFTN.

4.2.6 AFTN/AMHS Gateway Control Position

4.2.6.1 The AFTN/AMHS Gateway Control Position shall be used as the place where errors which occurred in the AFTN/AMHS Gateway and certain non-deliveries which occurred in the AMHS are reported for appropriate action.

4.2.6.2 The appropriate action to be undertaken on reporting of an error or of a non-delivery to an AFTN/AMHS Gateway control position shall be either:

a) a matter of policy which is local to the AMHS Management Domain operating the AFTN/AMHS Gateway; or

b) subject to multilateral agreements.

4.2.6.2.1 For some categories of error situations, this document specifies the actions to be taken, e.g. message rejection and generation of an appropriate service message (to the AFTN) or non-delivery report (to the AMHS). The specified actions aim at minimizing the assistance of the control position. However it may be a matter of policy local to the AMHS Management Domain operating an AFTN/AMHS Gateway to try to reduce the occurrence of message rejection with the assistance of the control position.

4.2.6.3 When the action chosen to handle an error situation includes the generation of an AMHS information object, the category of information object used for this purpose shall be an IPM conveying appropriate service information.

4.2.6.3.1 The service information to be conveyed may be derived, for example, from an AFTN service message.

4.2.6.3.2 The presentation of the service information is a matter of local policy.

4.2.6.4 **Recommendation.-** *In an AFTN/AMHS Gateway supporting the Extended ATS Message Handling Service, the Control Position should interface with the DUA component to allow the Control Position to access the ATN Directory Service.*

4.2.7 DUA Component

4.2.7.1 The DUA Component in an AFTN/AMHS Gateway supporting the Extended ATS Message Handling Service shall comply with the ATN DUA specification as included in Document 9705 Sub-Volume VII / Document 9880 Part IV.

4.2.7.1.1 The interface between the DUA Component and other gateway components (ATN Component, Message Transfer and Control Unit, Control Position) is a matter of implementation out of the scope of this document.

4.2.7.2 The DUA Component in an AFTN/AMHS Gateway supporting the Extended ATS Message Handling Service shall be used:

a) for the determination of the level of ATS Message Handling Service supported by AMHS users; and

b) for the retrieval of AMHS security information.

4.2.7.3 **Recommendation**.- *The DUA Component in an AFTN/AMHS Gateway supporting the Extended ATS*

Message Handling Service should be used to retrieve information from the ATN Directory in support of address conversion.

4.3 General functions

4.3.1 Traffic logging

4.3.1.1 The Message Transfer and Control Unit shall perform long-term logging, as specified in 4.3.1.2 to 4.3.1.5, for a period of at least thirty days, of information related to the following exchanges of information objects with the ATN Component and with the AFTN Component:

a) AMHS message transfer out (to the ATN Component);

b) AMHS report transfer out (to the ATN Component);

c) AMHS message transfer in (from the ATN Component);

d) AMHS report transfer in (from the ATN Component);

e) AFTN message conveyance out (to the AFTN Component);

f) AFTN message conveyance in (from the AFTN Component);

g) AFTN service message indicating an unknown addressee indicator conveyance in (from the AFTN Component); and

h) AFTN service message indicating an unknown addressee indicator conveyance out (to the AFTN Component).

4.3.1.2 For the long-term logging of information related to an AMHS Message Transfer In and AFTN message conveyance out, the following parameters, relating to the messages, shall be logged by the Message Transfer and Control Unit:

a) input *message-identifier*;

b) *IPM-identifier*, if any;

c) *common-fields* and either *receipt-fields* or *non-receipt-fields* of IPN (Inter-Personal Notification), if any;

d) action taken thereon (reject with *non-delivery-reason-code* and *non-delivery-diagnostic-code*, convert as AFTN message, convert as AFTN acknowledgement message, splitting due to number of recipients or message length, delivery report generation);

e) event date/time;

f) Origin line of converted AFTN message or service message, if any; and

g) transmission identification of AFTN message(s) or service message(s), if returned by the AFTN Component.

4.3.1.3 For the long-term logging of information related to AFTN message conveyance in and AMHS Message Transfer Out, the following parameters, relating to the messages, shall be logged by the Message Transfer and Control Unit:

a) Origin line of AFTN message (or AFTN acknowledgement message);

b) transmission identification of AFTN message or service message, if any;

c) action taken thereon (reject with rejection cause, convert as IPM, convert as RN, AFTN service message indicating an unknown addressee indicator generation);

d) event date/time;

e) *MTS-identifier*, if any; and

f) *IPM-identifier*, if any.

4.3.1.4 For the long-term logging of information related to an AMHS Message Report In and/or AFTN Service Message indicating an unknown addressee indicator conveyance out, the following parameters, relating to the report and/or service message, shall be logged by the Message Transfer and Control Unit:

a) *report-identifier* (if report in);

b) *subject-identifier* (if report in);

c) action taken thereon if report in (discard, convert into AFTN service message);

d) event date/time;

e) Origin line of converted AFTN service message (if service message out);

f) Origin line of subject AFTN message (if service message out and no report in); and

g) transmission identification of AFTN message or service message, if any.

4.3.1.5 For the long-term logging of information related to an AFTN Service Message indicating an unknown addressee indicator conveyance in and/or to an AMHS Message Report Out, the following parameters, relating to the service message and/or report, shall be logged by the Message Transfer and Control Unit:

a) Origin line of converted AFTN service message (if service message in);

b) Origin line of subject AFTN message (if service message in);

c) transmission identification of AFTN message or service message, if any;

d) action taken thereon if AFTN service message in (discard, convert into AMHS report);

e) *report-identifier* (if report out);

f) *subject-identifier* (if report out); and

g) event date/time.

4.3.2 Address look-up tables

4.3.2.1 The Message Transfer and Control Unit shall include look-up tables used for address conversion, covering three aspects:

a) a MD look-up table as specified in 4.3.2.2, for the determination of an AMHS MD based on elements of an AF-Address;

b) a CAAS look-up table as specified in 4.3.2.3, for the construction of a CAAS-compliant address based on elements of an AF-Address; and

c) a user address look-up table of individual users as specified in 4.3.2.4, for the conversion of an AF-Address to and from an MF-Address of any AMHS Addressing Scheme.

4.3.2.1.1 This description aims at providing a conceptual model of the relationships between address information elements which need to be exploited for address conversion in the Message Transfer and Control Unit. In this context, the term "look-up table" refers to a set of entries, each of them representing an individual relation between information elements in the AFTN address space and in the AMHS address space that are correlated. The way in which these tables are practically structured and stored in the Message Transfer and Control Unit is an implementation matter not constrained by the present provisions.

4.3.2.1.2 The way in which these tables are populated and maintained up-to-date is an organisational matter.

4.3.2.1.3 The way in which the ATN Directory can be used in support of address conversion and of these look-up tables for an AFTN/AMHS Gateway supporting the Extended ATS Message Handling Service is an implementation matter described for guidance purposes in ICAO Document 9739.

4.3.2.2 MD look-up Tables

4.3.2.2.1 The MD (Management Domain) look-up table maintained in the Message Transfer and Control Unit shall include a list of entries identifying an organizational entity, which is or intends to be an AMHS Management Domain, or collectively uses or intends to use the services of a given AMHS Management Domain, each entry comprising:

a) a string of characters identifying one of the following:

1) a country (two-letter designator as specified in ICAO Document 7910);

2) a country or location (four-letter designator as specified in ICAO Document 7910);

3) an organization within a country (combination of an element as in items 1) or 2) above with a three-letter designator as specified in ICAO Document 8585); or

4) an organization at a location (combination of a four-letter designator as specified in ICAO Document 7910 with a three-letter designator as specified in ICAO Document 8585); and

b) the set of attributes identifying either the AMHS Management Domain implemented by the organizational entity (alone or collectively) defined in a), if existing, or the AMHS Management Domain intended to be implemented, , this set of attributes being composed of:

1) *country-name*;

2) *administration-domain-name*; and

3) *private-domain-name* (if any).

4.3.2.2.1.1 As an implementation matter, "wild cards" may be used to optimise the amount of information stored as item a). A "wild card" character is a character that can be replaced by any alphabetical character.

4.3.2.2.2 It shall be possible to derive unambiguously a single item in 4.3.2.2.1 b) from any other single item in 4.3.2.2.1 a) by a search operation in the MD look-up table.

4.3.2.2.3 The MD look-up table maintained by in the Message Transfer and Control Unit shall include at least one entry for each AMHS Management Domain registered in the ICAO Register of AMHS Management Domains.

4.3.2.2.4 For each AMHS Management Domain identified in the MD look-up table, a reference to the type of addressing scheme declared in the ICAO Register of AMHS Management Domains shall be maintained in the MD look-up table.

4.3.2.3 CAAS look-up Tables

4.3.2.3.1 The CAAS look-up table maintained in the Message Transfer and Control Unit shall include a list of entries providing the correspondence between the *organization-name* and *organizational-unit-names* address attributes in each AMHS Management Domain having selected the CAAS addressing scheme and having provided this information through the ICAO Register of AMHS Management Domains, each such entry comprising:

a) an ICAO Location Indicator as specified in ICAO Document 7910, identifying a location within the AMHS Management Domain, which contains the first four

characters of the AF-Address and is identical to the *organizational-unit-names* attribute value for all AMHS direct and indirect users with CAAS addresses in this location; and

b) the *country-name*, *administration-domain-name*, *private-domain-name* and *organization-name* attribute values for all AMHS direct and indirect users with CAAS addresses in the location identified by item a).

4.3.2.3.2 The CAAS look-up table maintained in the Message Transfer and Control Unit shall include at least one entry for each Location Indicator listed in ICAO Document 7910 and in the ICAO Register of AMHS Management Domains.

4.3.2.3.2.1 As an implementation matter, "wild cards" may be used to optimise the amount of information stored. A "wild card" character is a character that can be replaced by any alphabetical character.

4.3.2.3.3 The presence in the CAAS look-up table of multiple entries including the same value for the ICAO Location Indicator in item a) shall be permitted only when the contents of the MD look-up table defined in 4.3.2.2 includes several MD entries allowing to unambiguously derive a single item b) of 4.3.2.3.1 for the considered AF-Address.

4.3.2.3.4 It shall be possible to unambiguously derive a single item b) from an AF-Address by a search in the CAAS look-up table, combined if necessary with a search in the MD look-up table as described in 4.3.2.2.2 in case of multiple entries for the Location Indicator in application of 4.3.2.3.3 above.

4.3.2.3.4.1 There is a many-to-one relationship between organizational-unit-names attribute values (ICAO Location Indicator) and the combination of AMHS Management Domain identifier and organization-name attribute values. Each organizational-unit-names is associated with precisely one organization-name within an AMHS Management Domain. In case of multiple possible associations due to multiple AMHS Management Domains operating in a single location, the MD look-up table is used to differentiate between AMHS Management Domains.

4.3.2.4 User address look-up Tables

4.3.2.4.1 The user address look-up table maintained by the Message Transfer and Control Unit shall include a list of entries, each of them comprising:

a) the AF-Address of either an indirect AMHS user who also has a MF-Address, or of a direct AMHS user who has an AF-Address for communication with indirect AMHS users; and

b) the MF-Address of that AMHS user, either direct or indirect, including all its address attributes.

4.3.2.4.2 It shall be possible to derive unambiguously item b) from item a), and vice-versa, by a searching operation in the user address look-up table.

4.3.2.4.3 In order not to restrict the potential form of an MF-Address, a user address look-up table shall support in the attributes included under item b) all the general attribute types authorized in ISO/IEC 10021-2,

section 18.5, Table 10.

4.4 AFTN to AMHS Conversion

Note.— This section specifies the actions to be performed by an AFTN/AMHS Gateway upon reception of messages from the AFTN for conveyance in the AMHS, after the accomplishment of the AFTN-related procedures by the AFTN Component as specified in 4.2.1.

4.4.1 Control function

4.4.1.1 Upon reception by the Message Transfer and Control Unit of a message passed from the AFTN Component, as the result of the provisions of 4.2.1.4 items a) and b), and of 4.2.1.6, the received message shall be processed in one of three mutually exclusive manners depending on the message category:

a) processing as specified in 4.4.3, if the received message is an AFTN acknowledgement message as specified in Annex 10, Volume II, 4.4.15.6;

b) processing as specified in 4.4.4, if the received message is an AFTN service message requesting correction by the originator of a message received with an unknown addressee indicator as specified in Annex 10, Volume II, 4.4.11.13.3; or

c) processing as specified in 4.4.2, if the received message is other than those referred to in a) and b) above.

4.4.1.2 Upon completion of the processing specified in 4.4.1.1, the following transfers shall take place:

a) transfer of the resulting AMHS information object, if any, to the ATN Component for conveyance in the AMHS; and

b) transfer of the resulting AFTN service message, if any, to the AFTN Component for conveyance over the AFTN.

4.4.1.3 If, for any reason, the processing specified in 4.4.1.1 and 4.4.1.2 cannot be properly achieved, the procedure shall unsuccessfully terminate, resulting in:

a) logging of the error situation and reporting to a control position; and

b) storage of the AFTN message for appropriate action at the control position.

4.4.2 Conversion of AFTN Messages

Upon reception by the Message Transfer and Control Unit of an AFTN message passed from the AFTN Component to be conveyed over the AMHS, this AFTN message shall be converted into an IPM conveyed with a Message Transfer Envelope to be transferred and delivered in the AMHS in compliance with the following:

a) the specification of how the components of the AFTN Message are used for mapping onto the AMHS message parameters, as included in 4.4.2.1, depending on:

1) the level of ATS Message Handling Service supported by the AFTN/AMHS Gateway; and

2) the level of ATS Message Handling Service supported by the intended recipients of the IPM;

b) the specification of how the IPM is generated, as included in 4.4.2.2, depending on:

1) the level of ATS Message Handling Service supported by the AFTN/AMHS Gateway; and

2) the level of ATS Message Handling Service supported by the intended recipients of the IPM; and

c) the specification of how the Message Transfer Envelope elements are generated, as included in 4.4.2.3.

4.4.2.1 Use of AFTN Message components

4.4.2.1.1 Each component of an AFTN Message shall be processed as specified in the column "action" of Table 4-1.

4.4.2.1.2 These components which are classified as "T" or "T1" in the column "action" of Table 4-1 shall be translated into the AMHS parameter specified in the column "AMHS parameter" of Table 4-1 and according to the specification in the provision referred to in the column "mapping".

Table 4-1. Use of AFTN Message Components

AFTN Message Part	Component	Action	AMHS parameter	Mapping
Heading	Start-of-Heading Character	-	-	-
	Transmission Identification	D	-	-
Address	Alignment Function	-	-	-
	Priority Indicator	T	ATS-Message-Priority (see Table 4-3/Part 5/1.2) or precedence (see Table 4-3/Part 4/1.4.3) priority (see Table 4-4/Part 1/1.1.6)	see 4.4.2.1.3
	Addressee Indicator(s)	T	primary-recipients (see Table 4-3/ Part 2/4) recipient-name (see Table 4-4/Part 1/1.2.1)	see 4.4.2.1.4.2

AFTN Message Part	Component	Action	AMHS parameter	Mapping
	Alignment Function	-	-	"
Origin	Filing Time	T	ATS-Message-Filing-Time (see Table 4-3/ Part 5/1.3) or authorization-time (see Table 4-3/Part 2/17.6)	see 4.4.2.1.5
	Originator Indicator	T	originator (see Table 4-3/Part 2/2) this-IPM (see Table 4-3/Part 2/1) originator-name (see Table 4-4/Part 1/1.1.2)	see 4.4.2.1.4.1
	Priority Alarm	D	-	-
	Optional Heading Information	T1	ATS-Message-Optional-Heading-Info (see Table 4-3/ Part 5/1.4) or originators-reference (see Table 4-3/Part 2/17.12)	see 4.4.2.1.6 or 4.4.2.1.7
	Alignment Function	-	-	-
	Start-of-Text Character	-		-
Text		T	ATS-Message-Text (see Table 4-3/Part 5/2)	see 4.4.2.1.8
Ending	Alignment Function	-	-	-
	Page-feed sequence	-	-	-
	End-of-Text Character	-	-	-

Legend (see 1.3):
T1 = conditionally translated
D = discarded
T = translated
- = not applicable

4.4.2.1.3 The value of the priority indicator of an AFTN message shall:

a) be mapped into the abstract-value of the *priority* element of the message transfer envelope of the converted AMHS message as specified in the second column of Table 4-2; and

b) either

1) be conveyed as the value of the priority-indicator in the ATS-Message-Priority element of the IPM text of the converted AMHS message as specified in the third column of Table 4-2, if the AFTN/AMHS Gateway, or at least one of the

intended recipients of the message supports only the Basic ATS Message Handling Service; or

2) be mapped into one of the authorized values of the precedence element of the recipient-extensions element of the recipient -specifier, as specified in the fourth column of Table 4-2, if the AFTN/AMHS Gateway and all the intended recipients of the message support the Extended ATS Message Handling Service.

4.4.2.1.3.1 The transport priority used for the conveyance of AMHS messages is specified in 3.2.2.2.2.3.

Table 4-2. Mapping of AFTN Priority Indicator

AFTN Priority Indicator	AMHS Message Transfer Envelope priority	AMHS ATS-Message-Priority priority-indicator	AMHS IPM precedence
SS	Urgent	SS	107
DD	Normal	DD	71
FF	Normal	FF	57
GG	non-urgent	GG	28
KK	non-urgent	KK	14

4.4.2.1.4 The value of an AFTN address included in an AFTN message shall be converted into an MF-Address as respectively specified in 4.4.2.1.4.1 and 4.4.2.1.4.2 depending whether it is an originator indicator or an addressee indicator.

Note.— The way in which the ATN Directory can be used in support of address conversion and of these look-up tables for an AFTN/AMHS Gateway supporting the Extended ATS Message Handling Service is an implementation matter described for guidance purposes in ICAO Document 9739.

4.4.2.1.4.1 The following actions shall be performed in order to translate the originator indicator of an AFTN Message into the MF-Address included in the *originator-name* of the converted AMHS message:

a) translation into the single MF-Address matching exactly the AF-Address of the originator, if such an MF-Address can be determined from the User address look-up table maintained in the Message Transfer and Control Unit; or

b) if a) cannot be achieved, translation into the MF-Address derived from the AF-Address of the originator as follows:

1) determination of the country-name, administration-domain-name and private-

domain-name address attributes belonging to the single AMHS Management Domain, if any, among the entries of the MD look-up table matching exactly the following character substrings of the AF-Address and selected, if several matches are found, on the basis of a decreasing order of precedence from i) to iv):

i) characters 1 to 7,

ii) characters 1, 2, 5, 6 and 7,

iii) characters 1, 2, 3 and 4,

iv) characters 1 and 2; and

2) determination of the other address attributes according to either of the following methods, depending on the addressing scheme declared by the AMHS Management Domain determined as in item 1) above, and found in the MD look-up table as a result of 4.3.2.2.4:

i) if the AMHS Management Domain has selected the Common AMHS Addressing Scheme, allocation of the AF-Address to the *common-name* attribute value, determination of the *organizational-unit-names* attribute value by extraction of the Location Indicator from the AF-Address, and determination of the single *organization-name* attribute value, if any, matching the Location Indicator in the CAAS look-up table for the considered AMHS Management Domain; or

ii) if the AMHS Management Domain has selected the XF addressing scheme, allocation of the AF-Address to the *organizational-unit-names* attribute value and allocation of the string "AFTN" to the *organization-name* attribute value; or

c) if the procedure defined in b) above cannot be achieved, or does not unambiguously result in a single MF-address, unsuccessful termination of the procedure resulting in:

1) logging of the error situation and reporting to a control position, and

2) storage of the AFTN message for appropriate action at the control position.

Note.— The specification above does not constrain the search algorithm provided that the expected result is achieved.

4.4.2.1.4.2 Each addressee indicator of an AFTN Message shall be translated into the MF-Address included in a *recipient-name* of the converted AMHS message in the same way as an originator indicator, with the exception that the unsuccessful termination for one or several addressee indicators additionally results in the generation, in compliance with the provisions of Annex 10, Volume II, 4.4.11.13.3, of an AFTN service message requesting correction by the originator of a message received with an unknown addressee indicator,

the unknown addressee indicator(s) included in item 8) of the text message taking the value of these addressee indicators for which the translation process failed.

Note.— A PDAI included in the addressee indicator(s) of an AFTN Message is translated into an MF-Address in the same way as any addressee indicator.

4.4.2.1.5 The value of the Filing Time of an AFTN message shall be either:

a) conveyed as the value of the filing-time element in the ATS-Message-Filing-Time element of the IPM text of the converted AMHS message, if the AFTN/AMHS Gateway, or at least of one the intended recipients of the message supports only the Basic ATS Message Handling Service; or

b) converted into the value of the *authorization-time* heading field extension of the IPM, which is of ASN.1 (abstract-syntax notation one) type GeneralizedTime, if the AFTN/AMHS Gateway and all the intended recipients of the message support the Extended ATS Message Handling Service, as the result of the following:

1) generation by the Message Transfer and Control Unit of the four figures identifying the year in the *authorization-time* element;

2) generation by the Message Transfer and Control Unit of the two figures identifying the month in the *authorization-time* element;

3) mapping of the first two figures of the date-time group into the value of the two figures identifying the day in the *authorization-time* element;

4) mapping of the value of the four last figures of the date-time group into the value of the four figures identifying the hours and minutes in the *authorization-time* element; and

5) addition by the Message Transfer and Control Unit of a final character in the *authorization-time* element taking the value "Z".

4.4.2.1.6 The ATS-Message-Optional-Heading-Info element of the IPM text in the converted AMHS message shall either:

a) convey the value of the Optional Heading Information of the AFTN message as the value of its optional-heading-information element, if the Optional Heading Information element is present in the AFTN message and if the AFTN/AMHS Gateway, or at least one of the intended recipients of the message supports only the Basic ATS Message Handling Service; or

b) be omitted in the converted AMHS message, if the Optional Heading Information element is not present in the AFTN message.

4.4.2.1.7 The originators-reference IPM heading field extension in the converted AMHS message shall either:

a) convey the value of the Optional Heading Information of the AFTN message, if the Optional Heading Information element is present in the AFTN message and if the AFTN/AMHS Gateway and all the intended recipients of the message support the Extended ATS Message Handling Service; or

b) be omitted in the converted AMHS message, if the Optional Heading Information element is not present in the AFTN message.

4.4.2.1.8 The content of the Text of an AFTN message, shall be conveyed in its entirety as the value of the ATS-Message-Text element in the IPM text of the converted AMHS message.

4.4.2.2 Generation of IPM

4.4.2.2.1 Each of the elements composing the IPM resulting from the conversion of an AFTN message in the Message Transfer and Control Unit shall be processed as specified in the column "action" of Table 4-3.

4.4.2.2.2 These elements which are classified as "G", "G1", "T" or "T1" in the column "action" of Table 4-3 shall be either generated or translated according to the specification in the provision referred to in the column "mapping" of Table 4-3.

4.4.2.2.2.1 Table 4-3 is structured as a PRL derived from the profile specification included in section 3 and consequently from the ISPICS Proforma included in ISO/IEC ISP 12062-2 (AMH21) as well as from Table 3-4. The columns "Base" and "ISP" under "Origination" are extracted from ISO/IEC ISP 12062-2 and the column "ATS Message Handling Service" specifies the static capability of an IPM AU supporting the ATS Message Handling Service, i.e. the ability to generate the element as part of an IPM carrying an ATS Message. The references to the ISP Profile are indicated in the part titles as AMH21/ref where appropriate. The references in column Ref are those of the ISP.

Table 4-3. IPM Generation

Ref	Element	Origination			Action	Mapping / Notes
		Base	ISP	ATS Mess. Service		
PART 1 : AMH21/A.1.1 SUPPORTED INFORMATION OBJECTS						
1	Interpersonal message (IPM)	M	M	M	T	see Part 1/1.1 and 1.2
1.1	Heading	M	M	M	T	see Part 2
1.2	Body	M	M	M	T	see Part 3
2	Interpersonal Notification (IPN)	M	M	M	-	out of the scope of this provision

Ref	Element	Origination			Action	Mapping / Notes
		Base	ISP	ATS Mess. Service		
PART 2 : AMH21/A.1.2 IPM HEADING FIELDS						
1	this-IPM	M	M	M	T	see Part 4/3
2	Originator	M	M	M	T	see 4.4.2.2.3 and Part 4/2
3	authorizing-users	O	O	O	X	-
4	primary-recipients	M	M	M	T	see 4.4.2.2.4 and Part 4/1
5	copy-recipients	M	M	M	X	-
6	blind-copy-recipients	O	O	O	X	-
7	replied-to-IPM	M	M	M	X	-
8	obsoleted-IPMs	O	O	O	X	-
9	related-IPMs	O	O	O	X	-
10	Subject	M	M	M	X	-
11	expiry-time	O	O	O	X	-
12	reply-time	O	O	O	X	-
13	reply-recipients	O	O	O	X	-
14	Importance	O	O	O	X	-
15	Sensitivity	O	O	O	X	-
16	auto-forwarded	O	O	O	X	-
17	Extensions	C1	C1		T1	see 4.4.2.2.10
17.1	incomplete-copy	O	O	O	X	-
17.2	Languages	O	O	O	X	-
17.3	auto-submitted	O	O	O	X	-
17.4*	body-part-signatures	O	O	O	X	
17.5*	ipm-security-label	O	O	O	X	

Ref	Element	Origination			Action	Mapping / Notes
		Base	ISP	ATS Mess. Service		
17.6*	authorization-time	O	O	M	T1	see 4.4.2.1.5
17.7*	circulation-list-recipients	O	O	O	X	
17.8*	distribution-codes	O	O	O	X	
17.9*	extended-subject	M	M	M	X	
17.10*	information-category	O	O	O	X	
17.11*	manual-handling-instructions	O	O	O	X	
17.12*	originators-reference	O	O	M	T1	see 4.4.2.1.7
17.13*	precedence-policy-identifier	O	O	M	G1	see 4.4.2.2.11
PART 3 : AMH21/A.1.3 IPM BODY						
1	ia5-text	O	O	M	T	see Part 3/1.1 and 1.2
1.1	Parameters	M	M	M	G	see Part 3/1.1.1
1.1.1	Repertoire	O	O	O	G	see 4.4.2.2.5
1.2	Data	M	M	M	T	see Part 5
2	Voice	I	I	I	X	-
3	g3-facsimile	O	O	O	X	-
4	g4-class-1	O	O	O	X	-
5	Teletex	O	O	O	X	-
6	videotext	O	O	O	X	-
7*	Encrypted	O	O	O	X	-
8	Message	O	O	O	X	-
9	mixed-mode	O	O	O	X	-
10	bilaterally-defined	O	O	O	X	-

Ref	Element	Origination			Action	Mapping / Notes
		Base	ISP	ATS Mess. Service		
11	nationally-defined	O	O	O	X	-
12	externally-defined / extended	C1	M	M	X	-
PART 4 : AMH21/A.1.5 COMMON DATA TYPES						
1	RecipientSpecifier					
1.1	Recipient	M	M	M	T	see 4.4.2.2.6 and Part 4/2
1.2	notification-requests	O	O	M	T	see Part 4/1.2.1-1.2.3
1.2.1	Rn	O	O	M	T	see 4.4.2.2.7
1.2.2	Nrn	O	O	M	T	see 4.4.2.2.7
1.2.3	ipm-return	O	O	O	X	-
1.3	reply-requested	O	O	O	X	-
1.4*	recipient-extensions	O	M	M	T1	see 4.4.2.2.10
1.4.1*	recipient-security-request	O	O	O	X	
1.4.2*	circulation-list-indicator	O	O	O	X	
1.4.3*	Precedence	O	O	M	T1	see 4.4.2.1.3
2	ORDescriptor					
2.1	formal-name	M	M1	M	T	see 4.4.2.2.8
2.2	free-form-name	O	O	O	X	-
2.3	telephone-number	O	O	O	X	-
3	IPMIdentifier					
3.1	User	M	M	M	T	see 4.4.2.2.9
3.2	user-relative-identifier	M	M	M	G	-
PART 5 : IPM SUPPORT OF THE BASIC ATS MESSAGE HANDLING SERVICE						

Ref	Element	Origination			Action	Mapping / Notes
		Base	ISP	ATS Mess. Service		
1	ATS-Message-Header	-	-	M	T1	see Part 5/1.1-1.6 and 4.4.2.2.12
1.1	start-of-heading	-	-	M	G	see 3.3.3
1.2	ATS-Message-Priority	-	-	M	T	see Part 5/1.2.1-1.2.3
1.2.1	priority-prompt	-	-	M	G	see 3.3.3
1.2.2	priority-indicator	-	-	M	T	see 4.4.2.1.3
1.2.3	priority-separator	-	-	M	G	see 3.3.3
1.3	ATS-Message-Filing-Time	-	-	M	T	see Part 5/1.3.1-1.3.3
1.3.1	filing-time-prompt	-	-	M	G	see 3.3.3
1.3.2	filing-time	-	-	M	T	see 4.4.2.1.5
1.3.3	filing-time-separator	-	-	M	G	see 3.3.3
1.4	ATS-Message-Optional-Heading-Info	-	-	O	T1	see Part 5/1.4.1-1.4.3
1.4.1	OHI-prompt	-	-	M	G	see 3.3.3
1.4.2	optional-heading-information	-	-	M	T	see 4.4.2.1.6
1.4.3	OHI-separator	-	-	M	G	see 3.3.3
1.5	start-of-text	-	-	M	G	see 3.3.3
2	ATS-Message-Text	-	-	M	T	see 4.4.2.1.8

Legend (see 1.3) :
M = mandatory support
M1 = minimal O/R name mandatory support
O = optional support
C1 = conditional support: if the AFTN/AMHS Gateway supports the Extended ATS Message Handling Service then M else O
I = out of scope
- = not applicable
G = generated
G1 = conditionally generated
T = translated
T1 = conditionally translated

X = excluded (not used)
* = requirement applicable only if the AFTN/AMHS Gateway supports the Extended ATS Message Handling Service

4.4.2.2.3 The *originator* heading field shall:

a) identify the indirect AMHS user who originated the AFTN message; and

b) be structured as specified in Table 4-3/ Part 4/2.

4.4.2.2.4 The *primary-recipients* heading field shall:

a) include the identification of the recipient(s) of the AFTN message; and

b) be structured as specified in Table 4-3/ Part 4/1.

4.4.2.2.5 The element *repertoire* shall take its default abstract value "ia5".

4.4.2.2.6 The element(s) *recipient* in the *primary-recipients* heading field shall:

a) identify the recipient(s) of the AFTN message; and

b) be structured as specified in Table 4-3/ Part 4/2.

4.4.2.2.7 The values "rn" and "nrn" shall be taken simultaneously by the element *notification-requests* if, and only if the element *priority-indicator* included in the message, as specified Table 4-3 / Part 5/1.2.2, has the value "SS" and the message is not an acknowledgement message to be converted into an IPM as the result of 4.4.3.1.1 or 4.4.3.1.2.

4.4.2.2.8 The element *formal-name* shall:

a) take the form of an MF-Address; and

b) be converted as specified in 4.4.2.1.4.

4.4.2.2.9 The element *user* in the *this-IPM* heading field shall:

a) be the MF-Address of the indirect AMHS user who originated the AFTN message; and

b) be converted as specified in 4.4.2.1.4.1.

4.4.2.2.10 The IPM heading fields and recipient extensions specified in 3.3.4.1 shall be conditionally generated by translation of AFTN message elements, if the AFTN/AMHS Gateway and all the intended recipients of the message support the Extended ATS Message Handling Service.

4.4.2.2.11 The element *precedence-policy-identifier* of the IPM heading field extensions shall:

a) be conditionally generated, if the AFTN/AMHS Gateway and all the intended recipients of the message support the Extended ATS Message Handling Service;

b) if present, take the object-identifier value specified in 3.3.4.4.3.

4.4.2.2.12 The ATS-Message-Header shall be conditionally generated by translation of AFTN message elements, if the AFTN/AMHS Gateway or at least one of the intended recipients of the message supports only the Basic ATS Message Handling Service.

4.4.2.3 Generation of Message Transfer Envelope

4.4.2.3.1 Each of the elements composing the Message Transfer Envelope conveyed with an IPM resulting from the conversion of an AFTN message shall be processed as specified in the column "action" of Table 4-4.

4.4.2.3.2 These elements which are classified as "G", "G1" and "T" in the column "action" of Table 4-4 shall be handled according to the specification in the provision referred to in the column "mapping" of Table 4-4.

4.4.2.3.2.1 Table 4-4 is structured as a PRL derived from the ISPICS Proforma included in ISO/IEC ISP 10611-3. The columns "Base" and "ISP" are extracted from ISO/IEC ISP 10611-3, and the column "ATS Message Handling Service" specifies the static capability of an AU, for the MT-Elements of Service, i.e. the ability to convey, handle and act in relation with the element. The references to the ISP Profile are indicated in the part titles as AMH11/ref where appropriate.

Table 4-4. MessageTransfer for conveyance of an IPM

Ref	Element	Base	ISP	ATS Mess. Service	Action	Mapping / Notes
PART 1 : AMH11/A.1.4.2 MESSAGETRANSFER						
1	MessageTransferEnvelope	M	M	M	T	see Part 1/1.1 and 1.2
1.1	(per message fields)					
1.1.1	message-identifier	M	M	M	G	see Part 2/1
1.1.2	originator-name	M	M	M	T	see 4.4.2.3.3
1.1.3	original-encoded-information-types	M	M-	M-	G	see 4.4.2.3.4 and Part 2/3
1.1.4	content-type	M	M-	M-	G	see 4.4.2.3.5 and Part 2/8
1.1.5	content-identifier	M	M	M	G1	see 4.4.2.3.6
1.1.6	Priority	M	M	M	T	see 4.4.2.1.3
1.1.7	per-message-indicators	M	M	M	G	see Part 2/4

Ref	Element	Base	ISP	ATS Mess. Service	Action	Mapping / Notes
1.1.8	deferred-delivery-time	O	M-	M-	X	-
1.1.9	per-domain-bilateral-information	O	M-	M-	G1	see 4.4.2.3.7 and Part 2/5
1.1.10	trace-information	M	M	M	G	see Part 2/6
1.1.11	Extensions	M	M	M	G	see 4.4.2.3.8 and Part 3/1
1.1.11.1	recipient-reassignment-prohibited	O	M	M	X	-
1.1.11.2	dl-expansion-prohibited	O	M	M	X	-
1.1.11.3	conversion-with-loss-prohibited	O	M	M	X	-
1.1.11.4	latest-delivery-time	O	M-	M-	X	-
1.1.11.5	originator-return-address	O	M-	M-	X	-
1.1.11.6	originator-certificate	O	M-	M-	X	-
1.1.11.7	content-confidentiality-algorithm-identifier	O	M-	M-	X	-
1.1.11.8	message-origin-authentication-check	O	M-	M-	X	-
1.1.11.9	message-security-label	O	M-	M-	X	-
1.1.11.10	content-correlator	M	M	M	G1	see 4.4.2.3.6
1.1.11.11	dl-expansion-history	M	M-	M-	X	see 4.4.2.3.2.2
1.1.11.12	internal-trace-information	M	M	M	G	see Part 3/5
1.1.11.13*	certificate-selectors	O	M-	M-	X	-
1.1.11.14*	multiple-originator-certificates	O	M-	M-	X	-
1.1.11.15*	dl-exempted-recipients	O	M-	M-	X	-
1.1.11.16*	PrivateExtensions	O	O	O	X	-
1.2	per-recipient-fields	M	M	M	T	see Part 1/1.2.1-1.2.5
1.2.1	recipient-name	M	M	M	T	see 4.4.2.3.9
1.2.2	originally-specified-recipient-number	M	M	M	G	see 4.4.2.3.10

Ref	Element	Base	ISP	ATS Mess. Service	Action	Mapping / Notes
1.2.3	per-recipient-indicators	M	M	M	G	see 4.4.2.3.11
1.2.4	explicit-conversion	O	M-	M-	X	-
1.2.5	Extensions	M	M	M	X	-
2	Content	M	M	M	T	see 4.4.2.2
PART 2 : AMH11/A.1.5 COMMON DATA TYPES						
1	MTSIdentifier					
1.1	global-domain-identifier	M	M	M	G	see 4.4.2.3.12 and Part 2/2
1.2	local-identifier	M	M	M	G	see 4.4.2.3.13
2	GlobalDomainIdentifier					
2.1	country-name	M	M	M	G	see 4.4.2.3.14
2.2	administration-domain-name	M	M	M	G	see 4.4.2.3.15
2.3	private-domain-identifier	M	M	M	G	see 4.4.2.3.16
3	EncodedInformationTypes					
3.1	built-in-encoded-information-types	M	M	M	G	see 4.4.2.3.4
3.2	(non-basic parameters)	O	M-	M-	X	-
3.3	extended-encoded-information-types	M	M	M	X	-
4	PerMessageIndicators					
4.1	disclosure-of-other-recipients	M	M	M	G	see 4.4.2.3.17
4.2	implicit-conversion-prohibited	M	M	M	G	see 4.4.2.3.18
4.3	alternate-recipient-allowed	M	M	M	G	see 4.4.2.3.19
4.4	content-return-request	O	M-	M-	X	see 4.4.2.3.20
4.5	Reserved	O	M-	M-	X	-

Ref	Element	Base	ISP	ATS Mess. Service	Action	Mapping / Notes
4.6	bit-5	O	M-	M-	X	-
4.7	bit-6	O	M-	M-	X	-
4.8	service-message	O	M-	M-	X	-
5	PerDomainBilateralInformation					
5.1	country-name	M	M-	M-	G1	see 4.4.2.3.21
5.2	administration-domain-name	M	M-	M-	G1	see 4.4.2.3.21
5.3	private-domain-identifier	O	M-	M-	G1	see 4.4.2.3.21
5.4	bilateral-information	M	M-	M-	G1	see 4.4.2.3.22
6	TraceInformation					
6.1	TraceInformationElement	M	M	M	G	see Part 2/6.1.1 and 6.1.2
6.1.1	global-domain-identifier	M	M	M	G	see 4.4.2.3.23 and Part 2/2
6.1.2	domain-supplied-information	M	M	M	G	see Part 2/6.1.2.1-6.1.2.4
6.1.2.1	arrival-time	M	M	M	G	see 4.4.2.3.24
6.1.2.2	routing-action	M	M	M	G	see Part 2/6.1.2.2.1 and 6.1.2.2.2
6.1.2.2.1	Relayed	M	M	M	G	see 4.4.2.3.25
6.1.2.2.2	Rerouted	O	C1	C1	X	see 4.4.2.3.2.3
6.1.2.3	attempted-domain	O	C1	C1	X	see 4.4.2.3.2.3
6.1.2.4	(additional actions)					
6.1.2.4.1	deferred-time	M	C2	C2	X	-
6.1.2.4.2	converted-encoded-information-types	O	M-	M-	X	-
6.1.2.4.3	other-actions	O	M-	M-	X	-

Ref	Element	Base	ISP	ATS Mess. Service	Action	Mapping / Notes
6.1.2.4.3.1	Redirected	O	M-	M-	X	see 4.4.2.3.2.4
6.1.2.4.3.2	dl-operation	O	M-	M-	X	see 4.4.2.3.2.2
8	ContentType					
8.1	built-in	M	M-	M-	G	see 4.4.2.3.5
8.2	Extended	O	M-	M-	X	-
PART 3 : AMH11/A.1.6 EXTENSION DATA TYPES						
1	ExtensionField					
1.1	Type	M	M	M	G	see Part 3/1.1.1 and 1.1.2
1.1.1	standard-extension	M	M	M	G	see 4.4.2.3.8
1.1.2	private-extension	O	M-	M-	X	-
1.2	Criticality	M	M	M	G	see 4.4.2.3.8
1.3	Value	M	M	M	G	see 4.4.2.3.8
5	InternalTraceInformation					
5.1	global-domain-identifier	M	M	M	G	see 4.4.2.3.23
5.2	mta-name	M	M	M	G	see 4.4.2.3.26
5.3	mta-supplied-information	M	M	M	G	see Part 3/5.3.1-5.3.4
5.3.1	arrival-time	M	M	M	G	see 4.4.2.3.24
5.3.2	routing-action	M	M	M	G	see Part 3/5.3.2.1-5.3.2.2
5.3.2.1	Relayed	M	M	M	G	see 4.4.2.3.25
5.3.2.2	Rerouted	O	C1	C1	X	see 4.4.2.3.2.3
5.3.3	Attempted	O	C1	C1	X	see 4.4.2.3.2.3

Ref	Element	Base	ISP	ATS Mess. Service	Action	Mapping / Notes
5.3.4	(additional actions)					
5.3.4.1	deferred-time	M	C2	C2	X	-
5.3.4.2	converted-encoded-information-types	O	M-	M-	X	-
5.3.4.3	other-actions	O	M-	M-	X	-
5.3.4.3.1	Redirected	O	M-	M-	X	see 4.4.2.3.2.4
5.3.4.3.2	dl-operation	O	M-	M-	X	see 4.4.2.3.2.2

Legend (see 1.3):
M = mandatory support
M- = minimal mandatory support
O = optional support
I = out of scope
- = not applicable
C1 = if rerouting is supported then M else M-
C2 = if deferred delivery is supported then M else M-
G = generated
G1 = optionally generated
T = translated
X = excluded
* = requirement applicable only if the AFTN/AMHS Gateway supports the Extended ATS Message Handling Service

4.4.2.3.2.2 The DL-expansion capability of an AFTN/AMHS Gateway is implemented in the ATN Component rather than in the Message Transfer and Control Unit.

4.4.2.3.2.3 The rerouting capability of an AFTN/AMHS Gateway, if any, is implemented in the ATN Component rather than in the Message Transfer and Control Unit.

4.4.2.3.2.4 The redirection capability of an AFTN/AMHS Gateway, if any, is implemented in the ATN Component rather than in the Message Transfer and Control Unit.

4.4.2.3.3 The value of the element *originator-name* shall:

a) be the address of the indirect AMHS user who originated the AFTN message;

b) take the form of an MF-Address; and

c) be converted as specified in 4.4.2.1.4.1.

4.4.2.3.4 The element *original-encoded-information-types* shall:

a) take the abstract-value "ia5-text", which is a value of type BuiltInEncodedInformationTypes; and

b) be formed as specified in Table 4-4/ Part 2/ 3.

4.4.2.3.5 The element *content-type* shall:

a) take the abstract-value "interpersonal-messaging-1988", which is a value of type BuiltInContentType; and

b) be formed as specified in Table 4-4/ Part 2/ 8.

4.4.2.3.6 The generation of this element shall be optional, as a matter of policy local to the AMHS Management Domain operating the AFTN/AMHS Gateway.

4.4.2.3.7 The element *per-domain-bilateral-information* shall be:

a) optionally generated, as a matter of policy local to the AMHS Management Domain operating the AFTN/AMHS Gateway; and

b) if present, structured as specified in Table 4-4/ Part 2/ 5.

4.4.2.3.8 The only extensions used shall:

a) belong to the type "standard-extension";

b) contain the following elements:

1) *content-correlator*, if used; and

2) *internal-trace-information*;

c) take a criticality value as specified in ISO/IEC 10021-4, Figure 2; and

d) take values as specified in 4.4.2.3.6 and Table 4-4/Part 3/5, respectively.

4.4.2.3.8.1 The non-use of the elements recipient-reassignment-prohibited, dl-expansion-prohibited and conversion-with-loss-prohibited implies, in compliance with ISO/IEC 10021-4, that they are assumed to take their default abstract-values, which are "recipient-reassignment allowed", "DL-expansion-allowed" and "conversion-with-loss-allowed", respectively.

4.4.2.3.9 The value of the element *recipient-name* in each of the *per-recipient-fields* elements shall:

a) be the address of each addressee indicated in the AFTN message, respectively;

b) take the form of a MF-Address; and

c) be converted as specified in 4.4.2.1.4.2.

4.4.2.3.10 The value of the element *originally-specified-recipient-number* in each of the *per-recipient-fields* elements shall be generated by the Message Transfer and Control Unit as specified in ISO/IEC 10021-4, 12.2.1.1.1.5.

4.4.2.3.11 The components of the element *per-recipient-indicators* in each of the *per-recipient-fields* elements shall be generated taking the following abstract-values:

a) "responsible" for the *responsibility* element;

b) "non-delivery-report" for the *originating-MTA-report-request* element; and

c) "non-delivery-report" for the *originator-report-request* element.

4.4.2.3.12 The element *global-domain-identifier* in the *MTS-identifier* shall:

a) identify the AMHS Management Domain operating the AFTN/AMHS Gateway; and

b) be composed as specified in Table 4-4 / Part 2/2.

4.4.2.3.13 The element *local-identifier* in the *MTS-identifier* shall be generated locally so as to ensure that it distinguishes the message from all other messages, probes or reports generated in the AMHS Management Domain operating the AFTN/AMHS Gateway.

4.4.2.3.14 The element *country-name* in the *global-domain-identifier* element of the *MTS-identifier* and of the first *trace-information-element* shall be the *country-name* element of the identifier of the AMHS Management Domain operating the AFTN/AMHS Gateway as specified in 2.5.1.3.

4.4.2.3.15 The element *administration-domain-name* in the *global-domain-identifier* element of the *MTS-identifier* and of the first *trace-information-element* shall be the *administration-domain-name* element of the identifier of the AMHS Management Domain operating the AFTN/AMHS Gateway as specified in 2.5.1.3.

4.4.2.3.16 The element *private-domain-identifier* in the *global-domain-identifier* element of the *MTS-identifier* and of the first *trace-information-element* shall be the *private-domain-identifier* element of the identifier part of the identification of the AMHS Management Domain operating the AFTN/AMHS Gateway as specified in 2.5.1.3.

4.4.2.3.17 The element *disclosure-of-other-recipients* shall take its default abstract-value, which is "disclosure-of-other-recipients-prohibited".

4.4.2.3.18 The element *implicit-conversion-prohibited* shall take its default abstract-value, which is "implicit-conversion-allowed".

4.4.2.3.19 The element *alternate-recipient-allowed* shall take the abstract-value "alternate-recipient-allowed".

4.4.2.3.20 The element *content-return-request* shall take its default abstract-value, which is "content-return-not-requested".

4.4.2.3.21 The elements *country-name*, *administration-domain-name* and *private-domain-identifier* shall together identify the AMHS Management Domain for which the bilateral-information is intended if, and only if, the element *bilateral-information* as specified in 4.4.2.3.22 is present.

4.4.2.3.22 The generation of this element shall be optional, as a matter of bilateral agreement between the AMHS Management Domain operating the AFTN/AMHS Gateway and an other AMHS Management Domain.

4.4.2.3.23 The element *global-domain-identifier* in the *trace-information* or in the *internal-trace-information* shall:

a) identify the AMHS Management Domain operating the AFTN/AMHS Gateway; and

b) be composed as specified in Table 4-4 / Part 2/2.

4.4.2.3.24 The element *arrival-time* in the first element of *trace-information* or of *internal-trace-information* shall take the semantic value of the time when the message was received by the Message Transfer and Control Unit for conveyance in the AMHS.

4.4.2.3.25 The element *routing-action* in the first element of *trace-information* or of *internal-trace-information* shall take the abstract-value "relayed".

4.4.2.3.26 The element *mta-name* in the first element of *internal-trace-information* shall be the mta-name assigned to the Message Transfer and Control Unit included in the AFTN/AMHS Gateway.

4.4.2.3.26.1 The structure of the mta-name of the Message Transfer and Control Unit included in an AFTN/AMHS Gateway within an AMHS Management Domain is a matter of policy internal to the AMHS Management Domain.

4.4.3 Conversion of AFTN Acknowledgement Messages

4.4.3.1 Initial processing of AFTN Acknowledgement Message

4.4.3.1.1 Upon reception by the Message Transfer and Control Unit of an AFTN acknowledgement message, passed from the AFTN Component to be conveyed in the AMHS, the received message shall be processed in one of the following manners depending on whether or not the subject AFTN message previously passed through the Message Transfer and Control Unit:

a) processing as specified in 4.4.3.1.2, if exactly one subject AMHS message can be identified which previously passed through the Message Transfer and Control Unit, where it was converted into an AFTN SS message as identified in the AFTN acknowledgement message; or

b) in all other cases, processing as follows:

1) logging of the error situation and reporting to a control position; and

2) conversion of the AFTN acknowledgement message into an IPM conveyed

with a Message Transfer Envelope as specified in 4.4.3.1.5.

4.4.3.1.2 If the subject AFTN message previously passed through the Message Transfer and Control Unit, the AFTN acknowledgement message shall then be processed in one of the following manners depending on whether the subject IPM was received from the AMHS without or with *receipt-notification-request*:

a) processing as follows, if the subject IPM was received from the AMHS without *receipt-notification-request*:

1) conversion into an IPM conveyed with a Message Transfer Envelope as specified in 4.4.3.1.5; and

2) logging of the error situation and reporting to a control position; or

b) processing as specified in 4.4.3.1.3, if the subject IPM was received from the AMHS with *receipt-notification-request.*

4.4.3.1.3 If the subject IPM had been received from the AMHS with *receipt-notification-request*, the AFTN acknowledgement message shall be converted by the AFTN/AMHS Gateway into an Interpersonal Notification (IPN) taking the form of a Receipt Notification (RN), conveyed with a Message Transfer Envelope generated in compliance with the provisions of 4.4.3.1.4.

4.4.3.1.4 When the provisions of 4.4.3.1.3 apply, the generation of the RN and of the Message Transfer Envelope shall be performed in compliance with the following:

a) the specification of how the components of the AFTN Service Message are used, as included in 4.4.3.2;

b) the specification of how the RN is generated, as included in 4.4.3.3; and

c) the provisions of 4.4.2.3 concerning the generation of the Message Transfer Envelope, with the exception of the differences specified in 4.4.3.4.

4.4.3.1.5 When an acknowledgement message is converted into an IPM as the result of 4.4.3.1.1 or 4.4.3.1.2, the specification of 4.4.2 shall apply with two exceptions:

a) the *subject* element in the IPM heading fields, initially specified in Table 4-3/Part 2/10, which is then generated and takes the value "AFTN service information"; and

b) the element(s) *notification-requests* within the *primary-recipients* heading field which neither takes the value "rn" nor the value "nrn".

4.4.3.2 Use of AFTN Service Message components

4.4.3.2.1 Each component of an AFTN acknowledgement message shall be processed for the generation of a RN as specified in the column "action" of Table 4-5.

4.4.3.2.2 These components which are classified as "T" or "T1" in the column "action" of Table 4-5 shall

be translated into the AMHS parameter specified in the column "AMHS parameter" of Table 4-5 and according to the specification in the provision referred to in the column "mapping".

Table 4-5. Use of AFTN Service Message Components

AFTN Message Part	Component	Action	AMHS parameter	Mapping
Heading	Start-of-Heading Character	-	-	-
	Transmission Identification	D	-	-
Address	Alignment Function	-	-	-
	Priority Indicator	T	priority (see Table 4-7/Part 1/1.1.6)	see 4.4.3.4.3
	Addressee Indicator	T	recipient-name (see Table 4-7/Part 1/1.2.1)	see 4.4.3.4.4
	Alignment Function	-	-	-
Origin	Filing Time	T	receipt-time (see Table 4-6/Part 2/7.1)	see 4.4.3.2.4
	Originator Indicator	T	ipn-originator (see Table 4-6/Part 2/2) originator-name (see Table 4-4/Part 1/1.1.2)	see 4.4.3.2.3 see 4.4.2.1.4.1
	Priority Alarm	D	-	-
	Optional Heading Information	D	-	-
	Alignment Function	-	-	-
	Start-of-Text Character	-	-	-
Text		D	-	-
Ending	Alignment Function	-	-	-
	Page-feed sequence	-	-	-
	End-of-Text Character	-	-	-

Legend: (see 1.3)
D = discarded
T = translated
- = not applicable

4.4.3.2.3 Upon generation of a RN as the result of the receipt of an AFTN acknowledgement message by the Message Transfer and Control Unit, the originator indicator element of the AFTN acknowledgement

message shall be translated into the *ipn-originator* element of the RN.

4.4.3.2.4 Upon generation of a RN as the result of the receipt of an AFTN acknowledgement message by the Message Transfer and Control Unit, the filing time of the AFTN acknowledgement message shall be converted into the *receipt-time* element, which is of ASN.1 (Abstract syntax notation one) type UTCTime, as the result of the following:

a) generation by the Message Transfer and Control Unit of the YY figures identifying the year (characters 1 and 2 of the string) in the *receipt-time* element;

b) generation by the Message Transfer and Control Unit of the MM figures identifying the month (characters 3 and 4 of the string) in the *receipt-time* element;

c) mapping of the value of the first two figures of the date-time group into the value of the DD figures identifying the day (characters 5 and 6 of the string) in the *receipt-time* element;

d) mapping of the value of the four last figures of the date-time group, which together represent the hours and minutes, into the value of the hhmm figures (characters 7 to 10 of the string) in the *receipt-time* element; and

e) addition by the Message Transfer and Control Unit of an eleventh and last character in the string composing the *receipt-time* element taking the value "Z".

4.4.3.3 Generation of RN

4.4.3.3.1 Each of the elements composing the RN resulting from the receipt of an AFTN acknowledgement message in the Message Transfer and Control Unit shall be processed as specified in the column "action" of Table 4-6.

4.4.3.3.2 These elements are classified as "G" or "T" in the column "action" of Table 4-6 shall be either generated or translated according to the specification in the provision referred to in the column "mapping" of Table 4-6.

4.4.3.3.2.1 Table 4-6 is structured as a PRL derived from the profile specification included in *3* and consequently from the ISPICS Proforma included in ISO/IEC ISP 12062-2 (AMH21). The columns "Base" and "ISP" under "Origination" are extracted from ISO/IEC ISP 12062-2, and the column "Basic ATS Message Handling Service" specifies the static capability of an IPM AU supporting the Basic ATS Message Handling Service, i.e. the ability to generate the element as part of an IPN in the AMHS. The references to the ISP Profile are indicated in the part titles as AMH21/ref where appropriate. The references in column Ref are those of the ISP.

Table 4-6. RN Generation

Ref	Element	Origination			Action	Mapping / Notes
		Base	**ISP**	**Basic ATS Mess. Service**		
PART 1 : AMH21/A.1.1 SUPPORTED INFORMATION OBJECTS						
1	Interpersonal Message (IPM)	M	M	M	-	out of the scope of this provision
2	Interpersonal Notification (IPN)	M	M	M		see Part 2
PART 2 : AMH21/A.1.4 IPN FIELDS						
1	subject-ipm	M	M	M	G	see 4.4.3.3.3
2	ipn-originator	O	M	M	T	see 4.4.3.2.3 and Part 3/2
3	ipm-preferred-recipient	M	M	M	G2	see 4.4.3.3.4
4	conversion-eits	O	O	O	G2	see 4.4.3.3.5
5	notification-extensions	O	I	I	X	-
6	non-receipt-fields	M	M	M	X	-
7	receipt-fields	O	O	O	T	see Part 2/7.1-7.4
7.1	receipt-time	M	M	M	T	see 4.4.3.2.4
7.2	acknowledgment-mode	O	O	O	G	see 4.4.3.3.6
7.3	suppl-receipt-info	O	O	O	X	-
7.4	rn-extensions	O	I	I	X	-
8	other-notification-type-fields	O	I	I	X	-
PART 3 : AMH21/A.1.5 COMMON DATA TYPES						
2	ORDescriptor					
2.1	formal-name	M	M1	M	T	see 4.4.3.3.7

Ref	Element	Origination			Action	Mapping / Notes
		Base	ISP	Basic ATS Mess. Service		
2.2	free-form-name	O	O	O	X	
2.3	telephone-number	O	O	O	X	

Legend (see 1.3) :
M = mandatory support
M1 = minimal O/R name mandatory support
O = optional support
I = out of scope
G = generated
G2 = conditionally generated
T = translated
X = excluded (not used)

4.4.3.3.3 The element *subject-ipm* shall be an IPM Identifier composed of the *user* and *user-relative-identifier* elements of the *this-IPM* heading field of the subject IPM.

4.4.3.3.3.1 The *user* element of the *IPM-identifier* (*this-IPM*) is an MF-address, so its case is insignificant. Although discouraged, this case may be modified when constructing the element *subject-ipm* from the elements of the subject IPM.

4.4.3.3.4 The element *ipm-preferred-recipient* shall:

a) be present if, and only if:

1) it would be different from the *ipn-originator* specified in 4.4.3.2.3; and

2) it would not be the result of a DL-expansion;

b) if present, identify the recipient of the subject IPM which caused the receipt of the AFTN acknowledgement message by the Message Transfer and Control Unit (as a result of the receipt by its addressee of the subject AFTN message); and

c) if present, be the *O/R descriptor* of the recipient of the subject IPM.

4.4.3.3.5 The element *conversion-eits* shall:

a) be present if, and only if, this encoded-information-types is different of the *originally-encoded-information-types* included in the subject IPM; and

b) if present, take the value of the encoded-information-types of the subject IPM received

by the Message Transfer and Control Unit.

4.4.3.3.6 The element *acknowledgement-mode* shall take the abstract-value "manual", which is its default value.

4.4.3.3.7 The element *formal-name* in an *ORDescriptor* shall take the form of an O/R address and be converted from the originator indicator of the AFTN acknowledgement message as specified in 4.4.2.1.4.1.

4.4.3.4 Differences in the generation of Message Transfer Envelope

4.4.3.4.1 The elements composing the Message Transfer Envelope which is conveyed with a RN resulting from the receipt of an AFTN acknowledgement message by the Message Transfer and Control Unit, which are different from the specification of 4.4.2.3 shall be processed according to the specification in the provision referred to in the column "mapping" of Table 4-7.

4.4.3.4.2 An element subject to the provisions of 4.4.3.4.1 shall be processed as specified in the column "action" of Table 4-7, and in accordance with the specification referred to in the column "mapping" of Table 4-7.

Note.— Table 4-7 is structured as an extract of Table 4-4. The references used in the part titles and in the column "Ref" are those of Table 4-4.

Table 4-7. MessageTransfer Envelope generation for conveyance with a RN (Differences with Table 4-4)

Ref	Element	Base	ISP	Basic ATS Mess. Service	Action	Mapping
PART 1 : AMH11/A.1.4.2 MESSAGETRANSFER						
1	MessageTransferEnvelope	M	M	M	T	see Part 1/1.1 and 1.2
1.1	(per message fields)					
1.1.3	original-encoded-information-types	M	M-	M-	X	-
1.1.6	Priority	M	M	M	G	see 4.4.3.4.3
1.1.7	per-message-indicators	M	M	M	G	see Part 2/4
1.2	per-recipient-fields	M	M	M	T	see Part 1/1.2.1 and 1.2.3
1.2.1	recipient-name	M	M	M	T	see 4.4.3.4.4
1.2.3	per-recipient-indicators	M	M	M	G	see 4.4.3.4.5

Ref	Element	Base	ISP	Basic ATS Mess. Service	Action	Mapping
2	Content	M	M	M	T	see 4.4.3.3
PART 2 : AMH11/A.1.5 COMMON DATA TYPES						
4	PerMessageIndicators					
4.2	implicit-conversion-prohibited	M	M	M	G	see 4.4.3.4.6

Legend (see 1.3) :
M = mandatory support
M- = minimal mandatory support
G = generated
T = translated
X = excluded (not used)

4.4.3.4.3 The element *priority* shall take the abstract-value "urgent".

4.4.3.4.4 The element *recipient-name* shall:

a) identify the originator of the subject IPM; and

b) take the form of an MF-Address.

4.4.3.4.5 The components of the element *per-recipient-indicators* shall be generated taking the following abstract-values:

a) "responsible" for the *responsibility* element;

b) "non-delivery-report" for the *originating-MTA-report-request* element; and

c) "no-report" for the *originator-report-request* element.

4.4.3.4.6 The element *implicit-conversion-prohibited* shall take the abstract-value "implicit-conversion-prohibited".

4.4.4 Conversion of AFTN Service Messages related to unknown addressee indicators

4.4.4.1 Initial Processing of the AFTN Service Message

4.4.4.1.1 Upon reception by the Message Transfer and Control Unit of an unknown address AFTN service message, passed from the AFTN Component to be conveyed in the AMHS, the received message shall be processed in one of the following manners:

a) processing as specified in 4.4.4.1.2, if exactly one subject AMHS message can be identified which previously passed through the MTCU, where it was converted into an

AFTN message as identified in the unknown address AFTN service message text; or

b) in all other cases, conversion of the unknown address AFTN service message into an IPM conveyed with a Message Transfer Envelope as specified in 4.4.4.1.7.

4.4.4.1.2 If the subject AMHS message previously passed through the Message Transfer and Control Unit, the received message shall be processed in either of the following manners depending on whether or not the unknown addressee indicator(s) which caused the generation of the unknown address AFTN service message can be determined:

a) processing as specified in 4.4.4.1.3, if at least one valid addressee indicator which caused the generation of the unknown address AFTN service message can be found; or

b) if no such valid addressee indicator can be found, conversion of the unknown address AFTN service message into an IPM conveyed with a Message Transfer Envelope as specified in 4.4.4.1.7.

4.4.4.1.3 For the addressee indicators determined as causing the generation of the unknown address AFTN service message, as the result of 4.4.4.1.2, the received message shall be processed as follows, depending on whether or not the conversion of each unknown addressee indicator into a recipient MF-Address in the same way as specified for an originator indicator in 4.4.2.1.4.1 can be successfully performed by the Message Transfer and Control Unit:

a) processing as specified in 4.4.4.1.4, for the set of unknown addressee indicators which can be successfully translated into an MF-Address, if any; and

b) for the set of unknown addressee indicators which cannot be successfully translated, if any, processing as follows:

1) deletion in the text of the unknown address AFTN service message of all unknown addressee indicators processed as specified in a) above; and

2) conversion of the resulting unknown address AFTN service message into an IPM conveyed with a Message Transfer Envelope as specified in 4.4.4.1.7.

4.4.4.1.4 For the unknown recipient MF-Addresses determined as the result of 4.4.4.1.3 a), the received message shall be processed as follows, depending on the abstract-values of the *originator-report-request* and of the *originating-MTA-report-request* elements in the *per-recipient-indicators* in the corresponding *per-recipient-fields* of the subject AMHS message:

a) processing as specified in 4.4.4.1.5, for the set of recipients which meet the following condition, if any:

1) the abstract-value of the *originator-report-request* differs from "report"; and

2) the abstract-value of the *originating-MTA-report-request* differs from "report" and from "audited-report"; or

b) processing as follows, for all other recipients, if any:

1) replacement, in the text of the unknown address AFTN service message, of the entire list of unknown addressee indicators with a list restricted to the addressee indicators of these recipients; and

2) conversion of the resulting unknown address AFTN service message into an IPM conveyed with a Message Transfer Envelope as specified in 4.4.4.1.7.

Note.— This provision aims at avoiding the generation of a non-delivery-report after the generation of a delivery-report by the MTCU for the same subject AMHS message.

4.4.4.1.5 For each unknown recipient MF-Address which has not been subject to the generation of a delivery-report, the received message shall be processed in one of the following manners:

a) processing as specified in 4.4.4.1.6, if, for a given recipient, no non-delivery report has been generated yet in relation with the same subject AMHS message and with the same message recipient; or

b) discarding of the unknown address AFTN service message for the considered unknown recipient MF-Address and termination of the procedure for the given recipient if a non-delivery report has already been generated in relation with the same subject AMHS message and with the same message recipient.

4.4.4.1.5.1 Provision 4.4.4.1.5 aims at avoiding the generation of a multiple non-delivery-reports in relation with a single subject AMHS message which would have been split in several AFTN messages when converted from the AMHS to the AFTN, as the result of 4.5.2.1.7.

4.4.4.1.6 A non-delivery report related to the unknown recipient MF-Addresses which have not caused the conversion of the unknown address AFTN service message into an IPM as the result of 4.4.4.1.4 and 4.4.4.1.5, shall be generated in compliance with:

a) the specification of 4.5.6 using the elements of the subject AMHS message; and

b) the following specification of abstract-values:

1) "unable-to-transfer" for the *non-delivery-reason-code*; and

2) "unrecognised-OR-name" for the *non-delivery-diagnostic-code*; and

c) the exception with respect to 4.5.6, that the *actual-recipient-name* element(s) in each *per-recipient-fields* element of the report take the value of the unknown recipient MF-Address(es) as determined in 4.4.4.1.5.

4.4.4.1.6.1 The potential future reception of an unknown address AFTN service message to be converted into a non-delivery-report requires the retention by the AFTN/AMHS Gateway of certain elements of the subject AMHS message for later report generation, if required.

4.4.4.1.7 When an unknown address AFTN service message is converted into an IPM as the result of 4.4.4.1.1 to 4.4.4.1.4, the specification of 4.4.2 shall apply, with the exception of the *subject* element in the IPM heading fields, initially specified in Table 4-3/Part2/10, which is then generated and takes the value "AFTN service information".

4.5 AMHS to AFTN Conversion

Note.— This section specifies the actions to be performed by an AFTN/AMHS Gateway upon reception of information objects from the AMHS for conveyance over the AFTN, after the accomplishment of the AMHS-related procedures by the ATN Component as specified in 4.2.2.

4.5.1 Control Function

4.5.1.1 Upon reception by the Message Transfer and Control Unit of an AMHS message passed by the ATN Component, the received message shall be processed in one of the following manners, depending on the abstract-value of the *content-type* element in the Message Transfer Envelope:

a) processing as specified in 4.5.1.2 if the abstract-value of the element is "interpersonal-messaging-1988"; or

b) if the abstract-value of the element is not "interpersonal-messaging-1988":

1) rejection of the message for all the message recipients for which the *responsibility* element of the *per-recipient-indicators* had the abstract-value "responsible"; and

2) generation of a non-delivery report as specified in 4.5.6 with the following elements taking the following abstract-values:

i) "unable-to-transfer" for the *non-delivery-reason-code*; and

ii) "content-type-not-supported" for the *non-delivery-diagnostic-code*.

4.5.1.1.1 The message recipients towards which the Message Transfer and Control Unit conveys the message are those identified by a recipient-name element in the per-recipient-fields element of the Message Transfer Envelope, and for which the responsibility element in the per-recipient-indicators element has the abstract-value "responsible". In 4.5 the term "message recipient" refers to such a recipient.

4.5.1.1.2 Support of other content-types, e.g. edi-messaging, may be added in future packages.

4.5.1.2 Upon reception by the Message Transfer and Control Unit of an AMHS message whose *content-type* is "interpersonal-messaging-1988" passed from the ATN Component, the message shall be processed for conversion into an AFTN message in one of three mutually exclusive manners, depending on the nature of the content:

a) processing for conversion into an AFTN message as specified in 4.5.2, if the content is

an IPM;

b) processing for conversion into an AFTN service message as specified in 4.5.3, if the content is an IPN which is a Receipt Notification (RN); or

c) unsuccessful termination of the procedure, if the content is an IPN but not a RN, resulting in:

1) logging of the error situation and reporting to a control position; and

2) storage of the message for appropriate processing at the control position.

4.5.1.3 Upon reception by the Message Transfer and Control Unit of an AMHS non-delivery report passed from the ATN Component, the report shall be processed as specified in 4.5.4.

4.5.1.4 Upon reception by the Message Transfer and Control Unit of an AMHS probe passed by the ATN Component, the received probe shall be processed in one of the following manners, depending on the abstract-value of the *content-type* element in the Probe Transfer Envelope:

a) processing for conveyance test as specified in 4.5.5 if the abstract-value of the element is "interpersonal-messaging-1988"; or

b) if the abstract-value of the element is not "interpersonal-messaging-1988":

1) rejection of the probe for all the probe recipients for which the *responsibility* element of the *per-recipient-indicators* had the abstract-value "responsible"; and

2) generation of a non-delivery report as specified in 4.5.6 with the following elements taking the following abstract-values:

i) "unable-to-transfer" for the *non-delivery-reason-code*; and

ii) "content-type-not-supported" for the *non-delivery-diagnostic-code*.

4.5.1.5 Upon reception by the Message Transfer and Control Unit of an ISO/IEC 10021 information object other than those referred to in 4.5.1.1 to 4.5.1.4 above, the processing by the Message Transfer and Control Unit shall unsuccessfully terminate, resulting in:

a) logging of the error situation and reporting to a control position; and

b) storage of the information object for appropriate processing at the control position.

4.5.1.6 Upon completion by the Message Transfer and Control Unit of the processing specified in 4.5.1.1 to 4.5.1.4 above, the resulting AFTN message(s) or AFTN service message(s), if any, shall be passed to the AFTN component, for conveyance over the AFTN.

4.5.1.7 If the generation of a report is required in relation with the result of the processing specified in 4.5.1.1

to 4.5.1.4 above, either due to message rejection or probe test failure by the Message Transfer and Control Unit, or due to a delivery-report request in the subject AMHS message or probe, an appropriate AMHS report shall be generated as specified in 4.5.6.

4.5.2 AMHS IPM Conversion

Upon reception by the Message Transfer and Control Unit of an IPM conveyed with a Message Transfer Envelope passed from the ATN Component to be conveyed over the AFTN, this message shall be converted into an AFTN message in compliance with the following:

a) the specification of the initial processing to be performed by the Message Transfer and Control Unit to determine the ability to convert the message and to split it into individually convertible messages, as included in 4.5.2.1;

b) the specification of how the AFTN message is generated and how the AFTN message components are mapped from AMHS parameters, as included in 4.5.2.2;

c) the specification of how the elements of the received IPM are handled, as included in 4.5.2.3; and

d) the specification of how the Message Transfer Envelope elements are handled, as included in 4.5.2.4.

4.5.2.1 Initial processing of AMHS Messages

4.5.2.1.1 Upon reception by the Message Transfer and Control Unit of an IPM, the received message shall be processed in one of the following manners, depending on the abstract-value of the current encoded-information-types, determined as either the abstract-value of the latest *converted-encoded-information-types*, if existing, in the *trace-information* element, or as the abstract-value of the *original-encoded-information-types* element if the previous does not exist:

a) processing as specified in 4.5.2.1.2 if the abstract-value of the current encoded-information-types is any of the following:

1) basic "ia5-text";

2) externally-defined "ia5-text";

3) OID {id-cs-eit-authority 1} as specified in ISO/IEC 10021-7;

4) OID {id-cs-eit-authority 2} as specified in ISO/IEC 10021-7;

5) OID {id-cs-eit-authority 6} as specified in ISO/IEC 10021-7; or

6) OID {id-cs-eit-authority 100} as specified in ISO/IEC 10021-7; or

b) if the abstract-value differs from all values indicated in item a) above:

1) rejection of the message for all the message recipients; and

2) generation of a non-delivery report as specified in 4.5.6 with the following elements taking the following abstract-values in all the *per-recipient-fields* of the report:

i) "unable-to-transfer" for the *non-delivery-reason-code*; and

ii) "encoded-information-types-unsupported" for the *non-delivery-diagnostic-code.*

4.5.2.1.2 A message which was not rejected as the result of 4.5.2.1.1 shall be processed in one of the following manners:

a) processing as specified in 4.5.2.1.3 if the abstract-value of the *implicit-conversion-prohibited* in the *per-message-indicators* element in the Message Transfer Envelope differs from "prohibited", or if the abstract-value of the current encoded-information-types does not include the OID value {id-cs-eit-authority 100}; or

b) if the abstract-value of the element is "prohibited" and if the abstract-value of the encoded-information-types includes OID {id-cs-eit-authority 100}:

1) rejection of the message for all the message recipients; and

2) generation of a non-delivery report as specified in 4.5.6 with the following elements taking the following abstract-values in all the *per-recipient-fields* of the report:

i) "conversion-not-performed" for the *non-delivery-reason-code*;

ii) "implicit-conversion-prohibited" for the *non-delivery-diagnostic-code*; and

iii) "unable to convert to AFTN" for the *supplementary-information*.

4.5.2.1.3 A message which was not rejected as the result of 4.5.2.1.2 shall be processed in one of the following manners:

a) processing as specified in 4.5.2.1.4 if there is one single body part in the IPM body; or

b) if there are multiple body parts in the IPM body:

1) rejection of the message for all the message recipients; and

2) generation of a non-delivery report as specified in 4.5.6 with the following elements taking the following abstract-values in all the *per-recipient-fields* of the report:

i) "unable-to-transfer" for the *non-delivery-reason-code*;

ii) "content-syntax-error" for the *non-delivery-diagnostic-code*; and

iii) "unable to convert to AFTN due to multiple body parts" for the *supplementary-information*.

4.5.2.1.4 A message which was not rejected as the result of 4.5.2.1.3 shall be processed in one of the following manners:

a) processing as specified in 4.5.2.1.5 if the body part type is one of the following:

1) a basic body part type "ia5-text";

2) a standard extended body part type "ia5-text-body-part";

3) a standard extended body part type "general-text-body-part" of which the repertoire set description is Basic (ISO 646); or

4) a standard extended body part type "general-text-body-part" of which the repertoire set description is Basic-1 (ISO 8859-1), if and only if the local policy of the AMHS Management Domain is to support the conversion of this repertoire set into IA5IRV characters according to locally defined conversion rules; or

b) if the body part type is different from the body part types 1) to 3) under a) above, or if the body part corresponds to type 4) under a) above and the local policy of the AMHS Management Domain is not to support the conversion of the ISO 8859-1 repertoire set:

1) rejection of the message for all the message recipients; and

2) generation of a non-delivery report as specified in 4.5.6 with the following elements taking the following abstract-values in all the *per-recipient-fields* of the report:

i) "unable-to-transfer" for the *non-delivery-reason-code*;

ii) "content-syntax-error" for the *non-delivery-diagnostic-code*; and

iii) "unable to convert to AFTN due to unsupported body part type" for the *supplementary-information*.

Note.— The locally defined conversion rules mentioned in 4.5.2.1.4 a) 4) above may be for example CCITT Recommendation X.408.

4.5.2.1.5 A message not rejected as the result of 4.5.2.1.4 shall then be processed in one of the following manners:

a) processing as specified in 4.5.2.1.6 if the text element in the body part includes an ATS Message Header as specified in 3.3.3.3, or if the IPM includes IPM heading fields and recipient extensions as specified in 3.3.4; or

b) if the text does not include an ATS Message Header as specified in 3.3.3.3 and the IPM does not include IPM heading fields and recipient extensions as specified in 3.3.4:

1) rejection of the message for all the message recipients; and

2) generation of a non-delivery report as specified in 4.5.6 with the following elements taking the following abstract-values in all the *per-recipient-fields* of the report:

i) "unable-to-transfer" for the *non-delivery-reason-code*;

ii) "content-syntax-error" for the *non-delivery-diagnostic-code*; and

iii) "unable to convert to AFTN due to ATS-Message-Header or Heading Fields syntax error" for the *supplementary-information*.

4.5.2.1.5.1 The compliance requested to meet the condition of item a) includes the requirement that the ATS Message Header element is present and has a value which is syntactically valid for the priority indicator, i.e. a value among SS, DD, FF, GG and KK, and for the filing time, i.e. a value in which the first six figures in the sequence build a valid date-time group, or that the IPM Heading Fields and recipient extensions are present, that the precedence-policy-identifier has the value specified in 3.3.4.4, and that the IPM precedence has a value authorized by Table 3-5 .

4.5.2.1.5.2 In case of absence of optional-heading-information in the ATS-Message-Header, both cases of either the ATS-Message-Optional-Heading-Info as a whole being absent, or the ATS-Message-Optional-Heading-Info consisting of only an OHI-prompt and OHI-separator, are considered as meeting the requirements of 3.3.3.3, as requested in item 4.5.2.1.5 a).

4.5.2.1.6 A message which was not rejected as the result of 4.5.2.1.5 shall be processed in one of five mutually exclusive manners:

a) processing as specified in 4.5.2.1.7 if the abstract-value of the *conversion-with-loss-prohibited* element in the *extensions* of the per message fields is"allowed";

b) if the abstract-value of the element *conversion-with-loss-prohibited* is "prohibited" and at least one line in the message exceeds 69 characters:

1) rejection of the message for all the message recipients; and

2) generation of a non-delivery report as specified in 4.5.6 with the following elements taking the following abstract-values in all the *per-recipient-fields* of the report:

i) "conversion-not-performed" for the *non-delivery-reason-code*; and

ii) "line-too-long" for the *non-delivery-diagnostic-code*;

c) if the abstract-value of the element *conversion-with-loss-prohibited* is "prohibited" and at least one punctuation symbol in the text is not authorized in Annex 10, Volume II, 4.1.2:

1) rejection of the message for all the message recipients; and

2) generation of a non-delivery report as specified in 4.5.6 with the following elements taking the following abstract-values in all the *per-recipient-fields* of the report:

i) "conversion-not-performed" for the *non-delivery-reason-code*; and

ii) "punctuation-symbol-loss" for the *non-delivery-diagnostic-code*;

d) if the abstract-value of the element *conversion-with-loss-prohibited* is "prohibited" and at least one alphabetical character in the text is not authorized in Annex 10, Volume II, 4.1.2:

1) rejection of the message for all the message recipients; and

2) generation of a non-delivery report as specified in 4.5.6 with the following elements taking the following abstract-values in all the *per-recipient-fields* of the report:

i) "conversion-not-performed" for the *non-delivery-reason-code*; and

ii) "alphabetical-character-loss" for the *non-delivery-diagnostic-code*; or

e) if several of the conditions under b) to d) above are simultaneously met:

1) rejection of the message for all the message recipients; and

2) generation of a non-delivery report as specified in 4.5.6 with the following elements taking the following abstract-values in all the *per-recipient-fields* of the report:

i) "conversion-not-performed" for the *non-delivery-reason-code*; and

ii) "multiple-information-loss" for the *non-delivery-diagnostic-code*.

4.5.2.1.7 A message which was not rejected as the result of 4.5.2.1.6 shall be processed in one of three mutually exclusive manners:

a) if the length of the ATS-Message-Text element exceeds 1800 characters, and if, due to system resource limitation, the procedure proposed in Annex 10, Volume II, Attachment B cannot be properly achieved by the AFTN/AMHS Gateway:

1) rejection of the message for all the message recipients; and

2) generation of a non-delivery report as specified in 4.5.6 with the following elements taking the following abstract-values in all the *per-recipient-fields* of the report:

i) "unable-to-transfer" for the *non-delivery-reason-code*;

ii) "content-too-long" for the *non-delivery-diagnostic-code*; and

iii) "unable to convert to AFTN due to message text length" for the *supplementary-information*.

b) if the length of the ATS-Message-Text element exceeds 1800 characters, and if the procedure proposed in Annex 10, Volume II, Attachment B is applied in the AFTN/AMHS Gateway:

1) splitting of the message, internally to the Message Transfer and Control Unit, into several messages in accordance with the aforementioned Annex 10 procedure:

i) each of the resulting messages having for conversion purposes the same Message Transfer Envelope, the same IPM Heading and the ATS-Message-Header, if present, as the message subject to the splitting; and

ii) only the ATS-Message-Text element varying between the different resulting messages; and

2) processing of each of these messages as specified in 4.5.2.1.8; or

c) processing as specified in 4.5.2.1.8 if the length of the ATS-Message-Text element does not exceed 1800 characters.

4.5.2.1.8 A message resulting from the situations in items b) and c) of 4.5.2.1.7 above shall be processed in one of three manners, depending on the number of message recipients towards which the Message Transfer and Control Unit is responsible for conveyance of the message:

a) if this number exceeds 21 message recipients and does not exceed 512 recipients:

1) split the message, internally to the Message Transfer and Control Unit, into several messages, each of them with no more than 21 message recipients:

i) each of the resulting messages having for conversion purposes the same *per-message-fields* in the Message Transfer Envelope, and the same content as the message subject to the splitting; and

ii) only the *per-recipient-fields* elements in the Message Transfer Envelope varying between the different resulting messages; and

2) processing of each of these messages as specified in 4.5.2.2 to 4.5.2.4;

b) if this number exceeds 512 message recipients:

3) rejection of the message for all the message recipients; and

4) generation of a non-delivery report as specified in 4.5.6 with the following elements taking the following abstract-values in all the *per-recipient-fields* of the report:

i) "unable-to-transfer" for the *non-delivery-reason-code*;

ii) "too-many-recipients" for the *non-delivery-diagnostic-code*; and

iii) "unable to convert to AFTN due to number of recipients" for the *supplementary-information*; or

c) processing as specified in 4.5.2.2 to 4.5.2.4, if this number does not exceed 21 message recipients.

4.5.2.1.8.1 In the processing defined in item a), the per-recipient-fields related to a particular recipient remain unchanged by the splitting. This applies in particular to the originally-specified-recipient-number, which is not altered by the processing specified in this provision.

4.5.2.1.8.2 The combination of 4.5.2.1.7 and 4.5.2.1.8 above may result in a very high number of AFTN messages being generated from one single AMHS message. Item 4.5.2.1.7 a) may, as a local matter, be used under such circumstances.

4.5.2.2 Generation of AFTN Message

4.5.2.2.1 Each message resulting from the processing specified in 4.5.2.1 above shall be converted by the Message Transfer and Control Unit into an AFTN Message composed of elements as specified in Table 4-8.

4.5.2.2.2 Those components which are classified as "G" in the column "action" of Table 4-8 shall be generated in compliance with the provisions of Annex 10, Volume II referred to in the column "mapping".

4.5.2.2.3 Those components which are classified as "T" or "T1" in the column "action" of Table 4-8 shall be converted from the AMHS parameter specified in the column "converted from AMHS parameter" of Table 4-8 and according to the specification in the provision referred to in the column "mapping".

Table 4-8. AFTN Message Generation

AFTN Message Part	Component	Action	Converted from AMHS parameter	Mapping
Heading	Start-of-Heading Character	X	-	-
	Transmission Identification	X	-	see 4.5.2.2.4
Address	Alignment Function	G	-	see Annex 10, Vol. II, 4.4.15.2.1
	Priority Indicator	T	ATS-Message-Priority (see Table 4-9/ Part 6/1.2) or precedence (see Table 4-9/Part 5/1.4.3)	see 4.5.2.2.5
	Addressee Indicator(s)	T	recipient-name (see Table 4-10/Part 1/1.2.1)	see 4.5.2.2.6.2
	Alignment Function	G	-	see Annex 10, Vol. II, 4.4.15.2.1
Origin	Filing Time	T	ATS-Message-Filing-Time (see Table 4-9/Part 6/1.3) or authorization-time (see Table 4-9/Part 2/17.6)	see 4.5.2.2.7
	Originator Indicator	T	originator-name (see Table 4-10/ Part 1/1.1.2)	see 4.5.2.2.6.1
	Priority Alarm	G	-	see Annex 10, Vol. II, 4.4.15.2.2
	Optional Heading Information	T1	ATS-Message-Optional-Heading-Info (see Table 4-9/Part 6/1.4) or originators-reference (see Table 4-9/ Part 2/17.12)	see 4.5.2.2.8
	Alignment Function	G	-	see Annex 10, Vol. II, 4.4.15.2.2
	Start-of-Text Character	G	-	see Annex 10, Vol. II, 4.4.15.2.2
Text		T	ATS-Message-Text (see Table 4-9/Part 6/2)	see 4.5.2.2.9
Ending	Alignment Function	G	-	see Annex 10, Vol. II, 4.4.15.3.12

AFTN Message Part	Component	Action	Converted from AMHS parameter	Mapping
	Page-feed sequence	G	-	see Annex 10, Vol. II, 4.4.15.3.12
	End-of-Text Character	G	-	see Annex 10, Vol. II, 4.4.15.3.12

Legend: (see 1.3)
X = excluded (not used)
T1 = conditionally translated
G = generated
T = translated

4.5.2.2.4 As specified in 4.5.2.3, the element transmission identification shall be:

a) generated by the AFTN Component rather than by the Message Transfer and Control Unit; and

b) returned to the Message Transfer and Control Unit as the result of the operation transferring the generated AFTN Message from the Message Transfer and Control Unit to the AFTN Component.

4.5.2.2.5 The value of the priority indicator of the converted AFTN message shall be:

a) mapped from the *precedence* element in the *recipient-extensions* in any of the *RecipientSpecifier* included in the IPM, in compliance with the mapping specified in Table 3-5, if all the following conditions are met:

1) the AFTN/AMHS Gateway supports the Extended ATS Message Handling Service; and

2) the *precedence* element is present in at least one of the *RecipientSpecifier* included in the IPM; or

b) the value of the priority-indicator in the ATS-message-priority element of the AMHS message, if any of the following conditions is met:

1) the AFTN/AMHS Gateway supports only the Basic ATS Message Handling Service;

2) the ATS-message-priority element is present in the ATS-Message-Header, and the *precedence* element is not present the IPM.

4.5.2.2.5.1 The use of the IPM heading fields and recipient extensions, in support of the Extended ATS Message Handling Service, takes precedence over the ATS-Message-Header, if both are present.

4.5.2.2.6 The value of an AF-Address included in the converted AFTN message shall be converted from an MF-Address as respectively specified in 4.5.2.2.6.1 and 4.5.2.2.6.2 depending whether it is an originator MF-Address or a recipient MF-Address.

4.5.2.2.6.1 The originator MF-Address included in an AMHS message shall be processed for translation into the originator indicator of the converted AFTN Message in one of four mutually exclusive manners, depending on the MF-Address format, after preliminary conversion of the value of all AMHS address attributes from lower case IA5IRV characters, if any, to upper case IA5IRV characters:

a) determination of an AF-Address matching exactly the MF-Address of the originator in the User address look-up table maintained in the Message Transfer and Control Unit, if such an exact match can be found; or

b) if a) cannot be achieved, and the MF-Address to be converted is a CAAS-compliant address as specified in 2.5.1.4.3 including a *common-name* attribute value which is a syntactically valid AF-Address, processing as follows:

   1) allocation of the AF-Address found as the *common-name* attribute value, to the originator indicator of the converted AFTN Message, and

   2) analysis of consistency between the originator MF-Address and the result of the backwards conversion of the AF-Address determined in 1) into an MF-Address as specified in 4.4.2.1.4.1 using the contents of the gateway look-up tables, resulting in:

      i) no further action if the originator MF-Address and the MF-Address resulting from the conversion of the AF-Address are identical; or

      ii) logging of the error situation and reporting to a control position if the originator MF-Address and the MF-Address resulting from the conversion of the AF-Address are not identical; or

c) if a) cannot be achieved, and the MF-Address to be converted is an XF-Address as specified in 2.5.1.4.2 including an *organizational-unit-names* attribute value which is a syntactically valid AF-Address, processing as follows:

   1) allocation of the AF-Address found as *organizational-unit-names* attribute value, to the originator indicator of the converted AFTN message, and

   2) analysis of consistency between the originator XF-Address and the result of the backwards conversion of the AF-Address determined in 1) into an MF-Address as specified in 4.4.2.1.4.1 using the contents of the gateway look-up tables, resulting in:

      i) no further action if the originator XF-Address and the MF-Address resulting from the conversion of the AF-Address are identical; or

      ii) logging of the error situation and reporting to a control position if the

originator XF-Address and the MF-Address resulting from the conversion of the AF-Address are not identical; or

d) if none of the conditions in a), b) and c) can be met, failure to translate the MF-Address resulting in:

1) rejection of the message for all the message recipients, and

2) generation of a non-delivery-report as specified in 4.5.6 with the following elements taking the following abstract-values in all the *per-recipient-fields* of the report:

i) "unable-to-transfer" for the *non-delivery-reason-code*;

ii) "invalid-arguments" for the *non-delivery-diagnostic-code*; and

iii) "unable to convert to AFTN due to unrecognized originator O/R address" for the *supplementary-information*.

4.5.2.2.6.2 To build the address part of the converted AFTN Message as specified in Annex 10, Volume II, 4.4.15.2.1, each of the recipient MF-Addresses included in an AMHS message, whose *responsibility* element in the *per-recipient-indicators* has the abstract-value "responsible", shall be processed for translation into an addressee indicator of the converted AFTN Message in one of four mutually exclusive manners, depending on the MF-Address format, after preliminary conversion of the value of all AMHS address attributes from lower case IA5IRV characters, if any, to upper case IA5IRV characters:

a) determination of an AF-Address matching exactly the MF-Address of the recipient in the User address look-up table maintained in the Message Transfer and Control Unit, if such an exact match can be found; or

b) if a) cannot be achieved, and the MF-Address to be converted is a CAAS-compliant address as specified in 2.5.1.4.3 including a *common-name* attribute value which is a syntactically valid AF-Address, processing as follows:

1) allocation of the AF-Address found as the *common-name* attribute value, to the addressee indicator of the converted AFTN Message, and

2) analysis of consistency between the recipient MF-Address and the result of the backwards conversion of the AF-Address determined in 1) into an MF-Address as specified in 4.4.2.1.4.1 using the contents of the gateway look-up tables, resulting in:

i) no further action if the recipient MF-Address and the MF-Address resulting from the conversion of the AF-Address are identical; or

ii) logging of the error situation and reporting to a control position if the recipient MF-Address and the MF-Address resulting from the

conversion of the AF-Address are not identical; or

c) if a) cannot be achieved, and the MF-Address to be converted is an XF-Address as specified in 2.5.1.4.2 including an *organizational-unit-names* attribute value which is a syntactically valid AF-Address, processing as follows:

1) allocation of the AF-Address found as *organizational-unit-names* attribute value, to the addressee indicator of the converted AFTN message, and

2) analysis of consistency between the recipient XF-Address and the result of the backwards conversion of the AF-Address determined in 1) into an MF-Address as specified in 4.4.2.1.4.1 using the contents of the gateway look-up tables, resulting in:

i) no further action if the recipient XF-Address and the MF-Address resulting from the conversion of the AF-Address are identical; or

ii) logging of the error situation and reporting to a control position if the recipient XF-Address and the MF-Address resulting from the conversion of the AF-Address are not identical;

or

d) if none of the conditions in a), b) and c) can be met, failure to translate the MF-Address resulting in:

1) rejection of the message for the considered message recipient, and

2) generation of a non-delivery-report as specified in 4.5.6 with the following elements taking the following abstract-values in the *per-recipient-fields* of the report, for the considered recipient:

i) "unable-to-transfer" for the *non-delivery-reason-code*; and

ii) "unrecognised-OR-name" for the *non-delivery-diagnostic-code*.

4.5.2.2.6.2.1 Although the potential generation of a non-delivery report is mentioned for each recipient-name which cannot be properly translated into an AF-Address, a single report with different per-recipient-fields may be generated for all recipient-names which cannot be translated.

4.5.2.2.7 The value of the filing time of a converted AFTN message shall:

a) be a date-time group as specified in Annex 10, Volume II, 4.4.15.2.2.1 taking the value of the six characters between the seventh and twelfth position from the *authorization-time* element in the IPM heading extensions adjusted by the optionally indicated time differential, if all the following conditions are met:

1) the AFTN/AMHS Gateway supports the Extended ATS Message Handling Service; and

2) the *authorization-time* element is present in the IPM heading extensions; or

b) be the value of the filing-time component in the ATS-Message-Filing-Time element of the AMHS message, if any of the following conditions is met:

1) the AFTN/AMHS Gateway supports only the Basic ATS Message Handling Service;

2) the ATS-Message-Filing-Time element is present in the ATS-Message-Header, and the *authorization-time* element is not present the IPM.

4.5.2.2.8 The Optional Heading Information of a converted AFTN message shall either:

a) take the value of the *originators-reference* IPM heading extension, if this element is present and the AFTN/AMHS Gateway supports the Extended ATS Message Handling Service;

b) take the value of the optional-heading-information in the ATS-Message-Optional-Heading-Info element, if this element is present and the AFTN/AMHS Gateway supports only the Basic ATS Message Handling Service, or if this element is present and the *originators-reference* element is absent; or

c) be omitted in the converted AFTN message, if the ATS-Message-Optional-Heading-Info element and the *originators-reference* element are absent from the AMHS message.

4.5.2.2.9 The content of the Text part of a converted AFTN message shall be derived from the value of the ATS-Message-Text element of the IPM text of the AMHS message, in compliance with the following procedure:

a) conversion of each character which is not in the IA5IRV character repertoire, into an IA5IRV character according to the locally defined conversion rules;

b) conversion of each IA5IRV character, if it is in lower case, into the equivalent upper case character;

c) replacement by question-marks ("?") of all characters or character sequences in the text, if any, of which the use is not authorized in Annex 10, Volume II, 4.1.2;

d) folding of any line longer than 69 characters; and

e) allocation of the result of items a) to d) above to the Text part of the converted AFTN message.

4.5.2.2.9.1 The locally defined conversion rules mentioned in item a) may be for example CCITT Recommendation X.408, if support of the ISO 8859-1 character set is a local policy of the AMHS Management

Domain.

4.5.2.2.9.2 A lower case IA5IRV character is one whose position is between 6/1 and 6/15 or 7/0 and 7/10. The corresponding upper case IA5IRV characters have positions extending from 4/1 to 4/15 and 5/0 to 5/10.

4.5.2.3 Use of IPM elements

4.5.2.3.1 Each of the elements composing the IPM in an AMHS message to be converted into an AFTN message in the Message Transfer and Control Unit shall be processed as specified in the column "action" of Table 4-9.

4.5.2.3.2 The elements composing the IPM shall be used according to the specification in the provision referred to in the column "mapping" of Table 4-9.

4.5.2.3.2.1 Table 4-9 is structured as a PRL derived from the profile specification included in 3 and consequently from the ISPICS Proforma included in ISO/IEC ISP 12062-2 as well as from Table 3-4 in 3.3.3. The columns "Base" and "ISP" under "Reception" are extracted from ISO/IEC ISP 12062-2 and the column "Basic ATS Message Handling Service" specifies the static capability of an IPM AU supporting the Basic ATS Message Handling Service, i.e. the ability to handle in reception the element as part of an IPM carrying an ATS Message. The references to the ISP Profile are indicated in the part titles as AMH21/ref where appropriate. The references in column Ref are those of the ISP.

Table 4-9. Use of IPM Elements

Ref	Element	Reception			Action	Mapping
		Base	ISP	ATS Mess. Service		
PART 1 : AMH21/A.1.1 SUPPORTED INFORMATION OBJECTS						
1	Interpersonal Message (IPM)	M	M	M	T	see Part 1/1.1 and 1.2
1.1	heading	M	M	M	T	see Part 2
1.2	body	M	M	M	T	see Part 3
2	Interpersonal Notification (IPN)	O	M	M	-	out of the scope of this provision
PART 2 : AMH21/A.1.2 IPM HEADING FIELDS						
1	this-IPM	M	M	M	D	-
2	originator	M	M	M	D	-
3	authorizing-users	M	M	M	D	-
4	primary-recipients	M	M	M	D	see 4.5.2.3.3 and Part 5/1
5	copy-recipients	M	M	M	D	see 4.5.2.3.3 and Part 5/1
6	blind-copy-recipients	M	M	M	D	see 4.5.2.3.3 and Part 5/1
7	replied-to-IPM	M	M	M	D	-
8	obsoleted-IPMs	M	M	M	D	-
9	related-IPMs	M	M	M	D	-
10	subject	M	M	M	D	-
11	expiry-time	M	M	M	D	-
12	reply-time	M	M	M	D	-
13	reply-recipients	M	M	M	D	-

Ref	Element	Reception			Action	Mapping
		Base	ISP	ATS Mess. Service		
14	importance	M	M	M	D	-
15	sensitivity	M	M	M	D	-
16	auto-forwarded	M	M	M	D	-
17	extensions	M	M	M	D	-
17.1	incomplete-copy	O	M	M	D	-
17.2	languages	M	M	M	D	-
17.3	auto-submitted	O	I	I	D	-
17.4*	body-part-signatures	O	O	O	D	-
17.5*	ipm-security-label	O	O	O	D	-
17.6*	authorization-time	O	O	M	T1	see 4.5.2.2.7
17.7*	circulation-list-recipients	M	M	M	D	-
17.8*	distribution-codes	O	O	M	D	-
17.9*	extended-subject	M	M	M	D	-
17.10*	information-category	O	O	M	D	-
17.11*	manual-handling-instructions	O	O	M	D	-
17.12*	originators-reference	O	O	M	T1	see 4.5.2.2.8
17.13*	precedence-policy-identifier	O	O	M	D	-
PART 3 : AMH21/A.1.3 IPM BODY						
1	ia5-text	O	M	M	T	see Part 3/1.1 and 1.2
1.1	parameters	M	M	M	D	-
1.1.1	repertoire	M	M	M	D	-
1.2	data	M	M	M	T	see Part 6
2	voice	I	I	I	X	see 4.5.2.3.2.2

Ref	Element	Reception			Action	Mapping
		Base	ISP	ATS Mess. Service		
3	g3-facsimile	O	O	O	X	see 4.5.2.3.2.2
4	g4-class-1	O	O	O	X	see 4.5.2.3.2.2
5	teletex	O	O	O	X	see 4.5.2.3.2.2
6	videotex	O	O	O	X	see 4.5.2.3.2.2
7	encrypted	O	O	O	X	see 4.5.2.3.2.2
8	message	O	M	M	X	see 4.5.2.3.2.2
9	mixed-mode	O	O	O	X	see 4.5.2.3.2.2
10	bilaterally-defined	O	O	C1	X	see 4.5.2.3.2.2
11	nationally-defined	O	O	O	X	see 4.5.2.3.2.2
12	extended	M	M	M	X/T	see 4.5.2.3.2.3 and Part 4
PART 4 : AMH21/A.1.3.1 EXTENDED BODY PART SUPPORT						
1	ia5-text-body-part	O	M	M	T	see Part 3/1
2	g3-facsimile-body-part	O	O	O	X	see 4.5.2.3.2.2
3	g4-class1-body-part	O	O	O	X	see 4.5.2.3.2.2
4	teletex-body-part	O	O	O	X	see 4.5.2.3.2.2
5	videotex-body-part	O	O	O	X	see 4.5.2.3.2.2
6	encrypted-body-part	O	O	O	X	see 4.5.2.3.2.2
7	message-body-part	O	M	M	X	see 4.5.2.3.2.2
8	mixed-mode-body-part	O	O	O	X	see 4.5.2.3.2.2
9	bilaterally-defined-body-part	O	O	O	X	see 4.5.2.3.2.2
10	nationally-defined-body-part	O	O	O	X	see 4.5.2.3.2.2
11	general-text-body-part	O	M	M	T/X	see 4.5.2.1.4, 4.5.2.3.4

Ref	Element	Reception			Action	Mapping
		Base	ISP	ATS Mess. Service		
						and Part 6
12	file-transfer-body-part	O	O	O	X	see 4.5.2.3.2.2
13	voice-body-part	O	O	O	X	see 4.5.2.3.2.2
14	oda-body-part	O	O	O	X	see 4.5.2.3.2.2
15*	report-body-part	O	M	M	X	see 4.5.2.3.2.2
16*	notification-body-part	O	M	M	X	see 4.5.2.3.2.2
17*	content-body-part	O	M	M	X	see 4.5.2.3.2.2
18*	pkcs7-body-part	O	O	O	X	see 4.5.2.3.2.2
PART 5 : AMH21/A.1.5 COMMON DATA TYPES						
1	RecipientSpecifier					
1.1	recipient	M	M	M	D	-
1.2	notification-requests	M	M	M	D	see Part 5/1.2.1-1.2.3
1.2.1	rn	O	O	O	D	see 4.5.2.3.3
1.2.2	nrn	M	M	M	D	-
1.2.3	ipm-return	O	O	O	D	-
1.3	reply-requested	M	M	M	D	-
1.4*	recipient-extensions	O	M	M	T1	see Part 5/1.4.3
1.4.1*	recipient-security-request	O	O	O	D	-
1.4.2*	circulation-list-indicator	O	O	O	D	-
1.4.3*	precedence	O	O	M	T1	see 4.5.2.2.5
PART 6 : IPM SUPPORT OF THE BASIC ATS MESSAGE HANDLING SERVICE						
1	ATS-Message-Header	-	-	M	T1	see Part 6/1.1-1.6
1.1	start-of-heading	-	-	M	-	-

Ref	Element	Reception			Action	Mapping
		Base	ISP	ATS Mess. Service		
1.2	ATS-Message-Priority	-	-	M	T	see Part 6/1.2.1-1.2.3
1.2.1	priority-prompt	-	-	M	-	-
1.2.2	priority-indicator	-	-	M	T	see 4.5.2.2.5 and 4.5.2.3.3
1.2.3	priority-separator	-	-	M	-	-
1.3	ATS-Message-Filing-Time	-	-	M	T	see Part 6/1.3.1-1.3.3
1.3.1	filing-time-prompt	-	-	M	-	-
1.3.2	filing-time	-	-	M	T	see 4.5.2.2.7
1.3.3	filing-time-separator	-	-	M	-	-
1.4	ATS-Message-Optional-Heading-Info	-	-	M	T1	see Part 6/1.4.1-1.4.3
1.4.1	OHI-prompt	-	-	M	-	-
1.4.2	optional-heading-information	-	-	M	T	see 4.5.2.2.8
1.4.3	OHI-separator	-	-	M	-	-
1.5	start-of-text	-	-	M	-	-
2	ATS-Message-Text	-	-	M	T	see 4.5.2.2.9

Legend (see 1.3) :
M = mandatory support
O = optional support
I = out of scope
- = not applicable
T1 = conditionally translated
D = discarded
T = translated
X = excluded
* = requirement applicable only if the AFTN/AMHS Gateway supports the Extended ATS Message Handling Service

4.5.2.3.2.2 This body part type is excluded as the result of 4.5.2.1.4.

4.5.2.3.2.3 This body part type may be either excluded or translated, depending on whether or not it is a standard extended body part type, and if yes, depending on the type of extended body part type, as specified in Part 4 and as the result of 4.5.2.1.4.

4.5.2.3.3 If the priority-indicator of a received AMHS message has the value "SS" and if the *responsibility* element of the corresponding *per-recipient-fields* of the Message Transfer Envelope has the value "responsible", then an error situation shall be logged and reported to a control position for appropriate action if any of the following situations, or both, occurs:

a) if the *notification-requests* element of either a *primary-recipient*, or a *copy-recipient*, or a *blind-copy-recipient* element has an abstract-value different from "rn" and the ATS-Message-Text does not contain the text of an AFTN acknowledgement message as specified in Annex 10, Volume II, 4.4.10.1.6.1 and 4.4.15.6; or

b) if the *priority* element of the Message Transfer Envelope has an abstract-value different from "urgent".

4.5.2.3.3.1 The Message Transfer and Control Unit generates RNs only for SS priority messages, since they are the only messages for which an end-to-end acknowledgement is possible in the AFTN. A receipt-notification-request included in a message with another priority is ignored, considering that the Message Transfer and Control Unit cannot ensure the actual reception of the message by the end-user.

4.5.2.3.3.2 The above specified error situation, if any, does not cause message rejection.

4.5.2.3.4 The components of a general-text body part shall be used as follows for the conversion of the IPM body into the text of the AFTN Message:

a) the parameters component identify the character set used for the message, as specified in ISO/IEC 10021-7, B.2; and

b) the data component of a general-text body part are used for the generation of the converted AFTN message as specified in Part 6 of Table 4-9.

4.5.2.4 Use of Message Transfer Envelope parameters

4.5.2.4.1 Each of the elements composing the Message Transfer Envelope of an AMHS message to be converted into an AFTN message in a Message Transfer and Control Unit shall be processed as specified in the column "action" of Table 4-10.

4.5.2.4.2 The elements composing the Message Transfer Envelope shall be handled according to the specification in the provisions referred to in the column "mapping" of Table 4-10.

4.5.2.4.2.1 Table 4-10 is structured as a PRL derived from the ISPICS Proforma included in ISO/IEC ISP 10611-3. The columns "Base" and "ISP" are extracted from ISO/IEC ISP 10611-3 and the column "Basic ATS Message Handling Service" specifies the static capability of an AU in relation with the MT-EoS (Message

Transfer Elements of Service), i.e. the ability to convey, handle and act in relation with the element. The references to the ISP Profile are indicated in the part titles as AMH11/ref where appropriate.

4.5.2.4.2.2 Although not used for mapping, some elements may generate specific actions for the gateway in the handling of the considered message.

4.5.2.4.2.3 Some elements may have two classifications, e.g. D/X where certain values of the element may cause message rejection, while other values are simply discarded when the AMHS message is converted into an AFTN message.

Table 4-10. Use of the MessageTransfer Envelope

Ref	Element	Base	ISP	ATS Mess. Service	Action	Mapping
PART 1 : AMH11/A.1.4.2 MESSAGETRANSFER						
1	MessageTransferEnvelope	M	M	M	T	see Part 1/1.1 and 1.2
1.1	(per message fields)					
1.1.1	message-identifier	M	M	M	D	-
1.1.2	originator-name	M	M	M	T	see 4.5.2.2.6.1
1.1.3	original-encoded-information-types	M	M-	M-	D/X	see 4.5.2.1.1
1.1.4	content-type	M	M-	M-	D/X	see 4.5.1.1
1.1.5	content-identifier	M	M	M	D	-
1.1.6	Priority	M	M	M	D	-
1.1.7	per-message-indicators	M	M	M	D	see Part 2/4
1.1.8	deferred-delivery-time	O	M-	M-	D	see 4.5.2.4.4
1.1.9	per-domain-bilateral-information	O	M-	M-	D	see 4.5.2.4.5 and Part 2/5
1.1.10	trace-information	M	M	M	D	see Part 2/6
1.1.11	Extensions	M	M	M	D/X	see 4.5.2.4.6 and Part 3/1
1.1.11.1	recipient-reassignment-prohibited	O	M	M	D	see 4.5.2.4.3
1.1.11.2	dl-expansion-prohibited	O	M	M	D	see 4.5.2.4.7

Ref	Element	Base	ISP	ATS Mess. Service	Action	Mapping
1.1.11.3	conversion-with-loss-prohibited	O	M	M	D/X	see 4.5.2.1.6
1.1.11.4	latest-delivery-time	O	M-	M-	D/X	see 4.5.2.4.8
1.1.11.5	originator-return-address	O	M-	M-	D	-
1.1.11.6	originator-certificate	O	M-	M-	D	see 4.5.2.4.12
1.1.11.7	content-confidentiality-algorithm-identifier	O	M-	M-	X	4.5.2.4.9
1.1.11.8	message-origin-authentication-check	O	M-	M-	D/X	see 4.5.2.4.13
1.1.11.9	message-security-label	O	M-	M-	D/X	see 4.5.2.4.6
1.1.11.10	content-correlator	M	M	M	D	-
1.1.11.11	dl-expansion-history	M	M-	M-	D	-
1.1.11.12	internal-trace-information	M	M	M	D	-
1.2	per-recipient-fields	M	M	M	T	see Part 1/1.2.1-1.2.5
1.2.1	recipient-name	M	M	M	T	see 4.5.2.2.6.2
1.2.2	originally-specified-recipient-number	M	M	M	D	-
1.2.3	per-recipient-indicators	M	M	M	D	-
1.2.4	explicit-conversion	O	M-	M-	D	-
1.2.5	Extensions	M	M	M	D/X	see 4.5.2.4.6 and Part 3/1
1.2.5.1	originator-requested-alternate-recipient	O	M-	M-	D	4.5.2.4.3
1.2.5.2	requested-delivery-method	O	M-	M-	D	see 4.5.2.4.10
1.2.5.3	physical-forwarding-prohibited	O	M-	M-	X	see 4.5.2.4.11
1.2.5.4	physical-forwarding-address-request	O	M-	M-	X	see 4.5.2.4.11
1.2.5.5	physical-delivery-modes	O	M-	M-	X	see 4.5.2.4.11
1.2.5.6	registered-mail-type	O	M-	M-	X	see 4.5.2.4.11
1.2.5.7	recipient-number-for-advice	O	M-	M-	X	see 4.5.2.4.11

Ref	Element	Base	ISP	ATS Mess. Service	Action	Mapping
1.2.5.8	physical-rendition-attributes	O	M-	M-	X	see 14.5.2.4.11
1.2.5.9	physical-delivery-report-request	O	M-	M-	X	see 4.5.2.4.11
1.2.5.10	message-token	O	M-	M-	D	see Part 3 and 4.5.2.4.14
1.2.5.11	content-integrity-check	O	M-	M-	D/X	see 4.5.2.4.13
1.2.5.12	proof-of-delivery-request	O	M-	M-	D/X	see 4.5.2.4.6
1.2.5.13	redirection-history	M	M-	M-	D	-
2	Content	M	M	M	T	see 4.5.2.3
PART 2 : AMH11/A.1.5 COMMON DATA TYPES						
4	PerMessageIndicators					
4.1	disclosure-of-other-recipients	M	M	M	D	-
4.2	implicit-conversion-prohibited	M	M	M	D/X	see 4.5.2.1.2
4.3	alternate-recipient-allowed	M	M	M	D	see 4.5.2.4.3
4.4	content-return-request	O	M-	M-	D	-
4.5	Reserved	O	M-	M-	D	-
4.6	bit-5	O	M-	M-	D	-
4.7	bit-6	O	M-	M-	D	-
4.8	service-message	O	M-	M-	D	-
5	PerDomainBilateralInformation					
5.1	country-name	M	M-	M-	D	see 4.5.2.4.5
5.2	administration-domain-name	M	M-	M-	D	see 4.5.2.4.5
5.3	private-domain-identifier	O	M-	M-	D	see 4.5.2.4.5
5.4	bilateral-information	M	M-	M-	D	see 4.5.2.4.5

Ref	Element	Base	ISP	ATS Mess. Service	Action	Mapping
6	TraceInformation					
6.1	TraceInformationElement	M	M	M	D	-
6.1.1	global-domain-identifier	M	M	M	D	-
6.1.2	domain-supplied-information	M	M	M	D	-
6.1.2.1	arrival-time	M	M	M	D	-
6.1.2.2	routing-action	M	M	M	D	-
6.1.2.2.1	Relayed	M	M	M	D	-
6.1.2.2.2	Rerouted	O	C1	C1	D	-
6.1.2.3	attempted-domain	O	C1	C1	D	-
6.1.2.4	(additional actions)				D	-
6.1.2.4.1	deferred-time	M	C2	C2	D	-
6.1.2.4.2	converted-encoded-information-types	O	M-	M-	D	see 4.5.2.1.1
6.1.2.4.3	other-actions	O	M-	M-	D	-
6.1.2.4.3.1	Redirected	O	M-	M-	D	-
6.1.2.4.3.2	dl-operation	O	M-	M-	D	-
PART 3 : AMH11/A.1.6 EXTENSION DATA TYPES						
1	ExtensionField					
1.1	Type	M	M	M	D/X	see Part 3/1.1.1 and 1.1.2
1.1.1	standard-extension	M	M	M	D/X	see 4.5.2.4.6
1.1.2	private-extension	O	M-	M-	D/X	see 4.5.2.4.6
1.2	Criticality	M	M	M	D/X	see 4.5.2.4.6
1.3	Value	M	M	M	D	-

Ref	Element	Base	ISP	ATS Mess. Service	Action	Mapping
4	MessageToken	O	M	M	D/X	see 4.5.2.4.14
4.1	token-type-identifier	M	M	M	D/X	see 4.5.2.4.15
4.2	asymmetric-token	M	M	M	D	see 4.5.2.4.15
4.2.1	signature-algorithm-identifier	M	M	M	D	see 4.5.2.4.15
4.2.2	Name	M	M	M	D	see 4.5.2.4.15
4.2.3	Time	M	M	M	D	see 4.5.2.4.15
4.2.4	signed-data	O	M	M	D	see 4.5.2.4.15
4.2.4.1	content-confidentiality-algorithm-identifier	O	C3	O	X	see 4.5.2.4.15
4.2.4.2	content-integrity-check	O	M	M	D	see 4.5.2.4.15
4.2.4.3	message-security-label	O	O	O	D/X	see 4.5.2.4.16
4.2.4.4	proof-of-delivery-request	O	O	O	D/X	see 4.5.2.4.16
4.2.4.5	message-sequence-number	O	O	O	D	see 4.5.2.4.16
4.2.5	encryption-algorithm-identifier	O	O	O	X	see 4.5.2.4.15
4.2.6	encrypted-data	O	O	O	X	see 4.5.2.4.15

Legend (see 1.3) :
M = mandatory support
M- = minimal mandatory support
O = optional support
C1 = if rerouting is supported then M else M-
C2 = if deferred delivery is supported then M else M-
C3 = if S0C then M else O
D = discarded
T = translated
X = excluded

4.5.2.4.3 The elements *alternate-recipient-allowed* and *originator-requested-alternate-recipient* shall be discarded by the Message Transfer and Control Unit, since the optional Redirection Functional Group, if implemented in an AFTN/AMHS Gateway, is supported by the ATN Component and not by the Message Transfer and Control Unit.

4.5.2.4.4 The element *deferred-delivery-time* shall be discarded by the Message Transfer and Control Unit,

since this functionality, if implemented in an AFTN/AMHS Gateway, is supported by the ATN Component and not by the Message Transfer and Control Unit.

4.5.2.4.5 For mapping purposes the whole *per-domain-bilateral-information* element shall be discarded.

4.5.2.4.5.1 If the elements country-name, administration-domain-name and private-domain-identifier in an element of the per-domain-bilateral-information together identify the AMHS Management Domain operating the AFTN/AMHS Gateway, the use made of the bilateral-information element is a local matter.

4.5.2.4.6 If any extension-field is present in the *extensions* of the Message Transfer Envelope and not semantically understood, or not supported by the Message Transfer and Control Unit, then the element shall either:

a) cause the following actions to be performed if its criticality is set to "CRITICAL FOR TRANSFER" or to "CRITICAL FOR DELIVERY":

1) message rejection of the message for either:

i) all the message recipients if the extension is part of the *per-message-fields*; or

ii) the considered message recipient if the extension is part of the *per-recipient-fields*; and

2) generation of a non-delivery report as specified in 4.5.6 with the following elements taking the following abstract-values in the appropriate *per-recipient-fields* of the report:

i) "unable-to-transfer" for the *non-delivery-reason-code*; and

ii) "unsupported-critical-function" for the *non-delivery-diagnostic-code*; or

b) be simply discarded if there is no criticality given.

4.5.2.4.7 The element *dl-expansion-prohibited* shall be discarded by the Message Transfer and Control Unit, since the DL-expansion capability of an AFTN/AMHS Gateway is supported by the ATN Component and not by the Message Transfer and Control Unit.

4.5.2.4.8 If the *latest-delivery-time* element is present, and if, when the AMHS message is handled by the Message Transfer and Control Unit, the current time exceeds the value of the *latest-delivery-time*, then the following actions shall be performed:

a) message rejection for all the message recipients; and

b) generation of a non-delivery report as specified in 4.5.6 with the following elements taking the following abstract-values in the appropriate *per-recipient-fields* of the report:

1) either "transfer-failure" or "unable-to-transfer" for the *non-delivery-reason-code*; and

2) "maximum-time-expired" for the *non-delivery-diagnostic-code*.

4.5.2.4.9 The Message Transfer and Control Unit does not implement Content Confidentiality Security Elements of Service. Thus, if any extension-field related to content-confidentiality is present in the *extensions* of the Message Transfer Envelope, the following actions shall be performed:

a) message rejection of the message for either:

1) all the message recipients if the extension is part of the *per-message-fields*; or

2) the considered message recipient if the extension is part of the *per-recipient-fields*; and

b) generation of a non-delivery report as specified in 4.5.6 with the following elements taking the following abstract-values in the appropriate *per-recipient-fields* of the report:

1) "unable-to-transfer" for the *non-delivery-reason-code*; and

2) "unsupported-critical-function" for the *non-delivery-diagnostic-code*.

4.5.2.4.10 The element *requested-delivery-method* shall be discarded by the Message Transfer and Control Unit.

4.5.2.4.10.1 The Message Transfer and Control Unit handles the message irrespective of the value of this attribute, since it indicates only a preferred delivery method (see Technical Corrigendum 5 to ISO/IEC 10021-4).

4.5.2.4.11 The Message Transfer and Control Unit does not implement Physical Delivery Elements of Service. Thus, if any physical delivery-related extension-field set to "CRITICAL FOR DELIVERY" is present in the *extensions* of the Message Transfer Envelope, the following actions shall be performed:

a) message rejection of the message for either:

1) all the message recipients if the extension is part of the *per-message-fields*; or

2) the considered message recipient if the extension is part of the *per-recipient-fields*; and

b) generation of a non-delivery report as specified in 4.5.6 with the following elements taking the following abstract-values in the appropriate *per-recipient-fields* of the report:

1) "physical-rendition-not-performed" for the *non-delivery-reason-code*; and

2) "unsupported-critical-function" for the *non-delivery-diagnostic-code*.

4.5.2.4.12 If the *originator-certificate* element is present, and if the AFTN/AMHS Gateway supports the Extended ATS Message Handling Service, the element shall be used in accordance with the AMHS security policy for the verification of any digital signature generated by the originator.

4.5.2.4.12.1 The originator certificate may also be obtained by other means, e.g. from the ATN Directory. Application of the AMHS security policy implies that the validity of the certificate is checked e.g. by reference to CRLs.

4.5.2.4.12.2 Although the information contained in the originator certificate is not used for generation of the resulting AFTN message, and as such is considered as discarded for conversion purposes, the certificate may be stored locally as part of a local implementation choice and/or operational matter for the application of the AMHS security policy.

4.5.2.4.13 If the *message-origin-authentication-check* or the *content-integrity-check* element is present in the *message-extensions* or *recipient-extensions* (not in the *message-token*), then either of the following actions shall be performed depending on the support of this optional element by the gateway:

a) handling as specified in 4.5.2.4.6 if the element is not semantically understood or not supported, and/or the AFTN/AMHS Gateway supports only the Basic ATS Message Handling Service; or

b) verification of the signature if the element is supported and if a valid originator certificate can be obtained, resulting in either:

1) validation of the message for further conveyance in the AFTN and discarding of the security element, if the message originator is successfully authenticated; or

2) rejection of the message for all recipients, if the message originator cannot be successfully authenticated, and generation of a non-delivery report as specified in 4.5.6 with the following elements taking the following abstract-values in the appropriate *per-recipient-fields* of the report:

i) "unable-to-transfer" for the *non-delivery-reason-code*; and

ii) "secure-messaging-error" for the *non-delivery-diagnostic-code*;

4.5.2.4.14 If the *message-token* element is present in the *recipient-extensions*, then either of the following actions shall be performed depending on the level of service supported by the gateway:

a) handling as specified in 4.5.2.4.6 if the AFTN/AMHS Gateway supports only the Basic ATS Message Handling Service; or

b) processing of the *message-token* element as specified in 4.5.2.4.15 if the

AFTN/AMHS Gateway supports the Extended ATS Message Handling Service.

4.5.2.4.15 If the *message-token* element is present in the *recipient-extensions* and is supported by the AFTN/AMHS Gateway, then either of the following actions shall be performed depending on the sub-elements received as part of the message-token :

a) rejection of the message for the considered recipient and generation of a non-delivery report as specified in 4.5.6 with the *non-delivery-reason-code* element taking the abstract-value "unable-to-transfer" and the *non-delivery-diagnostic-code* element taking the abstract-value "secure-messaging-error", if any of the following conditions is met:

1) if the *token-type-identifier* element identifies anything else than an asymmetric-token;

2) if the *asymmetric-token* element is not present;

3) if the *signature-algorithm-identifier* differs from the value specified in section 3.1.4.3.2.2.4;

4) if the *time* element is not present;

5) if the *signed-data* element is not present;

6) if the *content-integrity-check* is not present in the signed-data;

7) if the *content-confidentiality-algorithm-identifier* is present in the signed-data; or

8) if the *encryption-algorithm-identifier* or *encrypted-data* elements are present.

b) verification of the signature applying to the *name*, *time* and *signed-data* elements if a valid originator certificate can be obtained, resulting in either:

1) validation of the message for further conveyance in the AFTN and discarding of the *message-token* element, if all of the following conditions are met:

i) the message originator is successfully authenticated as can be determined from the successful check of the signature,

ii) the message content is unaltered as can be determined from the successful check of the signature including the *content-integrity-check* element, and

iii) the message has not been repeated as can be determined from the successful check of the signature and from the comparison from the *time* element with the gateway traffic log; or

2) if any of the conditions in item 1 above is not met, rejection of the message for the considered recipient and generation of a non-delivery report as specified with the *non-delivery-reason-code* element taking the abstract-value "unable-to-transfer" and the *non-delivery-diagnostic-code* element taking the abstract-value "secure-messaging-error".

4.5.2.4.16 If present, this element shall be used only for the verification of the digital signature as specified in 4.5.2.4.15 but not interpreted, before being discarded.

4.5.3 AMHS RN Conversion

Upon reception by the Message Transfer and Control Unit of a RN conveyed with a Message Transfer Envelope passed from the ATN Component, for the acknowledgement of a SS message, this message shall be converted into an AFTN acknowledgement message in compliance with the following:

a) the specification of the initial processing performed to determine the Message Transfer and Control Unit ability to convert the RN, as included in 4.5.3.1;

b) the specification of how the AFTN service message is generated and how the AFTN service message components are mapped from AMHS parameters, as included in 4.5.3.2;

c) the specification of how the elements of the received RN are handled, as included in 4.5.3.3; and

d) the specification of how the Message Transfer Envelope elements are handled, as included in 4.5.3.4.

4.5.3.1 Initial processing of AMHS Receipt Notifications

4.5.3.1.1 Upon reception by the Message Transfer and Control Unit of a RN, passed from the ATN Component to be potentially converted into an AFTN acknowledgement message, the received RN shall be processed in one of the following manners:

a) processing as specified in 4.5.3.1.2, if the subject IPM has been previously generated by the Message Transfer and Control Unit; or

b) unsuccessful termination of the procedure, if the subject IPM has not been previously generated by the Message Transfer and Control Unit, resulting in:

1) logging of the error situation and reporting to a control position;

2) storage of the RN for appropriate action at the control position; and

3) generation of a non-delivery report as specified in 4.5.6 with the following elements taking the following abstract-values:

i) "unable-to-transfer" for the *non-delivery-reason-code*;

ii) "invalid-arguments" for the *non-delivery-diagnostic-code*; and

iii) "unable to convert RN to AFTN Ack service message due to misrouted RN" for the *supplementary-information*.

4.5.3.1.2 For an AMHS RN passed from the ATN Component to the Message Transfer and Control Unit and not rejected as the result of 4.5.3.1.1, the received RN shall be processed in one of the following manners:

a) processing as specified in 4.5.3.1.3, if the value of the priority indicator of the subject AFTN message was "SS"; or

b) unsuccessful termination of the procedure, if the value of the priority indicator was different from "SS", resulting in:

1) logging of the error situation and reporting to a control position; and

2) storage of the RN for appropriate action at the control position.

4.5.3.1.3 An AMHS RN passed from the ATN Component to the Message Transfer and Control Unit and not rejected as the result of 4.5.3.1.2 shall be processed as specified in 4.5.3.2.

4.5.3.2 Generation of the AFTN acknowledgement message

4.5.3.2.1 An AMHS RN received by the Message Transfer and Control Unit and not rejected as the result of 1.4.5.3.1 shall be converted into an AFTN acknowledgement message in compliance with:

a) the specification of 4.5.2.2 with the exception of the components listed in Table 4-11; and

b) the classification of the components included in Table 4-11, as specified in the column "action" of Table 4-11.

4.5.3.2.2 These components which are classified as "G" shall be generated in compliance with the provision referred to in the column "mapping" of Table 4-11.

4.5.3.2.3 These components which are classified as "T" shall be converted from the AMHS parameter specified in the column "converted from AMHS parameter" of Table 4-11 and according to the specification in the provision referred to in the column "mapping".

Table 4-11. Generation of AFTN acknowledgement message

AFTN Message Part	Component	Action	converted from AMHS parameter	Mapping
Address	Priority Indicator	G	-	see 4.5.3.2.4
Origin	Filing Time	T	receipt-time (see Table 4-12/Part 1/7.1)	see 4.5.3.2.5
	Optional Heading Information	X	-	-
Text		G	-	see 4.5.3.2.6

Legend: (see 1.3)
G = generated
T = translated
X = excluded (not used)

4.5.3.2.4 In an AFTN acknowledgement message, generated as the result of the conversion of an AMHS RN message, the priority indicator component shall take the value SS.

4.5.3.2.5 In an AFTN acknowledgement message, generated as the result of the conversion of an AMHS RN message, the filing time component shall:

a) be a date-time group as specified in Annex 10, Volume II, 4.4.15.2.2.1; and

b) take the value of the six characters between the fifth and tenth position from the *receipt-time* element of the RN, adjusted by the optionally indicated time differential.

4.5.3.2.6 In an AFTN acknowledgement message, generated as the result of the conversion of an AMHS RN message, the value of the Text component shall be generated as specified in Annex 10, Volume II, 4.4.15.6 using the origin of the subject AFTN message.

4.5.3.3 Use of RN fields

4.5.3.3.1 Each of the elements composing the RN to be converted into an AFTN acknowledgement message in an AFTN/AMHS Gateway shall be processed as specified in the column "action" of Table 4-12.

4.5.3.3.2 The elements composing the RN shall be handled according to the specification in the provision referred to in the column "mapping" of Table 4-12.

4.5.3.3.2.1 Table 4-12 is structured as a PRL derived from the profile specification included in 3 and consequently from the ISPICS Proforma included in ISO/IEC ISP 12062-2 (AMH21). The columns "Base" and "ISP" under "Reception" are extracted from ISO/IEC ISP 12062-2, and the column "Basic ATS Message Handling Service" specifies the static capability of an IPM AU supporting the Basic ATS Message Handling Service, i.e. the ability to handle in reception the element as part of a RN. The references to the ISP Profile are indicated in the part titles as AMH21/ref where appropriate. The references in column Ref are those of the ISP.

Table 4-12. Use of RN fields

Ref	Element	Reception			Action	Mapping / Notes
		Base	ISP	Basic ATS Mess. Service		
PART 1: AMH21/A.1.4 IPN FIELDS						
1	subject-ipm	M	M	M	D	-
2	ipn-originator	M	M	M	D	-
3	ipm-preferred-recipient	M	M	M	D	-
4	conversion-eits	M	M	M	D	-
5	notification-extensions	O	I	I	-	-
6	non-receipt-fields	O	M	M	-	out of the scope of this provision
7	receipt-fields	O	M	M	T	see Part 1/7.1-7.4
7.1	receipt-time	M	M	M	T	see 4.5.3.2.5
7.2	acknowledgment-mode	M	M	M	D	-
7.3	suppl-receipt-info	O	O	O	D	-
7.4	rn-extensions	O	I	I	-	-
8	other-notification-type-fields	O	I	I	-	-

Legend (see 1.3) :
M = mandatory support
O = optional support
I = out of scope
- = not applicable
D = discarded
T = translated
- = out of scope

4.5.3.4 Use of Message Transfer Envelope parameters conveyed with a RN

4.5.3.4.1 The elements composing the Message Transfer Envelope conveyed with a RN to be converted into an AFTN acknowledgement message shall be used in compliance with:

a) the specification of 4.5.2.4 with the exception of those elements included in Table 4-13; and

b) the specification included in the provision referred to in the column "Mapping" of Table 4-13.

Note.— Table 4-13 is structured as an extraction of Table 4-10.

Table 4-13. Use of the MessageTransfer Envelope conveyed with a RN (differences from Table 4-10)

Ref	Element	Base	ISP	Basic ATS Mess. Service	Action	Mapping
PART 1 : AMH11/A.1.4.2 MESSAGE TRANSFER						
1	MessageTransferEnvelope	M	M	M	T	see Part 1/1.1 and 1.2
1.1	(per message fields)					
1.1.3	original-encoded-information-types	M	M-	M-	D	see 4.5.3.4.2
1.1.7	per-message-indicators	M	M	M	D	see Part 2/4
1.1.10	trace-information	M	M	M	D	see Part 2/6
1.2	per-recipient-fields	M	M	M	D	see Part 1/1.2.1
1.2.1	recipient-name	M	M	M	D	see 4.5.3.4.3
2	Content	M	M	M	T	see 4.5.3.3
PART 2 : AMH11/A.1.5 COMMON DATA TYPES						
4	PerMessageIndicators					
4.2	implicit-conversion-prohibited	M	M	M	D	see 4.5.3.4.2
6	TraceInformation					
6.1	TraceInformationElement	M	M	M	D	-
6.1.2	domain-supplied-information	M	M	M	D	-
6.1.2.4	(additional actions)				D	-

Ref	Element	Base	ISP	Basic ATS Mess. Service	Action	Mapping
6.1.2.4.2	converted-encoded-information-types	O	M-	M-	D	see 4.5.3.4.2

Legend (see 1.3) :
M = mandatory support
M- = minimal mandatory support
O = optional support
D = discarded
T = translated

4.5.3.4.2 The elements related to the encoded-information-types in the Message Transfer Envelope conveyed with a RN shall be discarded when converting the RN into an AFTN acknowledgement message.

4.5.3.4.3 The *recipient-name* element in the Message Transfer Envelope conveyed with a RN shall be discarded when converting the RN into an AFTN acknowledgement message.

4.5.3.4.3.1 The Message Transfer and Control Unit uses the information contained in the subject AFTN message to construct an AFTN acknowledgement message.

4.5.4 AMHS Non-delivery Report Conversion

Upon reception by the Message Transfer and Control Unit of an AMHS Non-Delivery Report passed from the ATN Component, this report shall be processed in compliance with the following:

a) the specification of the initial processing performed to determine the Message Transfer and Control Unit ability to convert the report, as included in 4.5.4.1;

b) the specification of how the AFTN service message is generated, if any, and how the AFTN service message components are mapped from AMHS parameters, as included in 4.5.4.2; and

c) the specification of how the Report Transfer Envelope elements are handled, as included in 4.5.4.3.

4.5.4.1 Initial processing of AMHS Non-Delivery Reports

4.5.4.1.1 Upon reception by the Message Transfer and Control Unit of a non-delivery report, passed from the ATN Component to be potentially converted into an AFTN service message, the received non-delivery report shall be processed in one of the following manners:

a) processing as specified in 4.5.4.1.2, if the subject AMHS message has been previously generated by the Message Transfer and Control Unit; or

b) unsuccessful termination of the procedure, if the subject AMHS message has not been previously generated by the Message Transfer and Control Unit, resulting in:

1) logging of the error situation and reporting to a control position; and

2) storage of the non-delivery report for appropriate action at the control position.

4.5.4.1.2 A non-delivery report received by the Message Transfer and Control Unit, and regarding a subject message which had been generated by the Message Transfer and Control Unit, shall be processed by the Message Transfer and Control Unit in one of three mutually exclusive manners:

a) processing as specified in 4.5.4.1.3 if there is no *originally-intended-recipient-name* element with a value different of the *actual-recipient-name* in any of the *per-recipient-fields* elements of the report;

b) processing as follows, if at least one *originally-intended-recipient-name* element in one of the *per-recipient-fields* elements has a value different from the value of the *actual-recipient-name*, and if at least one *per-recipient-fields* element in the report does not meet the same condition:

1) logging of the error situation and reporting to a control position;

2) storage of the non-delivery report and of the corresponding *per-recipient-fields* elements for appropriate action at the control position;

3) processing of the report as specified in 4.5.4.1.3 for the *per-recipient-fields* where there is no *originally-intended-recipient-name* element with a value different of the *actual-recipient-name*; or

c) processing as follows, if all *per-recipient-fields* elements of the report include an *originally-intended-recipient-name* element which has a value different from the value of the *actual-recipient-name*:

1) logging of the error situation and reporting to a control position;

2) storage of the non-delivery report and of the corresponding *per-recipient-fields* elements for appropriate action at the control position.

4.5.4.1.3 If the non-delivery report did not cause any error situation to be reported, or for the *per-recipient-fields* of the report which did not cause any error to be reported, the report shall be processed by the Message Transfer and Control Unit in one of the following manners:

a) conversion of the report into an unknown address AFTN service message as specified in 4.5.4.2, if the *non-delivery-diagnostic-code* has the abstract-value "unrecognised-OR-name"; or

b) processing as follows, if the *non-delivery-diagnostic-code* has any abstract-value other

than "unrecognised-OR-name"

1) logging of the non-delivery situation and reporting to a control position;

2) storage of the non-delivery report for appropriate action at the control position.

4.5.4.2 Generation of unknown address AFTN service message

4.5.4.2.1 An AMHS Non-Delivery Report received by the Message Transfer and Control Unit, which *non-delivery-diagnostic-code* has the abstract-value "unrecognised-OR-name", and not stored for action at the control position as the result of 4.5.4.1, shall be converted into an AFTN service message to the originator of the subject AFTN message, indicating that an unknown addressee indicator was specified in the subject AFTN message (unknown address AFTN service message) in compliance with:

a) the specification of Annex 10, Volume II, 4.4.11.13.3; and

b) the classification of the components included in Table 4-14, as specified in the column "action" of Table 4-14. in accordance with the terminology in 1.3.3.

4.5.4.2.2 These components which are classified as "G" shall be generated in compliance with the provisions of Annex 10, Volume II or with the provision referred to in the column "mapping" of Table 4-14.

4.5.4.2.3 These components which are classified as "T" shall be converted from the AMHS parameter specified in the column "converted from AMHS parameter" of Table 4-14 and according to the specification in the provision referred to in the column "mapping".

Table 4-14. Generation of unknown address AFTN service message

AFTN Message Part	Component	Action	converted from AMHS parameter	Mapping
Heading	Start-of-Heading Character	G	-	see Annex 10, Vol. II, 4.4.15.1.1
	Transmission Identification	G	-	see Annex 10, Vol. II, 4.4.15.1.1
Address	Alignment Function	G	-	see Annex 10, Vol. II, 4.4.15.2.1
	Priority Indicator	G	-	see 4.5.4.2.4
	Addressee Indicator(s)	G	-	see 4.5.4.2.5
	Alignment Function	G	-	see Annex 10, Vol. II, 4.4.15.2.1
Origin	Filing Time	G	-	see 4.5.4.2.6
	Originator Indicator	G	-	see 4.5.4.2.7

AFTN Message Part	Component	Action	converted from AMHS parameter	Mapping
	Priority Alarm	G	-	see Annex 10, Vol. II, 4.4.15.2.2
	Optional Heading Information	X	-	-
	Alignment Function	G	-	see Annex 10, Vol. II, 4.4.15.2.2
	Start-of-Text Character	G	-	see Annex 10, Vol. II, 4.4.15.2.2
Text		T	actual-recipient-name (see Table 4-15/ Part 1/2.2.1)	see 4.5.4.2.8
Ending	Alignment Function	G	-	see Annex 10, Vol. II, 4.4.15.3.12
	Page-feed sequence	G	-	see Annex 10, Vol. II, 4.4.15.3.12
	End-of-Text Character	G	-	see Annex 10, Vol. II, 4.4.15.3.12

Legend: (see 1.3)
G = generated
T = translated
X = excluded (not used)

4.5.4.2.4 The priority indicator component shall take the value of the priority indicator of the subject AFTN message.

4.5.4.2.5 The addressee indicator(s) component shall contain a single AF-Address which is the originator indicator of the subject AFTN message.

4.5.4.2.6 The filing time component, expressed as a date-time group in compliance with Annex 10, Volume II, 4.4.15.2.2.1, shall take the value of the time at which the AFTN service message is generated by the Message Transfer and Control Unit.

4.5.4.2.7 The originator indicator shall be the AFTN Address of the AFTN Component of the AFTN/AMHS Gateway, as specified in 4.2.1.16.

4.5.4.2.8 The value of the message text component shall be structured as follows:

a) a first line composed as specified in Annex 10, Volume II, 4.4.11.13.3, items 1) to 4), using the origin of the subject AFTN message;

b) a second line composed as specified in Annex 10, Volume II, 4.4.11.13.3, items 5) and 6), using the first address line of the subject AFTN message; and

c) the third and following lines as appropriate composed as specified in Annex 10, Volume II, 4.4.11.13.3, items 7) to 9), using the AF-Address(es) translated as specified

in 4.5.4.2.9 from the *actual-recipient-name* elements of the *per-recipient-fields* of the Non-Delivery Report which were not stored for action at the control position as the result of 4.5.4.1.2.

4.5.4.2.9 Each *actual-recipient-name* element used to generate an unknown address AFTN service message as specified in item c) of 4.5.4.2.8 above shall be processed for translation into an AF-Address as specified in 4.5.2.2.6.1, except for failure to translate the MF-Address resulting in:

a) logging of the error situation and reporting to a control position; and

b) storage of the MF-Address and of the non-delivery report for appropriate action at the control position.

4.5.4.3 Use of Report Transfer Envelope and Content parameters

4.5.4.3.1 Each of the elements composing the Report Transfer Envelope and Report Transfer Content of an AMHS report to be converted into an AFTN service message in the Message Transfer and Control Unit shall be processed as specified in the column "action" of Table 4-15.

4.5.4.3.2 These elements shall be handled according to the specification in the provision referred to in the column "mapping" of Table 4-15.

4.5.4.3.2.1 Table 4-15 is structured as a PRL derived from the ISPICS Proforma included in ISO/IEC ISP 10611-3. The columns "Base" and "ISP" are extracted from ISO/IEC ISP 10611-3, and the column "Basic ATS Message Handling Service" specifies the static capability of an AU for the MT-EoS, i.e. the ability to convey, handle and act in relation with the element. The references to the ISP Profile are indicated in the part titles as AMH11/ref where appropriate.

Table 4-15. Use of Report Transfer Envelope and Content parameters

Ref	Element	Base	ISP	Basic ATS Mess. Service	Action	Mapping
PART 1 : AMH11/A.1.4.3 REPORTTRANSFER						
1	ReportTransferEnvelope	M	M	M	D	-
2	ReportTransferContent	M	M	M	T	see Part 1/2.1 and 2.2
2.1	(per report fields)					
2.1.1	subject-identifier	M	M	M	D	-
2.1.2	subject-intermediate-trace-information	O	M	M	D	-
2.1.3	original-encoded-information-types	M	M	M	D	-

Ref	Element	Base	ISP	Basic ATS Mess. Service	Action	Mapping
2.1.4	content-type	M	M	M	D	-
2.1.5	content-identifier	M	M	M	D	-
2.1.6	returned-content	O	M-	M-	D	-
2.1.7	additional-information	O	M-	M-	D	-
2.1.8	Extensions	M	M	M	D	-
2.2	per-recipient-fields	M	M	M		
2.2.1	actual-recipient-name	M	M	M	T	see 4.5.4.2.8
2.2.2	originally-specified-recipient-number	M	M	M	D	-
2.2.3	per-recipient-indicators	M	M	M	D	-
2.2.4	last-trace-information	M	M	M	D	-
2.2.5	originally-intended-recipient-name	M	M	M	X	see 4.5.4.1.3
2.2.6	supplementary-information	O	M-	M-	D	-
2.2.7	Extensions	M	M	M	D	-

Legend (see 1.3) :
M = mandatory support
M- = minimal mandatory support
O = optional support
D = discarded
T = translated
X = excluded

4.5.5 Action upon reception of AMHS Probe

4.5.5.1 Upon reception by the Message Transfer and Control Unit of an AMHS probe which content type is "interpersonal-messaging-1988", the received probe shall be processed in one of the following manners, depending on the abstract-value of the current-encoded-information-types, determined as either the abstract-value of the latest *converted-encoded-information-types*, if existing, in the *trace-information* element, or as the abstract-value of the *original-encoded-information-types* element in the Probe Transfer Envelope if the previous does not exist:

a) processing as specified in 4.5.5.2 if the abstract-value of the current encoded-information-types is "ia5-text" or extended "ia5-text"; or

b) if the abstract-value differs from built-in "ia5-text" and from extended "ia5-text":

1) rejection of the probe for all the probe recipients; and

2) generation of a non-delivery report as specified in 4.5.6 with the following elements taking the following abstract-values in all the *per-recipient-fields* of the report:

i) "unable-to-transfer" for the *non-delivery-reason-code*; and

ii) "encoded-information-types-unsupported" for the *non-delivery-diagnostic-code*.

4.5.5.2 A probe which was not rejected as the result of 4.5.5.1 shall be processed in one of the following manners:

a) processing as specified in 4.5.5.3 if the abstract-value of the *implicit-conversion-prohibited* in the *per-message-indicators* element in the Probe Transfer Envelope differs from "prohibited"; or

b) if the abstract-value of the element is "prohibited":

1) rejection of the message for all the message recipients; and

2) generation of a non-delivery report as specified in 4.5.6 with the following elements taking the following abstract-values in all the *per-recipient-fields* of the report:

i) "conversion-not-performed" for the *non-delivery-reason-code*;

ii) "implicit-conversion-prohibited" for the *non-delivery-diagnostic-code*; and

iii) "unable to convert to AFTN" for the *supplementary-information*.

4.5.5.3 A probe which was not rejected as the result of 4.5.5.2 shall be processed in one of three mutually exclusive manners:

a) if, due to system resource limitation, the value of the element *content-length* in the Probe Transfer Envelope exceeds the conversion capability of the Message Transfer and Control Unit, then:

1) rejection of the message for all the message recipients; and

2) generation of a non-delivery report as specified in 4.5.6 with the following elements taking the following abstract-values in all the *per-recipient-fields* of the report:

i) "unable-to-transfer" for the *non-delivery-reason-code*; and

ii) "content-too-long" for the *non-delivery-diagnostic-code*; or

b) processing as specified in 4.5.5.4 for further conveyance test if the *content-length* does not exceed the conversion capability of the Message Transfer and Control Unit.

4.5.5.3.1 The way to determine the conversion capability of the Message Transfer and Control Unit in terms of message length is a matter local to the AMHS Management Domain operating the AFTN/AMHS Gateway.

4.5.5.4 A probe which was not rejected as the result of 4.5.5.3 shall be processed in one of three mutually exclusive manners, depending on the number of probe recipients towards which the Message Transfer and Control Unit is responsible for conveyance test:

a) if this number exceeds 21 and does not exceed 512 probe recipients:

1) split the probe, internally to the Message Transfer and Control Unit, into several probes, each of them with no more than 21 probe recipients:

i) each of the resulting probes having for conveyance test purposes the same *per-probe-fields* in the Probe Transfer Envelope; and

ii) only the *per-recipient-fields* elements in the Probe Transfer Envelope varying between the different resulting probes; and

2) processing of each of these probes as specified in 4.5.5.5;

b) if this number exceeds 512 probe recipients:

1) rejection of the probe for all the probe recipients; and

2) generation of a non-delivery report as specified in 4.5.6 with the following elements taking the following abstract-values in all the *per-recipient-fields* of the report:

i) "unable-to-transfer" for the *non-delivery-reason-code*;

ii) "too-many-recipients" for the *non-delivery-diagnostic-code*; and

iii) "unable to convert to AFTN due to number of recipients" for the *supplementary-information*; or

c) processing as specified in 4.5.5.5, if this number does not exceed 21 probe recipients.

4.5.5.5 A probe which was not rejected as the result of 4.5.5.4 shall be processed in one of the following manners, depending on the ability of the Message Transfer and Control Unit to translate the originator-name

element of the Probe Transfer Envelope into an AF-Address:

a) processing as specified in 4.5.5.6 if address conversion into an AF-Address as specified in 4.5.2.2.6.1 a), b) or c) can be achieved; or

b) if address conversion into an AF-Address as specified in 4.5.2.2.6.1 a), b) and c) cannot be achieved, then:

1) rejection of the probe for all the probe recipients; and

2) generation of a non-delivery report as specified in 4.5.6 with the following elements taking the following abstract-values in all the *per-recipient-fields* of the report:

i) "unable-to-transfer" for the *non-delivery-reason-code*;

ii) "invalid-arguments" for the *non-delivery-diagnostic-code*; and

iii) "unable to convert to AFTN due to unrecognized originator O/R address" for the *supplementary-information*.

4.5.5.6 For each probe recipient, a probe which was not rejected as the result of 4.5.5.5 shall be processed in one of the following manners, depending on the ability of the Message Transfer and Control Unit to translate the considered *recipient-name* element of the Probe Transfer Envelope into an AF-Address:

a) processing as specified in 4.5.5.7 if address conversion into an AF-Address as specified in 4.5.2.2.6.1 a), b) or c) can be achieved, or

b) if address conversion into an AF-Address as specified in 4.5.2.2.6.1 a), b) and c) cannot be achieved, then:

1) rejection of the probe for the considered recipient; and

2) generation of a non-delivery report as specified in 4.5.6 with the following elements taking the following abstract-values in the corresponding *per-recipient-fields* of the report:

i) "unable-to-transfer" for the *non-delivery-reason-code*; and

ii) "unrecognised-OR-name" for the *non-delivery-diagnostic-code*.

4.5.5.7 For the probe recipients which were not rejected as the result of 4.5.5.6, a delivery-report shall be generated as specified in 4.5.6, if requested, to indicate the successful result of the probe conveyance test.

4.5.6 Generation of AMHS Reports

4.5.6.1 General

4.5.6.1.1 A non-delivery report shall be generated by the Message Transfer and Control Unit:

a) for each message or probe which was rejected at the AFTN/AMHS Gateway, as the result of the procedures described in 4.5.1.1, 4.5.1.4, 4.5.2 and 4.5.5, either for all the recipients or for certain recipients; and

b) as the result of the conversion of an unknown address AFTN service message, as specified in 4.4.4.1.6.

4.5.6.1.2 **Recommendation.—** *When the generation of a non-delivery report is required in relation with the rejection at the AFTN/AMHS Gateway of the subject AMHS message for more than one recipient of the subject AMHS message, a single non-delivery report should be generated to report on the rejection for multiple recipients, using several per-recipient-fields elements in the Report Transfer Content.*

4.5.6.1.3 For each AMHS message which was converted by the Message Transfer and Control Unit as the result of the procedures specified in 4.5.2.2 to 4.5.2.4 and then successfully passed to the AFTN Component as specified in 4.5.1.6, a delivery report shall be generated by the Message Transfer and Control Unit for each message recipient of which:

a) the *originating-MTA-report-request* element has the abstract-value "report" or "audited-report"; or

b) the *originator-report-request* element has the abstract-value "report"; or

c) both conditions a) and b) above are met.

4.5.6.1.4 **Recommendation.—** *When the generation of a delivery report is required as specified in 4.5.6.1.3 for more than one recipient of the subject AMHS message, a single delivery report should be generated to report on the conveyance towards multiple recipients, using several per-recipient-fields elements in the Report Transfer Content.*

4.5.6.1.5 When the generation of a delivery report is required in relation with the result of a probe conveyance test as specified in 4.5.5, 4.5.6.1.3 to 4.5.6.1.4 above shall apply with the difference that the event which triggers the generation of the delivery report is the success of the probe conveyance test.

4.5.6.1.6 A report resulting from 4.5.6.1.1 to 4.5.6.1.5 shall be generated as specified in 4.5.6.2.

4.5.6.2 Generation of Report Transfer Envelope and Content

4.5.6.2.1 Each report resulting from the specification of 4.5.6.1 shall be generated by the Message Transfer and Control Unit, in the form of an AMHS Report Transfer Envelope and Report Transfer Content, composed of elements as specified in the column "action" of Table 4-16.

4.5.6.2.2 These elements which are classified as "G" or "G2" shall be either generated or conditionally generated according to the specification in the provisions referred to in the column "generation action" of Table 4-16.

4.5.6.2.2.1 Table 4-16 is structured as a PRL derived from the ISPICS Proforma included in ISO/IEC ISP 10611-3. The columns "Base" and "ISP" are extracted from ISO/IEC ISP 10611-3, and the column "Basic ATS Message Handling Service" specifies the static capability of an AU in relation with the MT-EoS, i.e. the ability to convey, handle and act in relation with the element. The references to the ISP Profile are indicated in the part titles as AMH11/ref where appropriate.

Table 4-16. Generation of AMHS Report

Ref	Element	Base	ISP	Basic ATS Mess. Service	Action	Generation action
PART 1 : AMH11/A.1.4.3 REPORTTRANSFER						
1	ReportTransferEnvelope	M	M	M	G	see Part 1/1.1-1.4
1.1	report-identifier	M	M	M	G	see 4.5.6.2.3 and Part 2/1
1.2	report-destination-name	M	M	M	G	see 4.5.6.2.6
1.3	trace-information	M	M	M	G	see 4.5.6.2.7
1.4	extensions	M	M	M		see 4.5.6.2.8
1.4.1	message-security-label	O	M-	M-	X	-
1.4.2	originator-and-DL-expansion-history	M	M	M	G2	see 4.5.6.2.9
1.4.3	reporting-DL-name	O	M-	M-	X	-
1.4.4	reporting-MTA-certificate	O	M-	M-	X	-
1.4.5	report-origin-authentication-check	O	M-	M-	X	-
1.4.6	internal-trace-information	M	M	M	G	see 4.5.6.2.10
2	ReportTransferContent	M	M	M	G	see Part1/2.1 and 2.2
2.1	(per report fields)					
2.1.1	subject-identifier	M	M	M	G	see 4.5.6.2.11

Ref	Element	Base	ISP	Basic ATS Mess. Service	Action	Generation action
2.1.2	subject-intermediate-trace-information	O	M	M	G2	see 4.5.6.2.12
2.1.3	original-encoded-information-types	M	M	M	G	see 4.5.6.2.13
2.1.4	content-type	M	M	M	G	see 4.5.6.2.14
2.1.5	content-identifier	M	M	M	G2	see 4.5.6.2.15
2.1.6	returned-content	O	M-	M-	G2	see 4.5.6.2.16
2.1.7	additional-information	O	M-	M-	X	-
2.1.8	extensions	M	M	M		see 4.5.6.2.8
2.1.8.1	content-correlator	M	M	M	G2	see 4.5.6.2.17
2.2	per-recipient-fields	M	M	M		see Part1/2.2.1-2.2.7
2.2.1	actual-recipient-name	M	M	M	G	4.5.6.2.18
2.2.2	originally-specified-recipient-number	M	M	M	G	see 4.5.6.2.19
2.2.3	per-recipient-indicators	M	M	M	G	see 4.5.6.2.20
2.2.4	last-trace-information	M	M	M	G	see Part 2/7
2.2.5	originally-intended-recipient-name	M	M	M	G2	see 4.5.6.2.26
2.2.6	supplementary-information	O	M-	M-	G2	see 4.5.6.2.27
2.2.7	extensions	M	M	M		see 4.5.6.2.8
2.2.7.1	redirection-history	M	M	M	G2	see 4.5.6.2.28
2.2.7.2	physical-forwarding-address	O	M-	M-	X	-
2.2.7.3	recipient-certificate	O	M-	M-	X	-
2.2.7.4	proof-of-delivery	O	M-	M-	X	-
PART 2 : AMH11/A.1.5 COMMON DATA TYPES						
1	MTSIdentifier					

Ref	Element	Base	ISP	Basic ATS Mess. Service	Action	Generation action
1.1	global-domain-identifier	M	M	M	G	see 4.5.6.2.4 and Part 2/2
1.2	local-identifier	M	M	M	G	see 4.5.6.2.5
2	GlobalDomainIdentifier					
2.1	country-name	M	M	M		see 4.5.6.2.29
2.2	administration-domain-name	M	M	M		see 4.5.6.2.30
2.3	private-domain-identifier	M	M	M		see 4.5.6.2.31
6	TraceInformation					
6.1	TraceInformationElement	M	M	M	G	see Part 2/6.1.1 and 6.1.2
6.1.1	global-domain-identifier	M	M	M	G	see 4.5.6.2.32 and Part 2/2
6.1.2	domain-supplied-information	M	M	M	G	see Part 2/6.1.2.1-6.1.2.4
6.1.2.1	arrival-time	M	M	M	G	see 4.5.6.2.33
6.1.2.2	routing-action	M	M	M	G	see Part 2/6.1.2.2.1 and 6.1.2.2.2
6.1.2.2.1	relayed	M	M	M	G	see 4.5.6.2.34
6.1.2.2.2	rerouted	O	C1	C1	X	-
6.1.2.3	attempted-domain	O	C1	C1	X	-
6.1.2.4	(additional actions)					
6.1.2.4.1	deferred-time	M	C2	C2	X	-
6.1.2.4.2	converted-encoded-information-types	O	M-	M-	X	-
6.1.2.4.3	other-actions	O	M-	M-	X	-
6.1.2.4.3.1	redirected	O	M-	M-	X	-

Ref	Element	Base	ISP	Basic ATS Mess. Service	Action	Generation action
6.1.2.4.3.2	dl-operation	O	M-	M-	X	-
7	LastTraceInformation					
7.1	arrival-time	M	M	M	G	see 4.5.6.2.21
7.2	converted-encoded-information-types	M	M	M	G2	see 4.5.6.2.22
7.3	report-type	M	M	M	G	see Part 2/7.3.1and 7.3.2
7.3.1	delivery	M	M	M	G2	see Part 2/7.3.1.1 and 7.3.1.2
7.3.1.1	message-delivery-time	M	M	M	G	see 4.5.6.2.23
7.3.1.2	type-of-MTS-user	M	M	M	G	see 4.5.6.2.24
7.3.2	non-delivery	M	M	M	G2	see Part 2/7.3.2.1 and 7.3.2.2
7.3.2.1	non-delivery-reason-code	M	M	M	G	see 4.5.6.2.25
7.3.2.2	non-delivery-diagnostic-code	M	M	M	G	see 4.5.6.2.25
PART 3 : AMH11/A.1.6 EXTENSION DATA TYPES						
1	ExtensionField					
1.1	type	M	M	M	G	see Part 3/1.1.1 and 1.1.2
1.1.1	standard-extension	M	M	M	G	see 4.5.6.2.8
1.1.2	private-extension	O	M-	M-	X	-
1.2	criticality	M	M	M	G	see 4.5.6.2.8
1.3	value	M	M	M	G	see 4.5.6.2.8
5	InternalTraceInformation					
5.1	global-domain-identifier	M	M	M	G	see 4.5.6.2.32

Ref	Element	Base	ISP	Basic ATS Mess. Service	Action	Generation action
5.2	mta-name	M	M	M	G	see 4.5.6.2.35
5.3	mta-supplied-information	M	M	M	G	see Part 3/5.3.1-5.3.4
5.3.1	arrival-time	M	M	M	G	see 4.5.6.2.33
5.3.2	routing-action	M	M	M	G	see Part 3/5.3.2.1-5.3.2.2
5.3.2.1	relayed	M	M	M	G	see 4.5.6.2.34
5.3.2.2	rerouted	O	C1	C1	X	-
5.3.3	attempted	O	C1	C1	X	-
5.3.4	(additional actions)					
5.3.4.1	deferred-time	M	C2	C2	X	-
5.3.4.2	converted-encoded-information-types	O	M-	M-	X	-
5.3.4.3	other-actions	O	M-	M-	X	-
5.3.4.3.1	redirected	O	M-	M-	X	-
5.3.4.3.2	dl-operation	O	M-	M-	X	-

Legend (see 1.3) :
M = mandatory support
M- = minimal mandatory support
O = optional support
I = out of scope
- = not applicable
C1 = if rerouting is supported then M else M-
C2 = if deferred delivery is supported then M else M-
G = generated
G2 = conditionally generated
X = excluded (not used)

4.5.6.2.3 The element *report-identifier* in the Report Transfer Envelope shall:

a) be generated locally so as to ensure that it distinguishes the report from all other messages, probes or reports generated in the AMHS, as specified in ISO/IEC 10021-4, 12.2.1.3.1.1; and

b) be composed as specified in Table 4-16/Part 2/1.

4.5.6.2.4 The element *global-domain-identifier* in the *report-identifier*, or in the *trace-information*, or in the *internal-trace-information* shall:

a) identify the AMHS Management Domain operating the AFTN/AMHS Gateway; and

b) be composed as specified in Table 4-16/Part 2/2.

4.5.6.2.5 The element *local-identifier* in the *report-identifier* shall be generated locally so as to ensure that it distinguishes the report from all other messages, probes or reports generated in the AMHS Management Domain operating the AFTN/AMHS Gateway.

4.5.6.2.6 The *report-destination-name* element in the Report Transfer Envelope shall be one of the following:

a) the last OR-name in the *DL-expansion-history* element, if present, of the subject AMHS message as specified in Table 4-10/Part 1/1.1.11.11; or

b) the *originator-name* of the subject AMHS message, as specified in Table 4-10/Part 1/1.1.2, if there is no *DL-expansion-history* element in the subject AMHS message.

4.5.6.2.7 The first *trace-information-element* in the *trace-information* of the Report Transfer Envelope shall be generated as specified in Table 4-16/Part 2/6.

4.5.6.2.8 Only extensions of type "standard-extension" as defined in the base standards shall be used, as further specified in the classification of Table 4-16.

4.5.6.2.9 If a *DL-expansion-history* element as specified in Table 4-10/Part 1/1.1.11.11 was present in the subject AMHS message, the *originator-and-DL-expansion-history* element shall be generated as the sequence of the *originator-name* of the subject AMHS message, as specified in Table 4-10/Part 1/1.1.2, and of the aforementioned *DL-expansion-history* element of the subject AMHS message.

4.5.6.2.10 The first *internal-trace-information-element* in the *internal-trace-information* of the Report Transfer Envelope shall be generated as specified in Table 4-16/Part 3/5.

4.5.6.2.11 The *subject-identifier* element in the Report Transfer Content shall be an MTS Identifier composed of the *global-domain-identifier* and *local-identifier* elements found in the *message-identifier* element of the subject AMHS message as specified in Table 4-10/Part 1/1.1.1.

4.5.6.2.11.1 The *global-domain-identifier* element of the MTS identifier is made of address attributes, so its case is insignificant. Although discouraged, this case may be modified when constructing the *subject-identifier* element from the elements of the subject message.

4.5.6.2.12 The *subject-intermediate-trace-information* element in the Report Transfer Content shall take the value which the *trace-information* element of the subject AMHS message as specified in Table 4-10/Part 1/1.1.10 had when the subject AMHS message entered the AMHS Management Domain operating the Message Transfer and Control Unit, if and only if the *originating-MTA-report-request* element in the *per-recipient-indicators* of all the subject AMHS message recipients in the subject Message Transfer Envelope has the abstract-value "audited-report".

4.5.6.2.13 The *original-encoded-information-types* element in the Report Transfer Content shall take the value of the *original-encoded-information-types* element of the subject AMHS message as specified in Table 4-10/Part 1/1.1.3.

4.5.6.2.14 The *content-type* element in the Report Transfer Content shall take the value of the *content-type* element of the subject AMHS message as specified in Table 4-10/Part 1/1.1.4.

4.5.6.2.15 The *content-identifier* element in the Report Transfer Content shall either:

a) take the value of the *content-identifier* element of the subject AMHS message as specified in Table 4-10/Part 1/1.1.5, if present; or

b) be omitted in the report if there is no such element in the subject AMHS message.

4.5.6.2.16 The *returned-content* element in the Report Transfer Content shall optionally take the value of the *content* of the subject AMHS message, if and only if the *content-return-request* element in the *per-message-indicators* of the subject AMHS message in the subject Message Transfer Envelope has the abstract-value "content-return-requested".

4.5.6.2.16.1 The Message Transfer and Control Unit is not mandated to implement the Return Of Content (RoC) Optional Functional Group as defined in ISO/IEC ISP 10611-1.

4.5.6.2.17 The *content-correlator* element in the Report Transfer Content shall either:

a) take the value of the *content-correlator* element of the subject AMHS message as specified in Table 4-10/Part 1/1.1.11.10, if present; or

b) be omitted in the report if there is no such element in the subject AMHS message.

4.5.6.2.18 The *actual-recipient-name* element in a *per-recipient-fields* element of the Report Transfer Content shall take the value of the corresponding *recipient-name* element in the *per-recipient-fields* of the subject AMHS message as specified in Table 4-10/Part 1/1.2.1.

4.5.6.2.19 The *originally-specified-recipient-number* element in a *per-recipient-fields* element of the Report Transfer Content shall take the value of the corresponding *originally-specified-recipient-number* element in the *per-recipient-fields* of the subject AMHS message as specified in Table 4-10/Part 1/1.2.2.

4.5.6.2.20 The *per-recipient-indicators* element in a *per-recipient-fields* element of the Report Transfer Content shall be composed of *responsibility*, *originating-MTA-report* and *originating-MTA-non-delivery-report* bits taking any value, and of the *originator-report* and *originator-non-delivery-report* bits taking the value of the corresponding bits in the *per-recipient-indicators* element in the *per-recipient-fields* of the subject AMHS message as specified in Table 4-10/Part 1/1.2.3.

4.5.6.2.21 The *arrival-time* element in the *last-trace-information* of a *per-recipient-fields* element shall take the value of the time at which the subject AMHS message entered the AMHS Management Domain operating the AFTN/AMHS Gateway, as found in the last *trace-information-element* of the subject AMHS message, as

specified in Table 4-10/Part 2/6.1.2.1.

4.5.6.2.22 The *converted-encoded-information-types* element in the *last-trace-information* of a *per-recipient-fields* element shall either:

a) take the last value of the *converted-encoded-information-types* element in the *trace-information* of the subject AMHS message, as specified in Table 4-10/Part 2/6.1.2.4.2, if this element exists; or

b) be omitted in the report, if no such element is present in the *trace-information* of the subject AMHS message.

4.5.6.2.23 If the report is a delivery-report, the *message-delivery-time* element in the *last-trace-information* of a *per-recipient-fields* element shall be the time at which the subject AMHS message has been successfully passed to the AFTN Component by the Message Transfer and Control Unit.

4.5.6.2.24 If the report is a delivery-report, the *type-of-MTS-user* element in the *last-trace-information* of a *per-recipient-fields* element shall take the abstract-value "other".

4.5.6.2.25 If the report is a non-delivery-report, the *non-delivery-reason-code* and *non-delivery-diagnostic-code* elements in the *last-trace-information* of a *per-recipient-fields* element shall take the abstract-values specified in the provision which caused the generation of the report.

4.5.6.2.26 The *originally-intended-recipient-name* element in a *per-recipient-fields* element shall either:

a) take the value of the first O/R name found in the *redirection-history* element of the subject AMHS message, if present, as specified in Table 4-10/Part 1/1.2.5.13; or

b) be omitted in the report if there is no *redirection-history* element in the subject AMHS message.

4.5.6.2.27 The *supplementary-information* element in a *per-recipient-fields* element shall take one of the following values:

a) the value "This report only indicates successful (potential) conversion to AFTN, not delivery to a recipient" if the report is a delivery-report; or

b) the value, if any, specified in the provision which caused the generation of the report if it is a non-delivery-report.

4.5.6.2.28 The *redirection-history* element in a *per-recipient-fields* element shall either:

a) take the value of the *redirection-history* element of the subject AMHS message, if present, as specified in Table 4-10/Part 1/1.2.5.13; or

b) be omitted in the report if there is no *redirection-history* element in the subject AMHS message.

4.5.6.2.29 The element *country-name* in the *global-domain-identifier* element of the *MTS-identifier* and of the first *trace-information-element* shall be the *country-name* element of the identifier of the AMHS Management Domain operating the AFTN/AMHS Gateway as specified in 2.5.1.3.

4.5.6.2.30 The element *administration-domain-name* in the *global-domain-identifier* element of the *MTS-identifier* and of the first *trace-information-element* shall be the *administration-domain-name* element of the identifier of the AMHS Management Domain operating the AFTN/AMHS Gateway as specified in 2.5.1.3.

4.5.6.2.31 The element *private-domain-identifier* in the *global-domain-identifier* element of the *MTS-identifier* and of the first *trace-information-element* shall be the *private-domain-identifier* element of the identifier of the AMHS Management Domain operating the AFTN/AMHS Gateway as specified in 2.5.1.3.

4.5.6.2.32 The element global-domain-identifier in the trace-information or in the internal-trace-information shall:

a) identify the AMHS Management Domain operating the AFTN/AMHS Gateway; and

b) be composed as specified in Table 4-16/ Part 2/2.

4.5.6.2.33 The element *arrival-time* in the first element of *trace-information* or of *internal-trace-information* shall take the semantic value of the time when the report was generated by the Message Transfer and Control Unit for conveyance in the AMHS.

4.5.6.2.34 The element *routing-action* in the first element of *trace-information* or of *internal-trace-information* shall take the abstract-value “relayed”.

4.5.6.2.35 The element *mta-name* in the first element of *internal-trace-information* shall be the mta-name assigned to the Message Transfer and Control Unit included in the AFTN/AMHS Gateway.

4.5.6.2.35.1 The structure of the *mta-name* of the Message Transfer and Control Unit included in an AFTN/AMHS Gateway within an AMHS Management Domain is a matter of policy internal to the AMHS Management Domain.

— END —