<u>AERONAUTICAL TELECOMMUNICATIONS NETWORK PANEL(ATNP)</u>

WORKING GROUP 3 - APPLICATIONS AND UPPER LAYERS

SUBGROUP 1 - GROUND APPLICATIONS SUBGROUP

Draft SARPs for the ATN CNS/ATM-1 Package
Sub-Volume III, Part 1

ATS Message Handling Services over the ATN

Version 1.0

Date : 04/02/96

Prepared by SG1 / SD01 Editor

<u>Summary</u>

This document is a proposed version 1.0 of the Draft SARPs for ATS Message Handling Services over the ATN, to become Part 1 of Sub-Volume III of the ATN CNS/ATM-1 Package Draft SARPs.

Document Control Log

Section(s)	Date	New Version	Reason for change
All	02/03/95	0.0 (provisional)	identification by the Editor of areas where additions/ amendments/ deletions are needed
All	27/04/95	0.0 (approved)	integration into the document of the additional areas for changes suggested prior to approval of version 0.0
All	31/05/95	0.1 (provisional)	inclusion of changes in preparation for discussion at the Brussels SG1 meeting.
All	27/06/95	0.1 (approved)	approval by the Brussels SG1 meeting of revisions proposed in Version 0.1 (provisional).
All	06/10/95	0.2 (provisional)	restructuration for inclusion in overall CNS/ATM-1 Package SARPs, separation of Types A and B environments, in preparation for discussion at the Banff SG1 meeting.
All	23/11/95	0.3 (provisional)	1st MHS DG meeting (Paris 8-10 November 1995) and Editor's work to take into account the meeting conclusions, in preparation for discussion at the London SG1 meeting
All	26/01/96	1.0 (provisional)	incorporation of the London SG1 meeting conclusions, of the 2nd MHS DG meeting (Paris 10-16 January 1996) conclusions, full development of section 2.3 in preparation for the Brisbane SG1 and WG3 meetings
All	04/02/96	1.0	incorporation of the Brisbane MHS DG sessions and SG1 meeting conclusions

Reference list for the source of changes in the document starting from the baseline version

Reference	Date	Title of reference

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LIST OF REFERENCES

INTERNATIONAL STANDARDIZED PROFILE ISO/IEC ISP 10611 :

Information Technology - International Standardized Profiles AMH1n - Message Handling Systems - Common Messaging

Part 1 : MHS Service Support (ISO/IEC ISP 10611-1 : 1994)

Part 2 : Specification of ROSE, RTSE, ACSE, Presentation and Session Protocols for use by MHS (ISO/IEC ISP 10611-2 : 1994)

Part 3 : AMH11 - Message Transfer (P1) (ISO/IEC ISP 10611-3 : 1994)

Part 4 : AMH12 - MTS Access (P3) (ISO/IEC ISP 10611-4 : 1994)

Part 5 : AMH13 - MS Access (P7) (ISO/IEC ISP 10611-5 : 1994)

INTERNATIONAL STANDARDIZED PROFILE ISO/IEC ISP 12062 :

Information Technology - International Standardized Profiles AMH2n - Message Handling Systems - Interpersonal Messaging

Part 1 : IPM MHS Service Support (ISO/IEC ISP 12062-1 : 1994)

Part 2 : AMH21 - IPM Content (ISO/IEC ISP 12062-2 : 1994)

Part 3 : AMH22 - IPM Requirements for Message Transfer (P1) (ISO/IEC ISP 12062-3 : 1994)

Part 4 : AMH23 - IPM Requirements for MTS Access (P3) (ISO/IEC ISP 12062-4 : 1994)

Part 5 : AMH24 - IPM Requirements for Enhanced MS Access (P7) (ISO/IEC ISP 12062-5 : 1994)

INTERNATIONAL STANDARD ISO/IEC 10021:

Information Technology – Text Communication – Message-Oriented Text Interchange System (MOTIS)

Part 1: System and Service Overview (ISO/IEC 10021-1: 1990)

ISO/IEC 10021-1/Cor.1:1991	ISO/IEC 10021-1/Cor.4:1992
ISO/IEC 10021-1/Cor.2:1991	ISO/IEC 10021-1/Cor.5:1992
ISO/IEC 10021-1/Cor.3:1992	ISO/IEC 10021-1/Cor.6:1994

ISO/IEC 10021-1/Amd.2:1994

Part 2: Overall Architecture (ISO/IEC 10021-2: 1990)

ISO/IEC 10021-2/Cor.1:1991	ISO/IEC 10021-2/Cor.5:1993
ISO/IEC 10021-2/Cor.2:1991	ISO/IEC 10021-2/Cor.6:1994
ISO/IEC 10021-2/Cor.3:1992	ISO/IEC 10021-2/Cor.7:1994
ISO/IEC 10021-2/Cor.4:1992	
ISO/IEC 10021-2/Amd.1:1993	ISO/IEC 10021-2/Amd.2:1994

Part 3: Abstract Service Definition Conventions (ISO/IEC 10021-3: 1990)

Technical Corrigendum 1

Part 4: Message Transfer System: Abstract Service Definition and Procedures (ISO/IEC 10021-4: 1990)

ISO/IEC 10021-4/Cor.1:1991	ISO/IEC 10021-4/Cor.5:1992
ISO/IEC 10021-4/Cor.2:1991	ISO/IEC 10021-4/Cor.6:1993
ISO/IEC 10021-4/Cor.3:1992	ISO/IEC 10021-4/Cor.7:1994
ISO/IEC 10021-4/Cor.4:1992	ISO/IEC 10021-4/Cor.8:1994
ISO/IEC 10021-4/Amd.1:1994	

Part 5: Message Store: Abstract Service Definition (ISO/IEC 10021-5: 1990)

ISO/IEC 10021-5/Cor.1:1991	ISO/IEC 10021-5/Cor.5:1992
ISO/IEC 10021-5/Cor.2:1991	ISO/IEC 10021-5/Cor.6:1993
ISO/IEC 10021-5/Cor.3:1992	ISO/IEC 10021-5/Cor.7:1994
ISO/IEC 10021-5/Cor.4:1992	

Amendment 1: Message Store Extensions and Message Store Logs

Part 6: Protocol Specifications (ISO/IEC 10021-6: 1990)

ISO/IEC 10021-6/Cor.1:1991	ISO/IEC 10021-6/Cor.5:1992
ISO/IEC 10021-6/Cor.2:1991	ISO/IEC 10021-6/Cor.6:1993

ISO/IEC 10021-6/Cor.3:1992	ISO/IEC 10021-6/Cor.7:1994
ISO/IEC 10021-6/Cor.4:1992	

Part 7: Interpersonal Messaging System (ISO/IEC 10021-7: 1990)

ISO/IEC 10021-7/Cor.1:1991	ISO/IEC 10021-7/Cor.5:1992
ISO/IEC 10021-7/Cor.2:1991	ISO/IEC 10021-7/Cor.6:1993
ISO/IEC 10021-7/Cor.3:1992	ISO/IEC 10021-7/Cor.7:1994
ISO/IEC 10021-7/Cor.4:1992	ISO/IEC 10021-7/Cor.8:1994

ICAO ANNEX 10, VOLUME II (fifth Edition, including Amendment 70)

Editor's Note: ADDITION NEEDED to incorporate the other Standards and CCITT / ITU-T Recommendations which are part of the base specification

Editor's Note: There are many references to Annex 10, Volume II in these SARPs. The references use the numbering of sections and clauses of Annex 10 as resulting from Amendment 70. This Amendment had caused many sections and clauses to be renumbered. In this context, and, considering that the fifth edition published by ICAO with this new numbering is not yet widespread, the correspondence table which follows has been included, to make it possible for the reader to cross-reference to the fourth Edition of Annex 10, Volume II, including up to Amendment 69.

Reference in these SARPs to 5th Edition of Annex 10, Volume II (including Amendment 70)	*Corresponding Reference in 4th Edition of Annex 10, Volume II (up to Amendment 69 inclusive)*
4.4.1.1.9	*4.4.1.1.10*
4.4.1.6.1	*4.4.1.7.1*
4.4.1.6.2	*4.4.1.7.2*
4.4.1.6.3	*4.4.1.7.3*
4.4.1.7	*4.4.1.8*
4.4.3.1.2	*4.4.4.1.2*
4.4.9.3	*4.4.11.1.5*
4.4.10.1.6.1	*4.4.12.1.6.1*
4.4.11.1	*4.4.13.1*
4.4.11.3	*4.4.13.3*
4.4.11.13.3	*4.4.13.13.3*
4.4.16.1 to 4.4.16.2.2	*4.4.18.1*
4.4.16.1.1	*4.4.18.1.1*
4.4.16.2.1	*4.4.18.1.2*
4.4.16.2.1.3	*4.4.18.1.2.3*
4.4.16.2.2	*4.4.18.1.3*
4.4.16.2.2.1	*4.4.18.1.3.1*
4.4.16.3.12	*4.4.18.2.12*
4.4.16.5	*4.4.18.4*
4.4.16.6	*4.4.18.5*
4.4.17.2.2	*4.4.19.2.2*

LIST OF ABBREVIATIONS

84IW	84 Interworking
A/G	Air-ground
ACSE	Association control service element
ADMD	Administration management domain
AF-Address	AFTN-form address
AFTN	Aeronautical fixed telecommunication network
AINSC	Aeronautical industry service communication
AMHS	ATS message handling system
API	Application Programme Interface
ASN.1	Abstract syntax notation one
ATC	Air traffic control
ATN	Aeronautical telecommunication network
ATS	Air traffic services
ATSC	Air traffic services communications
AU	Access unit
CCITT	Consultative Committee of International Telegraph and Telephone
COTP	Connection-oriented transport protocol
DL	Distribution List
EoS	Element of Service
FG	Functional Group
IA-5	International Alphabet No. 5

IEC	International Electrotechnical Commission
IP	Internetwork protocol
IPM	Interpersonal message
IPMS	Interpersonal messaging system
IPN	Interpersonal notification
ISO	International Organization for Standardization
ISP	International Standardized Profile
ISPICS	ISP Implementation Conformance Statement
ITA-2	International Telegraph Alphabet No. 2
ITU	International Telecommunication Union
MD	Management domain
MF-Address	MHS-form address
MHS	Message handling system
MOTIS	Message-oriented text interchange system
MS	Message store
MTA	Message transfer agent
MTS	Message transfer system
MTSE	Message transfer service element
NRN	Non-Receipt Notification
NSAP	Network service access point
O/R	Originator/recipient
OHI	Optional Heading Information
OSI	Open systems interconnection
PDAI	Predetermined address indicator

PRL   Profile Requirement List

PRMD   Private management domain

RN   Receipt Notification

RTSE   Reliable transfer service element

SPDU   Session protocol data unit

ST/SYS   Storage and transfer system

T/SYS   Transfer system

TI   Transmission identification

TSAP   Transport service access point

UA   User agent

1. TERMS, SCOPE AND APPLICABILITY

1.1 DESCRIPTION OF TERMS

1.1.1 ATS Messaging Handling Services

ATS Message. A unit of user-data, coded in binary form, which is conveyed from an originator of the data to one or more recipients of the data. It is possible to associate a unique message identifier and a priority with each ATS message.

Note 1.- An ATS Message may convey additional information associated with functions or procedures to be performed in relation with the message.

ATS Message Handling Service. Procedures used to exchange ATS Messages over the ATN such that the conveyance of an ATS Message is in general not correlated with the conveyance of another ATS Message by the service provider. Two ATS Message Handling Services are defined in this Part of Sub-Volume III. They are the ATS Message Service and the ATN Pass-Through Service.

Note 2.- Correlation of units of data may optionally be performed by the service provider on the request of the service user.

1.1.2 End Systems performing ATS Message Handling Services

1.1.2.1. The provisions for ATS Message Handling Services as specified in these SARPs apply to a set of ATN End Systems as defined in Sub-Volume V of the CNS/ATM-1 Package SARPs, Chapter 2. Four types of ATN End Systems are defined:

        a)   an ATS Message Server,

        b)   an ATS Message User Agent,

        c)   an AFTN/AMHS Gateway,

        d)   an AFTN/ATN Type A Gateway.

Note 1.- These SARPs defines only the procedures between these end systems without consideration of their implementation.

Note 2.- A single ATN End System may implement the provisions of several of the above defined categories of End Systems performing ATS Message Handling Services.

Note 3.- An AFTN/AMHS Gateway may also be denominated AFTN/ATN Type B Gateway.

1.1.2.2. An ATS Message User Agent provides an interface to the ATS Message Service for an ATS Message Service user. It is further specified in Section 2.2.1.

1.1.2.3. An ATS Message Server provides the relay function included in the ATS Message Service. It may also optionally provide the storage function included in the ATS Message Service. It is further specified in Section 2.2.2.

1.1.2.4. An ATS Message Server and an ATS Message User Agent together form the ATS Message Service provider.

1.1.2.5. An AFTN/AMHS Gateway provides bi-directional interworking between users of the ATS Message Service and users connected to the AFTN. It is further specified in Section 2.3.

1.1.2.6. An AFTN/ATN Type A Gateway provides a bi-directional interface between the ATN and the AFTN for the purpose of conveying AFTN messages over the ATN by implementation of the ATN Pass-Through Service. It is further specified in Section 3.2.

1.1.2.7. Connections are established over the Internet Communications Service between any pair constituted of these ATN End Systems and listed in the Table below.

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
AFTN/ATN Type A Gateway	AFTN/ATN Type A Gateway

Note.- The combination of the systems defined above into single physical implementations in accordance with the possibility mentioned in Note 2 under 1.1.2.1 may lead to additional pairs in the list.

1.1.3   The ATS Message Service

1.1.3.1. The ATS Message Service is provided by the implementation over the ATN of the Message Handling Systems specified in ISO/IEC 10021 and CCITT or ITU-T X.400, and complemented with the additional requirements specified in these SARPs.

1.1.3.2. The two sets of documents, the ISO/IEC MOTIS 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. In these SARPs reference is made to the relevant ISO 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.

Note 1.- An appendix to each part of the ISO/IEC Standards lists all differences between it and the equivalent CCITT Recommendation, and vice-versa.

Note 2.- The ISPs themselves refer to the ISO/IEC 10021 (1990) and CCITT X.400 (1992) Standards and Recommendations.

1.1.3.3. Two levels of service are defined within the ATS Message Service:

        a)   the Basic ATS Message Service.

        b)   the Extended ATS Message Service.

1.1.3.4. The Basic ATS Message Service shall meet the basic requirements of the MHS Profiles published by ISO as International Standardized Profiles (ISPs), and it shall incorporate additional features to support the service offered by the AFTN. The Basic ATS Message Service is further specified in section 2.2. This includes the specification of which ISPs apply in this context.

1.1.3.5. The Extended ATS Message Service shall provide functionalities in addition to those of the Basic ATS Message Service which shall be either one or several of the following:

        a)   functionalities which are optional in the ISPs which apply in the context of the Basic ATS Message Service.

        b)   functionalities included in ISPs which do not apply in the context of the Basic ATS Message Service.

        c)   functionalities included in future editions of the ISO/IEC and ITU-T MHS Standards and Recommendations.

Note 1.- An example of a) could be that the Extended ATS Message Service mandates the use of a Functional Group (e.g. Use of Directory) which is optional in the Basic ATS Message Service. An example of b) could be that the Extended ATS Message Service is based on a different category of service (e.g. EDIMS) defined in the MHS profiles.

Note 2.- The detailed specification of the Extended ATS Message Service is not included in the CNS/ATM-1 Package SARPs.

Note 3.- The term ATS Message Service refers to the service which includes both the Basic and the Extended ATS Message Service where no distinction between these is necessary.

1.1.3.6. The ATS Message Service shall be the long-term option amongst the ATS Message Handling Services defined over the ATN.

Note.- The set of protocols implemented between ATN End Systems which support the ATS Message Service is called the ATS Message Protocol Stack Type B.

1.1.4   The ATN Pass-Through Service

1.1.4.1. The ATN Pass-Through Service shall be the ATS Message Handling Service offered over the ATN by the implementation of AFTN/ATN Type A Gateways to exchange AFTN Messages formatted in IA-5 in compliance with the provisions of Annex 10, Volume II.

1.1.4.2. The ATN Pass-Through Service shall encapsulate and decapsulate AFTN messages using the non-confirmed Dialogue Service and the associated upper layer protocol architecture.

Note.- Due to its transitional nature, it is not appropriate that the ATN Pass-Through Service defined in these SARPs be the long-term option amongst the ATS Message Handling Services over the ATN.

1.1.4.3.   The protocol implemented between ATN End Systems which support the ATN Pass-Through Service is called the ATS Message Protocol Stack Type A.

1.2   SCOPE

The scope of these SARPs is restricted to ATS Message Handling Services which use the ATN Internet defined in Sub-Volume V of the CNS/ATM-1 Package SARPs.

Note 1.- The ATS Message Handling Services defined above aim at providing generic message services over the ATN. They 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 either the ATS Message Service or to the ATN Pass-Through Service. Such user-applications and APIs are out of the scope of these SARPs.

Note 2.- This does not preclude the direct use of ATS Message Protocol Stack Type A by user-applications implemented in ATN End Systems. Such user-applications and APIs are out of the scope of these SARPs.

Note 3.- This does not preclude the direct use of ATS Message Protocol Stack Type B by user-applications implemented in ATN End Systems. Such user-applications and APIs are out of the scope of these SARPs.

Note 4.- These SARPs do not specify or alter procedures within the AFTN.

1.3   APPLICABILITY

1.3.1. The ATS Message Service shall be implemented by national and international ATS Organisations.

Note.- As a matter of organisations'policy, the implementation of the ATS message service may be defered. In order to take early advantage of the enhanced connectivity provided by the ATN, ATS Organisations with such a policy may implement and operate in the interim the ATN Pass-Through Service. This service provides connectivity for the AFTN traffic as presently defined in Annex 10, Volume II, through the ATN. The interoperability between the ATS Message service and the ATN Pass-Through Service is a local implementation matter.

*1.3.2. **Recommendation**.- ATS Organisations which choose to implement the ATN Pass-Through Service should plan to implement the ATS Message Service at the earliest possible date.*

*1.3.3. **Recommendation**.- ATS Organisations which choose to implement the ATN Pass-Through Service should provide the interoperability facilities to the ATS Message Service implementations.*

2. ATS MESSAGE SERVICE

2.1. SYSTEM LEVEL PROVISIONS

2.1.1. The ATS Message Service Environment

2.1.1.1. The ATS Message Handling System

The set of computing and communication resources implemented by ATS organizations to provide the ATS Message Service is called the ATS Message Handling System (AMHS).

2.1.1.2. ATS Message Service Users

2.1.1.2.1. The Basic ATS Message Service shall be provided to users at an ATS Message User Agent.

2.1.1.2.2. There shall be two categories of users as follows:

　　　　a)　users who engage in the ATS Message Service at an ATS Message User Agent are called direct users; and

　　　　b)　users at AFTN stations using the AFTN/AMHS Gateway to communicate with other ATS Message Service users are called indirect users.

Note.- Direct users may belong to two subgroups as follows:

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

　　　　b)　host users which are computer applications running on ATN end systems and interacting with the ATS Message Service by means of application programme interfaces. Such APIs are out of the scope of these SARPs.

2.1.1.2.3. Indirect users shall use only that part of the Basic ATS Message Service which corresponds to AFTN functionalities, by using the interworking capability provided by an AFTN/AMHS Gateway as specified in Section 2.3.

2.1.2. AMHS Model

2.1.2.1. AMHS functional model

2.1.2.1.1. Model components

2.1.2.1.1.1. The systems composing the AMHS shall themselves be composed of the following functional objects, the general role of which is described in ISO/IEC 10021-2:

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

b)   user agent(s) (UA),

c)   message store(s) (MS),

d)   access unit(s) (AU).

2.1.2.1.1.2. The MHS Elements of Service and Protocols implemented by these functional objects shall comply with the specifications of Sections 2.2 and 2.3.

2.1.2.1.2.   ATS Message Server

2.1.2.1.2.1. An ATS Message Server shall implement a MTA and optionally one or several MSs.

2.1.2.1.2.2. An ATS Message Server shall not be required to use or have knowledge of AFTN procedures.

2.1.2.1.2.3. The specification of the ATS Message Server is included in Section 2.2.2.

2.1.2.1.3.   ATS Message User Agent

2.1.2.1.3.1. An ATS Message User Agent shall implement a UA.

2.1.2.1.3.2. The specification of the ATS Message User Agent is included in Section 2.2.1.

Note.- An ATS Message User Agent is by definition an ATN End System. The existence of this definition does not preclude the implementation, as a local matter, of UAs supporting a service identical to the Basic ATS Message Service without making use of the ATN for the interconnection between the UA and an ATS Message Server. Such UAs are considered as logically co-located.

2.1.2.1.4.   AFTN/AMHS Gateway

2.1.2.1.4.1. An AFTN/AMHS Gateway shall implement a MTA, which is part of the ATN Component of the AFTN/AMHS Gateway, and an AU.

Note.- As defined in 2.3.1.2 (Note 2), the AU is the Message Transfer and Control Unit of the AFTN/AMHS Gateway.

2.1.2.1.4.2. The specification of the AFTN/AMHS Gateway is included in Section 2.3.

Note.- An AFTN/AMHS Gateway also implements an AFTN Component as an interface to the AFTN, as specified in Section 2.3. However this AFTN component does not pertain to the AMHS.

2.1.2.2.   AMHS information model

In conformance with ISO 10021-2 there shall be three categories of information objects defined: message, probe and report.

2.1.2.2.1.   Messages

2.1.2.2.1.1. Messages shall be composed of two parts, the envelope and the content.

2.1.2.2.1.2. An envelope shall be generated by a ATS Message User Agent or an AFTN/AMHS Gateway when entering the AMHS. The envelope shall bear all the information necessary for the conveyance of the message by the ATS Message Servers towards its destination.

Note- The information carried by the envelope varies along the conveyance of the message towards its destination.

2.1.2.2.1.3.   The provisions of these SARPs concerning MHS envelopes shall only apply to Transfer Envelopes. In particular, an AFTN/AMHS Gateway shall generate a Transfer Envelope to convey an ATS Message.

Note.- The envelope which is used for the submission/delivery of a message between an ATS Message User Agent and an ATS Message Server is out of the scope of these SARPs (see Note 2 in section 2.2.1.2).

2.1.2.2.1.4. The content shall be an information object which the MTAs neither examines nor modifies, except for conversion, during its conveyance of the message.

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

2.1.2.2.2.   Probes

2.1.2.2.2.1. The probe shall be a class of message containing only an envelope which shall be conveyed by the MTAs from one user up to the MTA serving other users. It shall be used to determine the deliverability of messages.

2.1.2.2.2.2. Only direct ATS Message Service users shall be able to submit probes.

2.1.2.2.3.   Reports

2.1.2.2.3.1. A report shall be an information object generated by a MTA in order to report on the outcome or progress of a message or probe in the set of interconnected MTAs pertaining to the AMHS.

2.1.2.2.3.2. Reports shall be delivered only to direct ATS Message Service users.

2.1.2.3.   Security model

Note 1.- In the Basic ATS Message Service, security is obtained by procedural means rather than by technical features inherent to the AMHS.

Note 2.- In the Basic ATS Message Service, the security at each ATS Message Server or AFTN/AMHS Gateway is deemed a local issue to be addressed by the authority in charge of the system.

2.1.2.4.   Management model

Note.- In the Basic ATS Message Service, management is limited to the logging provisions which are defined for the ATS Message UA, 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.

2.1.3.   Organization of the AMHS

2.1.3.1.   ATS Messaging Organizations

2.1.3.1.1. An Organization which is subject to the same human management and which maintains at least one ATS Message Server and/or one AFTN/AMHS Gateway shall be called an ATS Messaging Organization.

2.1.3.1.2. Each ATS Messaging Organization shall be declared to ICAO. A list of the ATS Messaging Organizations shall be maintained by ICAO. An Organization which has elected to operate as an ATS Messaging Organization shall be responsible for accomplishing the necessary procedures for its declaration to ICAO.

Note.- In the CNS/ATM-1 Package, this declaration relates to administrative considerations which are internal to ICAO. It is not a substitute for, and is in fact in addition to the administrative registration provisions included in section 2.1.3.2.

2.1.3.1.3. All direct and indirect users of the ATS Message Service interacting via the resources managed and operated by an ATS Messaging Organization shall be called service-users of this Organization.

Note.- This does not imply that these service-users belong to the Organization. Rather, it may be interpreted as the Organization acting as a service provider to a set of service-users, of which some may belong to the same Organization and some may not.

2.1.3.1.4. An ATS Messaging Organization shall be connected over the ATN with at least one other ATS Messaging Organization as specified in section 2.1.4.2. These ATS Messaging Organizations with which an ATS Messaging Organization has direct connections over the ATN are called its neighbouring ATS Messaging Organizations.

2.1.3.1.5. An ATS Messaging Organization shall be responsible for delivery and submission of messages, probes and reports to and from its service-users. It shall be responsible for the transfer of messages, probes and reports towards the ATS Messaging Organization, of which each recipient the aforementioned information objects is a service-user.

Note.- This will be done in accordance with the AMHS routing principles specified in section 2.1.6.

2.1.3.1.6. An ATS Messaging Organization shall be responsible for relaying to other ATS Messaging Organizations messages, probes and reports received from other ATS Messaging Organizations and not directed to its own service-users. This role shall be carried out in accordance with the bilateral agreements concluded for this purpose with its neighbouring ATS Messaging Organizations.

2.1.3.2.   Management Domains in the AMHS

2.1.3.2.1. An ATS Messaging Organization shall operate as a Management Domain as defined in ISO/IEC 10021-2.

Note.- An ATS Messaging Organization may elect to operate as either an ADMD or a PRMD, depending on the national telecommunications regulation in force in the countries where it operates and on its relationships with other Management Domains.

2.1.3.2.2.   An ATS Messaging Organization shall be responsible for accomplishing the necessary administrative procedures for the national (multinational) registration of its Management Domain in the country(ies) where it operates, or for the international registration of its Management Domain by the appropriate registration authority.

Note.- In these SARPs the role of ICAO is limited to a place for declaration, since an administrative registration by appropriate (non-ICAO) registration authorities is required by the base standards to ensure the uniqueness of the MD-names.

2.1.4.   ATS Messaging Organization configurations

2.1.4.1.   Minimal set of systems

The minimal set of systems implemented and operated by an ATS Messaging Organization shall be either of the following:

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

  b)   an AFTN/AMHS Gateway;

  c)   any combination of a) and b).

Note 1.- The relationship between the ATS Message Server and the ATS Message User Agents at the level of the access protocol is deemed a local issue of the ATS Messaging Organization and is therefore not specified in these SARPs. This is similar to a situation where these functional objects would be co-located in one system.

Note 2.- This does not preclude the possibility for an ATS Messaging Organization to internally co-locate these systems. Such co-location, as described in the MHS ISPs, means that the MHS functional objects composing the systems above do not communicate via a standard MHS communications protocol.

2.1.4.2.   Interconnection between two ATS Messaging Organizations

2.1.4.2.1. An interconnection between two ATS Messaging Organizations shall be implemented as either of the following connections:

  a)   a connection between two ATS Message Servers,

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

c)   a connection between two AFTN/AMHS Gateways.

2.1.4.2.2.   The protocol data units exchanged over such a connection shall comply with the profile specification which is given in section 2.2.2.2.

Note.- This means that the protocol implemented between two ATS Messaging Organizations is P1.

2.1.5.   AMHS addressing principles

2.1.5.1.   Address forms

2.1.5.1.1. Two address forms are defined in the AMHS, which are as follows:

a)   an AF-Address is used to locate AMHS users, either direct or indirect, in the AFTN address space;

b)   a MF-Address is used to locate a direct or indirect AMHS user in the AMHS address space.

Note 1.- an AF-Address (AFTN-form) is an ICAO AFTN 8-letter addressee indicator.

Note 2.- a MF-Address (MHS-form) is a MHS O/R address without particular restrictions or specifications other than those relative to the ATS Messaging Organization which the user belongs to.

Note 3.- By definition, an indirect user has an AF-Address.

Note 4.- If a direct user needs to communicate with indirect users, it is required that an AF-Address be allocated to him. The way in which this AFTN address is allocated is outside the scope of these SARPs.

2.1.5.1.2. An AF-Address shall be either an AFTN addressee indicator as specified in Annex 10, Vol. II, 4.4.3.1.2 and 4.4.16.2.1.3, or a PDAI as specified in Annex 10, Vol. II, 4.4.15.

2.1.5.1.3.   An MF-Address shall take any form of O/R Address as specified in Clause 18.5.1 of ISO/IEC 10021-2 and further specified in section 2.1.5.2.

2.1.5.2.   Structure of a MF-Address

The MF-Address of an AMHS user shall comprise:

a)   a set of attributes identifying the ATS Messaging Organization of which the AMHS user, either direct or indirect, is a service-user. This identifier shall be as specified in 2.1.5.3; and

b)   a set of attributes identifying uniquely the AMHS user within the ATS Messaging Organization. The attributes present in this identifier shall be as defined in the AMHS addressing scheme implemented by the ATS Messaging Organization.

Note 1.-   The identifier defined in item a) includes the standard address attributes country-name, administration-domain-name *and optionally* private-domain-name.

Note 2.- The attributes present in the identifier defined in item b) may include any standard or domain-defined attribute as defined in section 18 of ISO/IEC 10021-2, other than country-name, administration-domain-name *and* private-domain-name.

Note 3.- AMHS addressing schemes are defined in 2.1.5.4.

2.1.5.3.   ATS Messaging Organization identifier

2.1.5.3.1.   The attributes identifying an ATS Messaging Organization shall depend on the status under which the ATS Messaging Organization has elected to operate. They shall be as specified in Table 2.1.

Table 2.1. Attributes identifying an ATS Messaging Organization

ATTRIBUTE TYPE	STATUS	VALUE FOR ADMD	VALUE FOR PRMD
country-name	m	2.1.5.3.2	2.1.5.3.2
administration-domain-name	m	2.1.5.3.3	2.1.5.3.4
private-domain-name	c1	–	2.1.5.3.3

m : mandatory

x : excluded

c1 : if the ATS Messaging Organization operates as a PRMD then m else x

2.1.5.3.2.   *Country-name*

2.1.5.3.2.1.   The country-name attribute in a MF-Address shall bear either the semantic value of the country, or of one of the countries, where the ATS Messaging Organization has been registered as a MHS Management Domain in case of national or multi-national registration, or the value allocated by the international registration authority to be used in-lieu of the country-name, in case of international registration.

Note.-   Depending on local regulations and policies, and whether the ATS Messaging Organization operates as an ADMD or a PRMD, such registration may be done either at the national registration authority or at a national ADMD. In either case, registration ensures that the MD-name is unique in the context which is referred to.

2.1.5.3.2.2.   The attribute shall take either the value of the two-character alphabetical country-indicator of this country as specified in ISO 3166 in case of national registration, or the three-digits data-country-code as specified in CCITT Recommendation X.121, or a two-character alphabetical value as appropriate in case of international registration. It shall be encoded as a Printable String.

Note 1.- Indicators dedicated to international organizations, in line with the registration procedures for such organizations as defined in Recommendation ITU-T X.666, are neither specified at present in ISO 3166 nor in CCITT Recommendation X.121.

Note 2.- For common representation purposes, this is usually represented by "C=(country-indicator)".

2.1.5.3.3   ATS Messaging Organization Name

2.1.5.3.3.1. In a MF-Address, the name of the ATS Messaging Organization to which the user belongs shall be carried either in the ADMD-name attribute or in the PRMD-name attribute, based on the status under which the ATS Messaging Organization has elected to operate and as specified in Table 2.1.

2.1.5.3.3.2. Names of ATS Messaging Organizations shall be declared by ICAO, which shall maintain a list of these, including the name of the ATS Messaging Organization, the country-name value used to identify the Management Domain as specified in 2.1.5.3.2 and the name of the ADMD, if present, as specified in 2.1.5.3.4.

2.1.5.3.3.3. The format of the name of an ATS Messaging Organization shall be a Printable String with a maximum length of 16 alphanumerical characters.

Recommendation.- *Names of ATS Messaging Organizations should be chosen with the objective of being short and meaningful.*

Note.- For common representation purposes, this is usually represented by "A=(name of ATS Messaging Organization)" in the case of an ATS Messaging Organization operating as an ADMD, or by "P=(name of ATS Messaging Organization)" in the case of an ATS Messaging Organization operating as a PRMD.

2.1.5.3.4   ADMD-name

In the MF-Address of a user belonging to an ATS Messaging Organization which operates as a PRMD, the ADMD-name attribute shall take either of the following values:

> a)   the name of the ADMD to which the PRMD built by the ATS Messaging Organization is connected; or
>
> b)   a single space value,

which shall be encoded as a Printable String in both cases.

Note 1.- The use of the single space value implies that such a scheme is supported nationally in the country which is referred to by the country-name, and that the PRMD-name is registered as being unique in the country.

Note 2.- For common representation purposes, this is usually represented by "A=(ADMD-name)" in case a) and by "A=(single-space)" in case b).

2.1.5.4. AMHS Addressing Schemes

2.1.5.4.1. General provisions

Note.- Local AMHS Addressing Schemes and Common AMHS Addressing Schemes are defined in the AMHS.

2.1.5.4.1.1. It shall be a matter of policy local to each ATS Messaging Organization to implement either a local AMHS Addressing Scheme or a Common AMHS Addressing Scheme, or a combination of these.

2.1.5.4.1.2. Local AMHS Addressing Schemes shall be defined as a matter of policy local to each ATS Messaging Organization. In each MF-address complying with a local AMHS Addressing Scheme, the set of attributes identifying the ATS Messaging Organization as specified in 2.1.5.3 shall be present. The only restriction on the selection of attributes used to identify a user in a local AMHS Addressing Scheme shall be as specified in 2.1.5.1.3.

2.1.5.4.1.3. Several Common AMHS Addressing Schemes shall be defined in the AMHS.

Note.- In the CNS/ATM-1 Package, there is one single Common AMHS Addressing Scheme which is defined, it is called the XF-Addressing Scheme.

2.1.5.4.2. XF-Addressing Scheme

Note.- The XF-Addressing Scheme defines XF-Addresses. An XF-Address is a particular MF-address whose attributes identifying the user, i.e. those attributes other than country-name, may be converted by an algorithmic method to and from an AF-Address. The algorithmic method requires the use of look-up tables which are limited, i.e. which include only a list of Management Domains rather than a list of individual users.

2.1.5.4.2.1. The components of a XF-Address shall include the set of attributes identifying the ATS Messaging Organization as specified in 2.1.5.3.

2.1.5.4.2.2. The presence of attribute types in a XF-Address shall be as specified in column "Status" of Table 2.2.

Editor's Note: It needs to be clarified whether an XF-address can identify a DL (is the common-name attribute mandatory or not in a DL-name ?).

Table 2.2. Attributes composing a XF-Address

ATTRIBUTE TYPE	STATUS	VALUE FOR ADMD-USER	VALUE FOR PRMD-USER
country-name	m	2.1.5.3.2	2.1.5.3.2
administration-domain-name	m	2.1.5.3.3	2.1.5.3.4
private-domain-name	c1	–	2.1.5.3.3
organization-name	m	2.1.5.4.2.3	2.1.5.4.2.3
domain-defined	x	–	–
organizational-unit-names	m	2.1.5.4.2.4	2.1.5.4.2.4
common-name	x	–	–
personal-name	x	–	–

m : mandatory

x : excluded

c1 : if the ATS Messaging Organization operates as a PRMD then m else x

2.1.5.4.2.3   *Organization-name*

In a XF-Address the organization-name attribute shall take the 4-character value "AFTN", encoded as a Printable String.

Note 1.- In compliance with ISO/IEC 10021-2 no distinction is made between upper case and lower case.

Note 2.- For common representation purposes, this is usually represented by "O=AFTN".

2.1.5.4.2.4   *Organizational-unit-names*

In the XF-Address of a direct or indirect user, the organizational-unit-names attribute shall comprise a sequence of one single element encoded as a Printable String, which shall take the 8-character alphabetical value of the AF-Address of the user, as defined in section 2.1.5.1.

Note 1.- In compliance with ISO/IEC 10021-2 no distinction is made between upper case and lower case.

Note 2.- For common representation purposes, this is usually represented by "OU1=(8-letter addressee indicator)".

2.1.6.   AMHS Routing and rerouting

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

2.1.6.2. The MTAs implemented by an ATS Message Organization shall be collectively able to route on country-name, ADMD-name, PRMD-name, Organization-name and Organizational-units-name attributes.

Note 1 : in compliance with the base standards (ISO/IEC 10021-4, section 14.3.4.4) the AMHS routing algorithm is out of the scope of these SARPs.

Note 2 : in compliance with the base standards (same reference) an ATS Message Server includes a rerouting capability, to determine an alternate next hop destination (MTA) for a given recipient, if there is a relay failure to the next hop destination previously determined. The decision to use this capability and how it is implemented is out of the scope of these SARPs.

Note 3 : in an AFTN/AMHS Gateway, the rerouting capability is limited to that of the MTA included in its ATN Component, as indicated above. The AFTN Component is not required to have a rerouting capability, since it is indistinguishable from an AFTN station.

2.1.7.   AMHS Traffic logging upon origination

An ATS Messaging Organization shall be responsible for logging in their entirety all messages which are originated by its direct users, for a period of at least thirty days.

Note 1.- The choice of the component where such information is logged is a matter of policy local to each ATS Messaging Organization.

Note 2.- The requirement for logging messages in their entirety upon origination is related to the requirement for long-term retention as specified in Annex 10, Vol. II, 4.4.1.6.1.

2.2.   ATS MESSAGE SERVICE SPECIFICATION

This section includes the specification of an ATS Message User Agent, of an ATS Message Server and of common parameters for the support of the Basic ATS Message Service.

2.2.1.   ATS Message User Agent Specification

2.2.1.1.   General

For the support of the Basic ATS Message Service, an ATS Message User Agent shall conform to:

- a)   profile AMH21 as specified in ISO/IEC ISP 12062;

- b)   the IPM 84 Interworking (84IW) Functional Group as specified in Clause 7.10 of ISO/IEC ISP 12062-1;

- c)   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;

- d)   the additional provisions relating to parameters generated at an ATS Message User Agent, as specified in sections 2.2.1.2; and

- e)   the provisions related to traffic logging as specified in section 2.2.1.3.

2.2.1.2.   Additional provisions on parameters

2.2.1.2.1.   Message Content Profile Specification

2.2.1.2.1.1.   In an ATS Message User Agent, the content of the Inter-Personal Messages conveyed in support of the Basic ATS Message Service shall conform to the basic requirements of AMH21 as specified in Clause A.1 of ISO/IEC ISP 12062-2, Annex A and to the additional requirements described in Table 2.3 which are specific to the Basic ATS Message Service.

Note 1.- Table 2.3 specifies the additional requirements in the form of a PRL expressing restrictions to a set of rows of the AMH21 profile, which are referred to using their reference in ISO/IEC ISP 12062-2.

Note 2.- 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 ATS Messaging Organization. If it is desired to use standard MHS protocols for this communication, then profile AMH23 (for P3) or profile AMH24 (for P7) as specified in ISO/IEC ISP 12062 may be implemented.

Table 2.3. Requirements specific to the Basic ATS Message Service in addition to profile AMH21

AMH21/A.1.3	IPM body						
Ref	Element	Origination		Reception		Basic ATS	CNS/ATM-1 Package SARPs reference	ISP 12062-2 Notes/References
		Base	ISP	Base	ISP	Message Service Support		
1	ia5-text	o	o	o	m	m/m		
1.2	data	m	m	m	m	m/m	2.2.3.3	

AMH21/A.1.3.1	Extended body part support						
Ref	Extended Body Part Type	Origination		Reception		Basic ATS	CNS/ATM-1 Package SARPs reference	ISP 12062-2 Notes/References
		Base	ISP	Base	ISP	Message Service 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	2.2.3.3 and 2.2.1.1 c)	

AMH21/A.1.5	Common data types						
Ref	Element	Origination		Reception		Basic ATS	CNS/ATM-1 Package SARPs reference	ISP 12062-2 Notes/References
		Base	ISP	Base	ISP	Message Service Support		
1	RecipientSpecifier							
1.2	notification-requests	o	o	m	m	m/m	2.2.3.3	
1.2.1	rn	o	o	o	o	m/m	2.2.3.3	

1.2.2	nrn	o	o	m	m	m/m		
2	ORDescriptor							
2.1	formal-name	m	m1	m	m1	m1/m1	2.2.3.1	

m1   (see ISO/IEC ISP 12062-2) the requirements for support of O/R names are specified in clause 8 of ISO/IEC ISP 12062-1 (i.e. a claim of support of the formal-name element means that at least the minimum requirements of ISO/IEC 12062-1 with respect to the component elements of O/R names are met)

2.2.1.2.1.2. **Recommendation**.- *In order to ensure operability with both 1984 and 1988 IPM UAs, the ATS Message User Agent should use the ia5-text body part as specified in Table 2.3/AMH21/A1.3/1 to carry unstructured character data.*

Note 3.- Clause 8 of ISO/IEC ISP 12062-1 mandates support of the naming and addressing capabilities specified in Clause 8 of ISO/IEC 10611-1.

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

For the support of the Basic ATS Message 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 defined in section 2.2.3.2.1 is "SS".

Note.- This clause places no constraint on its implementation, which may take place at the level of the user-interface.

2.2.1.3.   Traffic logging requirements at an ATS Message User Agent

Note.- The requirement expressed in 2.1.7 may be implemented in the ATS Message User Agent.

2.2.2.   ATS Message Server Specification

2.2.2.1.   General

For the support of the Basic ATS Message Service, an ATS Message Server shall conform to:

>   a)   the profile specification expressed in 2.2.2.2; and

>   b)   the provisions related to traffic logging as specified in section 2.2.2.3.

2.2.2.2.   Profile Specification

2.2.2.2.1.   Requirements for Message Transfer (P1)

2.2.2.2.1.1. In an ATS Message Server, the P1 implementation of the IPM Service in support of the Basic ATS Message Service shall conform to the basic requirements of AMH22 as specified in Clause B.1 of ISO/IEC ISP 12062-2, Annex B and to the additional requirements described in Clause B.2.2. for the

support of the IPM Distribution List Functional Group. This in turn places no requirements concerning the P1 implementation other than:

  a) the basic requirements of AMH11 specified for Common Messaging in annex A.1 of ISO/IEC ISP 10611-3; and

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

Note 1.- The Distribution List concept is similar to the PDAI (predetermined addressee indicator) mechanism used in the AFTN.

Note 2.- The requirements above imply the mandatory support of the AMH111 Profile implementing the mts-transfer application context.

Note 3.- As a consequence of Note 2 in section 2.2.1.2.1, there are no provisions in these SARPs for the optional implementation of Message Stores (MS) in an ATS Message Server. Such an implementation relates to the access protocol from an ATS Message User Agent to an ATS Message Server, which is a subject local to each ATS Messaging Organization and out of the scope of these SARPs.

2.2.2.2.1.2. **Recommendation**.*- An ATS Message Server should support the AMH112 Profile as specified in ISO/IEC ISP 10611.*

Note.- Conformance to AMH112 implies the additional support of the mts-transfer-protocol and mts-transfer-protocol-84 application contexts and the support of the 84IW Functional Group. Support of AMH112 is required for conformance to CCITT X.400. An ATS Messaging Organization may be required to such conformance, e.g. under the following circumstances:

  a) to comply with national regulation when registration by the national registration authority is requested;

  b) to interconnect with public MHS ADMDs which are by definition CCITT X.400-84 or X.400-88 compliant.

  2.2.2.2.2. Requirements for RTSE and ACSE

The specification in section 2.2.2.2.1 places no requirements other than conformance with ISO/IEC ISP 10611-2 in accordance with the P1 application context(s) for which conformance is claimed.

Note 1.- The support requirement for RTSE is specified in Clause 7 of ISO/IEC ISP 10611-2. The support of RTSE in normal mode is mandatory. If AMH112 is supported, then the support of RTSE in X.410-84 is required.

Note 2.- The support requirement for ACSE is specified in Clause 8 of ISO/IEC ISP 10611-2. This clause also refers to the specification of ISO/IEC ISP 11188-1. The support of ACSE in normal mode is mandatory. If AMH112 is supported, then the support of ACSE in X.410-84 is required.

2.2.2.2.3.   *Requirements for Presentation and Session Layers*

The specification in section 2.2.2.2.1 places no requirements other than conformance with ISO/IEC ISP 10611-2 in accordance with the P1 application context(s) for which conformance is claimed.

Note 1.- The support requirement for the Presentation protocol is specified in Clause 9 of ISO/IEC ISP 10611-2. This clause also refers to the specification of ISO/IEC ISP 11188-1.

Note 2.-   The support requirement for the Session protocol is specified in Clause 10 of ISO/IEC ISP 10611-2. This clause also refers to the specification of ISO/IEC ISP 11188-1.

2.2.2.2.4.   *Use of the Transport Service*

2.2.2.2.4.1. The Basic ATS Message Service shall make use of the Connection Mode Transport Service as specified in Subvolume V, Chapter 5.

Note.- An ATS Message Server or an AFTN/AMHS Gateway are defined as ATN End Systems, thus they implement an ISO 8073 Class 4 Transport protocol as specified in Subvolume V. However this is out of the scope of this Subvolume.

2.2.2.2.4.2. If profile AMH112 is supported, then the ATS Message Server shall implement an ISO 8073 Class 0 Transport protocol.

Note.- The support of Classes 0 and 4 of the ISO 8073 Transport protocol also implies the support of the Transport Class Negotiation.

2.2.2.2.4.3. For the support of the Basic ATS Message Service, transport connections shall be established over the ATN Transport Service between systems belonging to the AMHS using the Transport Connection Priority "4", which corresponds to the message category "normal priority flight safety messages".

Note 1.-   The base MHS standards used in the CNS/ATM-1 Package SARPs do not allow for the establishment of different transport connections with different quality of service parameters, based on the distinction between application level MHS priorities. This is due to the absence of a QoS parameter in the MTA-Bind abstract-operation and in the RT-OPEN service. Thus a single transport priority, conveying messages with different application-level priorities is used.

Note 2.- The way to request the use of the specified transport connection priority to the Transport Service provider is an implementation matter which is out of the scope of these SARPs.

2.2.2.3.   Traffic logging requirements at an ATS Message Server

2.2.2.3.1. An ATS Message Server shall log as specified in 2.2.2.3.2 to 2.2.2.3.6, for a period of at least thirty days, information related to the following events occurred at its Transfer-Port and in the internal procedures of its MTA:

        a)   MTA-bind (to or from another MTA) operation successful completion;

        b)   MTA-unbind (to or from another MTA);

c)   Message Transfer out (to another MTA) operation successful completion;

d)   Probe Transfer out (to another MTA) operation successful completion;

e)   Report Transfer out (to another MTA) operation successful completion;

f)   Message Transfer in (from another MTA) operation successful completion;

g)   Probe Transfer in (from another MTA) operation successful completion;

h)   Report Transfer in (from another MTA) operation successful completion;

i)   Message Submission operation successful completion;

j)   Probe Submission operation successful completion;

k)   Message Delivery operation successful completion;

l)   Report Delivery operation successful completion; and

m)   MTA-bind (to or from another MTA) error.

Note 1.- The requirements for logging related to message and probe submission errors, and message and report delivery errors, are deemed a matter of policy local to the ATS Messaging Organization operating the ATS Message Server. They are out of the scope of these SARPs.

Note 2.- The way in which the information specified is logged is an implementation matter which is out of the scope of these SARPs.

Note 3.- The way in which the information specified is retrieved, exchanged and used is an implementation matter which is out of the scope of these SARPs.

Note 4.- The requirement for logging during at least thirty days is analogous to the long-term retention recommendation placed on AFTN Communication Centres as specified in Annex 10, Vol. II, 4.4.1.6.3.

2.2.2.3.2.   For the logging of information related to a MTA-Bind successful operation completion, to a MTA-unbind or to a MTA-bind error, an ATS Message Server shall log the following parameters which are either arguments, results or errors of the abstract operation:

a)   *initiator-name* (if present);

b)   *initiator-credentials* (if present);

c)   *security-context* (if present);

d)   *responder-name* (if present);

e)   *responder-credentials* (if present); and

f)   *bind-errors* (if any).

2.2.2.3.3. For the logging of information related to a Message Transfer In or Message Transfer Out, an ATS Message Server shall log the following parameters related to the message:

a)   *message-identifier*;

b)   *priority*;

c)   *content-type*;

d)   *originator-name*;

e)   *recipient-name* elements on responsibility list;

f)   message-content-size; and

g)   last element of the *trace-information*.

Note.- The responsibility list identifies recipients whose perRecipientIndicator responsibility bit has the abstract-value "responsible".

2.2.2.3.4. For the logging of information related to a Probe Transfer In or Probe Transfer Out, an ATS Message Server shall log the following parameters related to the probe:

a)   *probe-identifier*;

b)   *content-type*;

c)   *originator-name*;

d)   *recipient-name* elements on responsibility list;

e)   *content-length*; and

f)   last element of the *trace-information*.

2.2.2.3.5. For the logging of information related to a Report Transfer In, Report Transfer Out or Report Delivery, an ATS Message Server shall log the following parameters related to the report:

a)   *report-identifier*;

b)   *subject-identifier*;

c)   *actual-recipient-name* elements;

d)   *report-type* elements;

e)   *report-destination-name*; and

f)   last element of the *trace-information* (for Report Transfer In or Out only).

2.2.2.3.6. For the logging of information related to a Message Submission or Probe Submission, an ATS Message Server shall log the following parameters related to the message or probe:

a)   *message-identifier* or *probe-identifier*;

b)   *submission-time;*

c)   *priority* (for a message only);

d)   *content-type*;

e)   *originator-name*; and

f)   *recipient-name* elements.

2.2.2.3.7. For the logging of information related to a Message Delivery, an ATS Message Server shall log the following parameters related to the message:

a)   *MTS-identifier*;

b)   *delivery-time;*

c)   *priority*;

d)   *content-type*;

e)   *originator-name*; and

f)   *this-recipient-name.*

2.2.3.   Parameters

2.2.3.1.   AMHS Addresses

In the AMHS, the O/R Address of a direct user belonging to an ATS Messaging Organization shall be a MF-Address as specified in 2.1.5.2.

2.2.3.2.   Text

In the Basic ATS Message Service, the body of an IP Message shall comprise a single body part carrying IA5 characters and structured as depicted in Table 2.4.

Note.- This clause places no constraint on its implementation, which may take place at the level of the user-interface.

Table 2.4. Structure of an IPM in the Basic ATS Message Service

Ref	Element	Basic ATS Message Service Support		Value	IA-5 Encoding
		Orig	Rec		
1	aTS-Message-Header	m	m		
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 2.2.3.2.1	see 2.2.3.2.1
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 2.2.3.2.2	see 2.2.3.2.2
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 2.2.3.2.3	see 2.2.3.2.3
1.4.3	oHI-separator	m	m	(CR)(LF)	(0/13)(0/10)
1.5	end-of-heading-blank-line	m	m	(LF)	(0/10)
1.6	start-of-text	m	m	(STX)	(0/2)
2	aTS-Message-Text	m	m	see 2.2.3.2.4	see 2.2.3.2.4

2.2.3.2.1.   *ATS Message Priority*

2.2.3.2.1.1. In the Basic ATS Message Service, each message shall be assigned to one of five priority groups which are designated the priority indicators SS, DD, FF, GG and KK, as defined in Annex 10, Vol.II, 4.4.1.1.1 to 4.4.1.1.9.

2.2.3.2.1.2. The value of the priority-indicator element shall be one of these five two-character alphabetical priority indicators.

2.2.3.2.2.   ATS Message Filing Time

2.2.3.2.2.1. In the Basic ATS Message Service, each message shall comprise a filing time built in compliance with the provisions of Annex 10, Vol. II, 4.4.16.2.2.1.

2.2.3.2.2.2. The value of the filing-time element shall be 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.

2.2.3.2.3.   ATS Message Optional Heading Info

2.2.3.2.3.1. In the Basic ATS Message Service, it shall be possible to associate an optional heading information with each message.

2.2.3.2.3.2. The value of the optional-heading-information element shall comprise a character string with a maximum length of 54 characters.

2.2.3.2.4.   ATS Message Text

In the Basic ATS Message Service, the aTS-Message-Text element shall be composed of IA5 characters with no further restriction.

2.2.3.3.   Notification requests

In the Basic ATS Message Service, 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".

Note.- This clause places no constraint on its implementation, which may take place at the level of the user-interface.

2.3.   AFTN/AMHS GATEWAY SPECIFICATION

2.3.1.   General

2.3.1.1.   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.

2.3.1.2.   An AFTN/AMHS Gateway shall consist of the four following logical components:

   a)   AFTN Component;

   b)   ATN Component;

   c)   Message Transfer and Control Unit; and

   d)   Control Position.

Note 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.

Note 2.– In an AFTN/AMHS Gateway, the Message Transfer and Control Unit is the Access Unit (AU).

2.3.1.3.   An AFTN/AMHS Gateway shall be able to perform actions upon receipt from the AMHS of information objects as specified in Section 2.1.2.2. These information objects shall be received by the ATN Component of the AFTN/AMHS Gateway.

2.3.1.4.   An AFTN/AMHS Gateway shall be able to perform actions upon receipt from the AFTN of messages as specified in Annex 10, Volume II. These messages shall be received by the AFTN Component of the AFTN/AMHS Gateway.

Note.- Flow control mechanisms may be implemented in any of the AFTN/AMHS Gateway components to alleviate congestion problems within the gateway.

2.3.2.   AFTN/AMHS Gateway components

2.3.2.1.   AFTN component

2.3.2.1.1. The AFTN component shall handle the interface to the AFTN and provide an interface to the Message Transfer and Control Unit. The AFTN component shall implement :

a)   all the applicable requirements of ICAO 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;

b)   additional requirements which are not placed on AFTN stations by Annex 10, Volume II but which are necessary due to the AFTN Component pertaining to an AFTN/AMHS Gateway.

2.3.2.1.2. If an AFTN/AMHS Gateway is connected to an AFTN centre which is capable of using only ITA-2 format, a conversion to/from the IA-5 format shall be assumed in the AFTN component.

Note.- This allows the Message Transfer and Control Unit to use IA-5 characters internally, as specified in 2.3.2.3.2.

2.3.2.1.3. The AFTN Component shall incorporate an AFTN procedure handler that shall provide for all AFTN functions prescribed for the interface to the AFTN.

2.3.2.1.4. When received by the AFTN Component of an AFTN/AMHS Gateway, AFTN service messages as generally defined in Annex 10, Volume II, 4.4.1.1.9 and subclauses, shall be handled in four manners exclusive one from each other by the AFTN Component of the Gateway, depending on the category of service message:

a)   AFTN service messages acknowledging the receipt of a SS message, as defined in Annex 10, Volume II, 4.4.10.1.6.1 and 4.4.16.6 shall be passed to the Message Transfer and Control Unit and handled as specified in section 2.3.4;

b)   AFTN service messages requesting correction of a message received with an unknown addressee indicator as defined in Annex 10, Volume II, 4.4.11.13.3 shall be passed to the Message Transfer and Control Unit and handled as specified in section 2.3.4;

c)   AFTN service messages requesting from the originator repetition of an incorrectly received message when it is detected that a message has been mutilated, as defined in Annex 10, Volume II, 4.4.11.1 and 4.4.17.2.2, shall be processed by the AFTN Component as specified in 2.3.2.1.9, and shall not be passed to the Message Transfer and Control Unit;

d)   all other AFTN service messages shall be handled by the AFTN Component in compliance with the provisions of Annex 10, Volume II, and shall not be passed to the Message Transfer and Control Unit.

2.3.2.1.5. When received by an AFTN/AMHS Gateway, AFTN channel-check transmissions as defined in Annex 10, Volume II, 4.4.9.3 and 4.4.16.5 shall be handled by the AFTN Component in compliance with the provisions of Annex 10, Volume II, and shall not be passed to the Message Transfer and Control Unit.

2.3.2.1.6. The AFTN Component shall pass all messages, other than those referred to in 2.3.2.1.4 and 2.3.2.1.5, received from the AFTN to the Message Transfer and Control Unit for processing as specified in 2.3.4, and provided that the conditions of 2.3.2.1.7 are met.

2.3.2.1.7. 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 paragraph 4.4.16.1 through 4.4.16.3.12. and 4.4.16.6. Except as required during normal operations, messages shall not otherwise be checked for proper format or for properly coded or missing fields.

Note.- A consequence of 2.3.2.1.2 and 2.3.2.1.4 together is that AFTN service messages as specified in Annex 10, Volume II, 4.4.10.1.6.1 and 4.4.11.13.3 are considered to be converted to the appropriate IA-5 format by the AFTN Component, prior to being handled by the Message Transfer and Control Unit as specified in 2.3.4.

2.3.2.1.8. The AFTN Component of an AFTN/AMHS Gateway 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.

Note.- This requirement belongs to the additional requirements referred to in clause 2.3.2.1.1., item b) above.

2.3.2.1.9. The AFTN Component of an AFTN/AMHS Gateway shall perform long-term retention (thirty days) of the heading, address and origin parts of all messages received from the AFTN, with the message receipt-time and the action taken thereon.

Note.- This requirement is analogous to the requirement for long-term retention of traffic records by a destination AFTN Station, as specified in Annex 10, Vol. II, 4.4.1.6.2.

2.3.2.1.10. The AFTN Component of an AFTN/AMHS Gateway shall perform long-term retention (thirty days) of all AFTN messages, in their entirety, that it generates.

Note.- This requirement is analogous to the requirement for long-term retention of traffic records by an origination AFTN Station, as specified in Annex 10, Vol. II, 4.4.1.6.1. Messages converted by the Message Transfer and Control Unit do not need to be logged in their entirety since the AFTN Component is not the initial originator of the message.

2.3.2.1.11. The AFTN Component of an AFTN/AMHS Gateway shall perform long-term retention (thirty days) of the heading, address and origin parts of all messages received from the Message Transfer and Control Unit and the action taken thereon.

Note.- This requirement belongs to the additional requirements referred to in clause 2.3.2.1.1., item b) above.

2.3.2.1.12.   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 4.4.17.2.2, the origin included in the text of the service message shall be analysed and compared with the gateway short-term retention as specified in 2.3.2.1.8 above, to determine whether the subject message previously passed through the AFTN/AMHS Gateway and whether the AFTN Component is in possession of an unmutilated copy of the message. Depending on the result of the analysis, the AFTN Component shall perform either of the following:

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

b)   reassume the responsibility of the mutilated message and impersonate the origin station to 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.

Note 1.- This requirement belongs to the additional requirements referred to in clause 2.3.2.1.1., item b) above.

Note 2.- 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.

2.3.2.1.13.   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.

Note 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.

Note 2.- The way in which the information is passed to the AFTN Component that the Message Transfer and Control Unit is unable to accept AFTN messages passed by the AFTN Component is an implementation matter and thus it is out of the scope of these SARPs.

Note 3.- Since the AFTN Component operates in a manner so as to be indistiguishable from an AFTN Station by the AFTN Centre to which it is connected, the AFTN Component is not required to have any diversion routing capability. Diversion routing, if any, is implemented in the AFTN Centre to which the AFTN/AMHS Gateway is connected.

2.3.2.1.14.   The AFTN Component of an AFTN/AMHS Gateway 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 2.3.2.1.3 above.

2.3.2.1.15.   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, Vol. II, as specified in 2.3.2.1.4 d) or 2.3.2.1.5, then the an error condition shall be logged and reported to a control position.

2.3.2.1.16. An AFTN address shall be allocated to the AFTN Component of an AFTN/AMHS Gateway.

Note 1.- This address is required in particular for the handling of the AFTN procedure between the AFTN Component and the AFTN Centre to which it is connected.

Note 2.- The way in which this AFTN address is allocated is outside the scope of these SARPs.

2.3.2.2.   ATN Component

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

2.3.2.2.2. The ATN Component shall handle the interface to the AMHS, and it shall provide an interface to the Message Transfer and Control Unit as specified in 2.3.2.4. The ATN Component shall implement a MTA complying with the profile specification included in section 2.2.2.2 so as to be externally indistinguishable from an ATS Message Server by the ATS Message Server(s) or other AFTN/AMHS Gateway(s) to which it is connected.

2.3.2.2.3. 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 attempt to reroute the message or probe as specified in ISO/IEC 10021-4 14.3.4.4. If no alternate route is available in the MTA-routing tables or all such routes cannot be succesfully used, then the message shall be rejected by the ATN Component, for all the message recipients towards which the Message Transfer and Control Unit should have conveyed the message. The *non-delivery-reason-code* and *non-delivery-diagnostic-code* elements of the non-delivery report shall take the abstract-values specified in the base standards (ISO/IEC 10021-4 14.3.4.4., item 1)).

Note 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.

Note 2.- The way in which the information is passed to the ATN Component that the Message Transfer and Control Unit is unable to accept messages or probes passed by the ATN Component is an implementation matter and thus it is out of the scope of these SARPs.

2.3.2.2.4. If the ATS Messaging Organization operating an AFTN/AMHS Gateway desires to implement MHS optional functional groups in addition to the specification of 2.3.2.2.2 above, this shall be performed in the ATN Component.

Note.- 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 2.3.2.2.3 above for example.

2.3.2.2.5. The ATN Component of an AFTN/AMHS Gateway 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 2.2.2.2, in application of 2.3.2.2.2 above.

2.3.2.2.6. The ATN Component of an AFTN/AMHS Gateway shall implement a traffic logging function identical to that of the MTA included in an AFTN/AMHS Gateway as specified in 2.2.2.3.

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

2.3.2.3.   Message Transfer and Control Unit

2.3.2.3.1.   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. It shall consist of:

    a)   a set of general functions as specified in section 2.3.3; and

    b)   AFTN/AMHS conversion functions as respectively specified in 2.3.4 for the AFTN to AMHS conversion and in 2.3.5 for the AMHS to AFTN conversion.

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

2.3.2.3.3.   The Message Transfer and Control Unit in an AFTN/AMHS Gateway shall pass all the AMHS information objects which it constructs in application of sections 2.3.4 and 2.3.5.6 to the ATN Component of the gateway, for further conveyance in the AMHS.

2.3.2.3.4.   For the generation of AMHS information objects, and for the processing of received AMHS information objects, the Message Transfer and Control Unit shall have the capability to interpret the semantics and to perform actions related to the MHS Elements of Service which are part of the basic requirements of the MT service as specified in ISO/IEC ISP 10611-1.

Note.-   This implies that the Message Transfer and Control Unit is not required to implement the functionalities associated with any of the optional functional groups defined in the ISP.

2.3.2.3.5.   The Message Transfer and Control Unit in an AFTN/AMHS Gateway shall pass all the AFTN messages which it constructs in application of sections 2.3.5 and 2.3.4.2.1.4.2 to the AFTN Component of the AFTN/AMHS Gateway, for further conveyance in the AFTN.

2.3.2.3.6.   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 Table 2.3, 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).

2.3.2.3.7.   The Message Transfer and Control Unit shall ensure that all the AFTN information objects which it constructs comply with section 4.4.16 of Annex 10, Vol. II.

2.3.2.3.8.   When converting AMHS information objects to and from AFTN information objects in the Message Transfer and Control Unit, the items of the following classification shall be used to describe the way in which each element or component is handled:

a) "generated" (g) is used to describe the generation of an AMHS or AFTN information object. It means that the element shall be generated by the Message Transfer and Control Unit, and that its value does not depend on the value of an element of the information object received by the Message Transfer and Control Unit which caused the current generation of an information object, but that the value of the element shall be based on parameters related to the AFTN/AMHS Gateway itself or shall take a pre-determined value. If an element comprises several components, then the element shall be classified as generated if at least one of its components is generated, and the others are either generated or excluded;

b) "optionally generated" (g1) has the same meaning as "generated", with the exception that the generation of the element shall be optional, the decision being a matter of policy local to the ATS Messaging Organization operating the AFTN/AMHS Gateway;

c) "conditionally generated" (g2) is used only to describe the generation of an AMHS report or RN element. It means, for a report generation, that the element shall be generated in the report or RN based on some condition related to the subject message being true. If the element is generated, it shall take a value derived from elements present in the received AMHS information object which caused the generation of the report or RN;

d) "translated" (t) is 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 shall be translated by the Message Transfer and Control Unit, 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 shall be 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" (c) has the same meaning as "translated", with the exception that the translation of the element shall be subject to some condition being true, e.g. the presence of an optional element in the received information object;

f) "discarded" (d) is used to describe the use of a received AMHS or AFTN information object. It means that the value of the element shall not be 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 shall be discarded by the Message Transfer and Control Unit during the process of conversion. 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) is 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 shall not be used nor present in the generated information object. Upon reception of an AMHS information object, it means that the presence of the element shall cause rejection of the information object, and generation of an AMHS non-delivery report as appropriate;

h) "out of scope" or "not-applicable" (-) is 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 serving as a basis for the mapping specification.

Note.- The classifications "excluded" on reception and "discarded" are used only for information objects coming from the AMHS, since in the Basic ATS Message Service, by definition, each element of a received AFTN message has an equivalent in the AMHS. The existence of these classifications is due to the higher level of functionality supported in the AMHS, in comparison with the AFTN.

2.3.2.4.   Interface between the ATN Component and the Message Transfer and Control Unit

2.3.2.4.1. 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.

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

2.3.2.4.3. 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.

2.3.2.5.   Interface between the AFTN Component and the Message Transfer and Control Unit

2.3.2.5.1. An AFTN message or service message passed by the AFTN Component to the Message Transfer and Control Unit in application of 2.3.2.1.4, 2.3.2.1.6 and 2.3.2.1.7 shall be transferred according to the table of priorities as defined in Annex 10, Vol. II, 4.4.1.2.1. It shall be 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 2.3.2.1.2, and including the unaltered AFTN heading if present in the received message.

2.3.2.5.2. An AFTN message or service message passed by the Message Transfer and Control Unit to the AFTN Component in application of 2.3.2.3.5 shall be transferred according to the table of priorities as defined in Annex 10, Vol. II, 4.4.1.2.1. It shall be passed as constructed by the Message Transfer and Control Unit, and thus without message heading as defined in Annex 10, Vol. II, 4.4.16.1.1.

2.3.2.5.3. The AFTN Component shall return to the Message Transfer and Control Unit, as the result of the transfer operation described in 2.3.2.5.2, the Transmission Identification, if any, constructed by the AFTN Component for the transmission of the message or service message over the AFTN.

2.3.2.6.   AFTN/AMHS Gateway Control Position

2.3.2.6.1.   An AFTN/AMHS Gateway control position shall be implemented in association with each AFTN/AMHS Gateway.

2.3.2.6.2.   The AFTN/AMHS Gateway Control Position shall be used as the place where errors which occurred in the AFTN/AMHS Gateway are reported for appropriate action.

Note.- The AFTN/AMHS Gateway control position is intended to provide an operator interface where exception cases which could not be handled in an automated manner by the AFTN/AMHS Gateway components, and in particular by the Message Transfer and Control Unit. Also, it is a matter of policy local to the ATS Messaging Organization operating the AFTN/AMHS Gateway, to decide whether certain categories of exception cases will be handled automatically or with the assistance of the control position.

2.3.2.6.3.   The format used by the AFTN Component, the ATN Component and the Message Transfer and Control Unit of an AFTN/AMHS Gateway to report errors to the control position is a matter of policy local to the ATS Messaging Organization operating the AFTN/AMHS Gateway. It is out of the scope of these SARPs.

Note 1.- Such errors are usually associated with a specification in these SARPs that an information object is to be automatically discarded.

Note 2.- As a matter of policy local to the ATS Messaging Organization operating the AFTN/AMHS Gateway, the subject information object may be sent in conjunction with the error reported to the control position.

2.3.2.6.4.   The appropriate action to be undertaken on reporting of an error to an AFTN/AMHS Gateway control position is a matter of policy which is either local to the ATS Messaging Organization operating the AFTN/AMHS Gateway, or subject to multilateral agreements. This is out of the scope of these SARPs.

Note.- For some categories of error situations these SARPs specify 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 ATS Messaging Organization operating an AFTN/AMHS Gateway to try to reduce the occurrence of message rejection with the assistance of the control position. Such provisions are out of the scope of these SARPs.

2.3.2.6.5.   The interface between the Control Position and the other components of an AFTN/AMHS Gateway is an implementation matter, which is out of the scope of these SARPs.

2.3.3.   General functions

The Message Transfer and Control Unit of an AFTN/AMHS Gateway shall implement the following general functions:

> a)   traffic logging as specified in 2.3.3.1,

> b)   address look-up tables as specified in 2.3.3.2.

2.3.3.1.   Traffic logging

2.3.3.1.1. The Message Transfer and Control Unit of an AFTN/AMHS Gateway shall log as specified in 2.3.3.1.2 to 2.3.3.1.6, for a period of at least thirty days, information related to the following events occurred at its interfaces with the ATN Component and with the AFTN Component, and in its internal procedures:

> 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 probe transfer in (from the ATN Component);

> e)   AMHS report transfer in (from the ATN Component);

> f)   AFTN message conveyance out (to the AFTN Component);

> g)   AFTN message conveyance in (from the AFTN Component);

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

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

Note 1.- The way in which the information specified is logged is an implementation matter which is out of the scope of these SARPs.

Note 2.- The way in which the information specified shall be retrieved and used is an implementation matter which is out of the scope of these SARPs.

Note 3.- In case of duplication of information with either the traffic log of the ATN Component or of the AFTN Component, there is no requirement to implement different logs, provided that adequate mechanisms are implemented to allow the use of these traffic logs by the Message Transfer and Control Unit or in relation with the Message Transfer and Control Unit.

Note 4.- The requirement for logging during at least thirty days is analogous to the long-term retention recommendation placed on AFTN Communication Centres as specified in Annex 10, Vol. II, 4.4.1.6.3.

Note 5.- The nature of the information which is logged (and the way in which it is logged) in case of error situations in the Message Transfer and Control Unit as specified in 2.3.4 and 2.3.5 is an implementation matter which is out of the scope of these SARPs.

2.3.3.1.2. For the logging of information related to an AMHS Message Transfer In and AFTN message conveyance out, the Message Transfer and Control Unit shall log the following parameters related to the messages:

> a) input *MTS-identifier*;
>
> b) *IPM-identifier*, if any;
>
> c) *primary-recipients*, *copy-recipients* and *blind-copy-recipients* elements of the IPM heading, if any;
>
> d) *common-fields* and either *receipt-fields* or *non-receipt-fields* or IPN, if any;
>
> e) action taken thereon (reject with *non-delivery-reason-code* and *non-delivery-diagnostic-code*, convert as AFTN message, convert as AFTN SS-acknowledgement service message, splitting due to number of recipients or message length, delivery report generation);
>
> f) *arrival-time* and conveyance-time, if any; and
>
> g) *origin* of converted AFTN message or service message, if any;
>
> h) *transmission identification* of AFTN message(s) or service message(s), if returned by the AFTN Component.

2.3.3.1.3. For the logging of information related to AFTN message conveyance in and AMHS Message Transfer Out, the Message Transfer and Control Unit shall log the following parameters related to the messages:

> a) *origin* of AFTN message (or SS-acknowledgement service 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) *MTS-identifier*, if any; and
>
> e) *IPM-identifier*, if any.

2.3.3.1.4. For the logging of information related to an AMHS Probe In, the Message Transfer and Control Unit shall log the following parameters related to the probe:

      a)   *MTS-identifier*;

      b)   action taken thereon (reject with *non-delivery-reason-code* and *non-delivery-diagnostic-code*, delivery-report generation); and

      c)   *arrival-time*.

2.3.3.1.5. For the logging of information related to an AMHS Message Report In and/or AFTN Service Message indicating an unknown addressee indicator conveyance out, the Message Transfer and Control Unit shall log the following parameters related to the report and/or service message:

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

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

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

      d)   *arrival-time* (if report in) and conveyance-time (if service message out);

      e)   *origin* of converted AFTN service message (if service message out); and

      f)   *origin* of subject AFTN message (if service message out and no report in).

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

Note.- The specification above is made using a same type of logging for the events specified in case of failure in 2.3.4.2.1.4.2 and in 2.3.5.4. However this places no particular restriction on the implementation.

2.3.3.1.6. For the 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 Message Transfer and Control Unit shall log the following parameters related to the service message and/or report:

      a)   *origin* of converted AFTN service message (if service message in);

      b)   *origin* of subject AFTN message (if service message in).

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

      d)   action taken thereon if report in (discard, convert as AMHS report);

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

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

g)   conveyance-time (if service message in) and/or *arrival-time* (if report out).

Note.- The specification above is made using a same type of logging for the events specified in 2.3.4.4 and in 2.3.5.6. However this places no particular restriction on the implementation.

2.3.3.2.   Address look-up tables

The Message Transfer and Control Unit of an AFTN/AMHS Gateway shall maintain look-up tables used for address conversion. These tables shall cover two aspects:

a)   a MD look-up table as specified in 2.3.3.2.1, for the algorithmic conversion of an AF-Address to an XF-Address; and

b)   a fully configured user address look-up table of individual users as specified in 2.3.3.2.2, for the conversion of an AF-Address to and from an MF-address of any AMHS Addressing Scheme.

Note 1.- The description of two different tables places no requirement on the implementation in terms of number of different tables.

Note 2.- The way in which these tables are populated and maintained up-to-date is an operational matter which is out of the scope of these SARPs.

2.3.3.2.1.   MD look-up Tables

2.3.3.2.1.1.   The MD look-up table maintained by in the Message Transfer and Control Unit of an AFTN/AMHS Gateway shall include a list of entries, each of them comprising:

a)   a string of characters identifying either a country (two-letter designator as specified in ICAO Document 7910), or a location (four-letter designator as specified in ICAO Document 7910), or an organization within a country (combination of a two-letter designator as specified in ICAO Document 7910 with a three-letter designator as specified in ICAO Document 8585), or 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), which shall identify an organizational entity, which either is an ATS Messaging Organization, or collectively uses the services of a given ATS Messaging Organization;

b)   the country-name, ADMD-name and PRMD-name (if any) of either the ATS Messaging Organization implemented by the organizational entity mentioned in a), if existing, or of the ATS Messaging Organization whose AFTN/AMHS Gateway may be used to communicate with indirect users within the aforementioned organisational entity.

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

Note 1.- The reverse search is not required since the entire AF-Address is conveyed in the first element of the organizational-unit-names *attribute of the XF-address.*

Note 2.- The specification in 2.3.3.2.1.1 and 2.3.3.2.1.2 places no constraint on the internal format of the table. Data structures other than tables may also be used.

2.3.3.2.2.   *User address look-up Tables*

2.3.3.2.2.1.   The user address look-up table maintained by the Message Transfer and Control Unit of an AFTN/AMHS Gateway shall include a list of entries, each of them comprising:

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

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

2.3.3.2.2.2.   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.

2.3.3.2.2.3.   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.

Note.- The present specification places no requirement for inclusion of Domain-Defined-Attributes in the tables. Such an inclusion is a matter local to an ATS Messaging organization.

2.3.4.   AFTN to AMHS Conversion

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 2.3.2.1.

The actions specified in this section shall be performed by the Message Transfer and Control Unit of an AFTN/AMHS Gateway.

2.3.4.1.   Control function

2.3.4.1.1. Upon reception by the Message Transfer and Control Unit of a message passed from the AFTN Component, as the result of the provisions of 2.3.2.1.4 items a) and b), and of 2.3.2.1.6, the first line of the AFTN message text shall be analysed to determine the processing to be applied to the message, which shall comply with the provisions of either 2.3.4.1.2, or 2.3.4.1.3 or 2.3.4.1.4.

Note.- The first line of the text of an AFTN IA-5 message refers to the string of characters included between the first character in a message text and the first CARRIAGE RETURN found therein.

2.3.4.1.2. If the message received is an AFTN service message acknowledging the receipt of a SS message as specified in Annex 10, Vol. II, 4.4.16.6, the message shall be processed as specified in section 2.3.4.3.

Note.- Such a message is characterized by its text which includes exclusively "R ddhhmm AFADDRES", where ddmmhh is a filing time as defined in Annex 10, Vol. II, 4.4.16.2.2.1 and AFADDRES is an instance of an AF-address parameter as defined in 2.1.5.1.

2.3.4.1.3. If the message received is an AFTN service message requesting correction by the originator of a message received with an unknown addressee indicator as defined in Annex 10, Vol. II, 4.4.11.13.3, the message shall be processed as specified in section 2.3.4.4.

Note.- Such a message is characterized by its text which includes "SVC ADS ddhhmm AFADDRES", where ddmmhh is a filing time as defined in Annex 10, Vol. II, 4.4.16.2.2.1 and AFADDRES is an instance of an AF-address parameter as defined in 2.1.5.1.

2.3.4.1.4. If the message passed to the Message Transfer and Control Unit is other than those referred to in 2.3.4.1.2 and 2.3.4.1.3 above, the message shall be processed as specified in section 2.3.4.2.

2.3.4.1.5. Upon completion of the processing specified in sections 2.3.4.1.2 to 2.3.4.1.4, the resulting AMHS information objects, if any, shall be passed to the ATN Component for conveyance in the AMHS and the resulting AFTN service messages, if any, shall be passed to the AFTN Component for conveyance over the AFTN.

2.3.4.1.6. If, for any reason, the processing specified in clauses 2.3.4.1.1 to 2.3.4.1.5 cannot be properly achieved, then an error situation shall be logged and reported to a control position. The AFTN message shall then be discarded and the procedure shall terminate.

2.3.4.2.   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 2.3.4.2.1;

b)   the specification of how the IPM is generated, as included in 2.3.4.2.2; and

c)   the specification of how the Message Transfer Envelope elements are generated, as included in section 2.3.4.2.3.

2.3.4.2.1.   Use of AFTN Message components

2.3.4.2.1.1.   Each component of an AFTN Message shall be processed according to the classification defined in 2.3.2.3.8.

2.3.4.2.1.2.   These components which are classified as "t" or "c" in the column "support" of Table 2.6 shall be translated into the AMHS parameter specified in the column "AMHS parameter" of Table 2.6 and according to the specification in the section referred to in the column "mapping action".

Note.- The Message Transfer and Control Unit actions related to logging are not included in Table 2.6, they are specified in 2.3.3.1.

Table 2.6- Use of AFTN Message Components

AFTN Message Part	Component	Support	AMHS parameter	Mapping action
Heading	Start-of-Heading Character	-	-	–
	Transmission Identification	d	-	-
Address	Alignment Function	-	-	-
	Priority Indicator	t	aTS-Message-Priority (see Table 2.8/Part 5/1.2) priority (see Table 2.9/Part 1/1.1.6)	see 2.3.4.2.1.3
	Addressee Indicator(s)	t	primary-recipients (see Table 2.8/Part 2/4) recipient-name (see Table 2.9/Part 1/1.2.1)	see 2.3.4.2.1.4.2
	Alignment Function	-	-	–
Origin	Filing Time	t	aTS-Message-Filing-Time (see Table 2.8/Part 5/1.3)	see 2.3.4.2.1.5
	Originator Indicator	t	originator (see Table 2.8/Part 2/2) this-IPM (see Table 2.8/Part 2/1) originator-name (see Table 2.9/Part 1/1.1.2)	see 2.3.4.2.1.4.1
	Priority Alarm	d	-	-
	Optional Heading Information	c	aTS-Message-Optional-Heading-Info (see Table 2.8/Part 5/1.4)	see 2.3.4.2.1.6
	Alignment Function	-	-	-
	Start-of-Text Character	-		-
Text		t	aTS-Message-Text (see Table 2.8/Part 5/2)	see 2.3.4.2.1.7
Ending	Alignment Function	-	-	-
	Page-feed sequence	-	-	-
	End-of-Text Character	-	-	-

Legend: c = conditionally translated
               d = discarded
               t = translated
               - = not applicable

2.3.4.2.1.3. The value of the *Priority Indicator* of an AFTN message shall 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 2.7. The value of the *Priority Indicator* of an AFTN message shall 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 2.7.

Note 1.- The conveyance of the Priority-Indicator is due to the definition of the ATS-message-priority in section 2.2.3.2.1. Its goal is to convey the semantic information included in the priority-indicator, i.e. the information related to the category of the message being conveyed, rather than the transfer priority which is the subject of the mapping above.

Note 2.- The transport priority used for the conveyance of AMHS messages is specified in section 2.2.2.2.4.

Table 2.7. Mapping of AFTN Priority Indicator

AFTN Priority Indicator	AMHS Message Transfer Envelope priority	AMHS aTS-Message-Priority priority-indicator
SS	urgent	SS
DD	normal	DD
FF	normal	FF
GG	non-urgent	GG
KK	non-urgent	KK

2.3.4.2.1.4. The value of an AFTN address included in an AFTN message shall be converted into an O/R address as respectively specified in 2.3.4.2.1.4.1 and 2.3.4.2.1.4.2 depending whether it is an originator indicator or an addressee indicator.

2.3.4.2.1.4.1. The *originator indicator* of an AFTN Message shall be translated into the O/R address included in the *originator-name* of the converted AMHS message as follows:

  a) a single O/R address matching exactly the AF-address of the originator shall be looked for in the User address look-up table maintained in the Message Transfer and Control Unit. Upon determination of an adequate entry in the look-up table, the O/R address of the originator shall take the value of the MF-Address corresponding to that entry and the translation process shall terminate successfully. If no adequate entry can be found in the User address look-up table, then the procedure described in item b) shall apply;

b)   a single Management Domain identified by the set of *country-name*, *administration-domain-name* and (if any) *private-domain-name* attributes designating an ATS Messaging Organization shall be looked for in the MD look-up table maintained in the Message Transfer and Control Unit as specified in 2.3.3.2.1 as follows: the entries, if any, matching exactly the following character substrings of the AFTN address shall be identified in the MD look-up table:

1) characters 1 to 7,

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

3) characters 1, 2, 3 and 4,

4) characters 1 and 2.

If several such entries are found, then the resulting MD shall be selected among them on the basis of a decreasing order of precedence from 1) to 4). If no an adequate entry can be found in the MD look-up table, or if the procedure defined above does not result in a single resulting MD, then an error situation shall be logged and reported to a control position, and the procedure shall terminate.

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

2.3.4.2.1.4.2.   An *addressee indicator* of an AFTN Message shall be translated into the O/R address included in a *recipient-name* of the converted AMHS message in the same way as an *originator indicator*, with the exception that if in the procedure described in item b), no adequate entry can be found for one or several addressee indicators in the MD look-up table, then an AFTN service message requesting correction by the originator of a message received with an unknown addressee indicator shall be generated by the Message Transfer and Control Unit in compliance with the provisions of Annex 10, Vol. II, 4.4.11.13.3. The *unknown addressee indicator(s)* included in item 8) of the text message shall be these *addressee indicators* for which the translation process failed.

2.3.4.2.1.5.   The value of the *Filing Time* of an AFTN message shall be 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.

Note.- This conveyance is due to the definition of the aTS-Message-Filing-Time in section 2.2.3.2.2.

2.3.4.2.1.6.   The value of the *Optional Heading Information* of an AFTN message, if present, shall be conveyed as the value of the optional-heading-information in the aTS-Message-Optional-Heading-Info element of the IPM text of the converted AMHS message. If the *Optional Heading Information* element is not present in the AFTN message, the aTS-Message-Optional-Heading-Info element shall be omitted in the converted AMHS message.

Note.- This conveyance is due to the definition of the aTS-Message-Optional-Heading-Info in section 2.2.3.2.3.

2.3.4.2.1.7.   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.

2.3.4.2.2.   Generation of IPM

2.3.4.2.2.1. Each component of an AFTN Message shall be processed according to the classification defined in 2.3.2.3.8.

2.3.4.2.2.1. 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 according to the classification defined in 2.3.2.3.8.

2.3.4.2.2.2. These elements which are classified as "g" or "t" in the column "support" of Table 2.8 shall be either generated or translated according to the specification in the section referred to in the column "mapping action" of Table 2.8.

Note 1.- Table 2.8 is structured as a PRL derived from the profile specification included in 2.2 and consequently from the ISPICS Proforma included in ISO/IEC ISP 12062-2 (AMH21) as well as from Table 2.4 in section 2.2.3.2. The columns "Base" and "Profile" under "Origination" are extracted from this specification and specify the static capability of an IPM AU supporting the Basic ATS Message 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 2.8. IPM Generation

PART 1 : AMH21/A.1.1	SUPPORTED INFORMATION OBJECTS				
Ref	**Element**	**Origination**		**Support**	**Mapping Action / Notes**
		Base	**Profile**		
1	Interpersonal Message (IPM)	m	m	t	see below
1.1	heading	m	m	t	see Part 2
1.2	body	m	m	t	see Part 3
2	Interpersonal Notification (IPN)	m	m	-	out of the scope of this section

PART 2 : AMH21/A.1.2	IPM HEADING FIELDS				
Ref	**Element**	**Origination**		**Support**	**Mapping Action / Notes**
		Base	**Profile**		
1	this-IPM	m	m	t	see Part 4/3
2	originator	m	m	t	see 2.3.4.2.2.3 and Part 4/2
3	authorizing-users	o	o	x	-
4	primary-recipients	m	m	t	see 2.3.4.2.2.4 and Part 4/1
5	copy-recipients	m	m	x	-
6	blind-copy-recipients	o	o	x	-
7	replied-to-IPM	m	m	x	-
8	obsoleted-IPMs	o	o	x	-
9	related-IPMs	o	o	x	-
10	subject	m	m	x	-
11	expiry-time	o	o	x	-
12	reply-time	o	o	x	-

13	reply-recipients	o	o	x	-
14	importance	o	o	x	-
15	sensitivity	o	o	x	-
16	auto-forwarded	o	o	x	-
17	extensions	o	o	x	-
17.1	incomplete-copy	o	o	x	-
17.2	languages	o	o	x	-
17.3	auto-submitted	o	i	x	-

PART 3 : AMH21/A.1.3   IPM BODY

Ref	Element	Origination		Support	Mapping Action / Notes
		Base	**Profile**		
1	ia5-text	o	m	t	see below
1.1	parameters	m	m	g	see below
1.1.1	repertoire	o	o	g	see 2.3.4.2.2.5
1.2	data	m	m	t	see Part 5
2	voice	i	i	x	-
3	g3-facsimile	o	o	x	-
4	g4-class-1	o	o	x	-
5	teletex	o	o	x	-
6	videotex	o	o	x	-
7	encrypted	i	i	x	-
8	message	o	o	x	-
9	mixed-mode	o	o	x	-
10	bilaterally-defined	o	o	x	-

Ref	Element	Base	Profile	Support	Mapping Action / Notes
11	nationally-defined	o	o	x	-
12	externally-defined	o	m	x	-
PART 4 : AMH21/A.1.5	**COMMON DATA TYPES**				

Ref	Element	Origination		Support	Mapping Action / Notes
		Base	Profile		
1	RecipientSpecifier				
1.1	recipient	m	m	t	see 2.3.4.2.2.6 and Part 4/2
1.2	notification-requests	o	m	t	see below
1.2.1	rn	o	m	t	see 2.3.4.2.2.7
1.2.2	nrn	o	m	t	see 2.3.4.2.2.7
1.2.3	ipm-return	o	o	x	-
1.3	reply-requested	o	o	x	-
1.4	recipient-extensions	o	i	x	-
2	ORDescriptor				
2.1	formal-name	m	m	t	see 2.3.4.2.2.8
2.2	free-form-name	o	o	x	-
2.3	telephone-number	o	o	x	-
3	IPMIdentifier				
3.1	user	m	m	t	see 2.3.4.2.2.9
3.2	user-relative-identifier	m	m	g	-

PART 5 :	IPM SUPPORT OF THE BASIC ATS MESSAGE SERVICE				
Ref	Element	Origination		Support	Mapping Action / Notes
		Base	Profile		
1	aTS-Message-Header	-	m	t	see below
1.1	start-of-heading	-	m	g	see 2.2.3.2
1.2	aTS-Message-Priority	-	m	t	see below
1.2.1	priority-prompt	-	m	g	see 2.2.3.2
1.2.2	priority-indicator	-	m	t	see 2.3.4.2.1.3
1.2.3	priority-separator	-	m	g	see 2.2.3.2
1.3	aTS-Message-Filing-Time	-	m	t	see below
1.3.1	filing-time-prompt	-	m	g	see 2.2.3.2
1.3.2	filing-time	-	m	t	see 2.3.4.2.1.5
1.3.3	filing-time-separator	-	m	g	see 2.2.3.2
1.4	aTS-Message-Optional-Heading-Info	-	o	c	see below
1.4.1	oHI-prompt	-	m	g	see 2.2.3.2
1.4.2	optional-heading-information	-	m	t	see 2.3.4.2.1.6
1.4.3	oHI-separator	-	m	g	see 2.2.3.2
1.5	end-of-heading-blank-line	-	m	g	see 2.2.3.2
1.6	start-of-text	-	m	g	see 2.2.3.2
2	aTS-Message-Text	-	m	t	see 2.3.4.2.1.7

g =   generated
t =   translated
x =   excluded (not used)

2.3.4.2.2.3.   Upon generation of an IPM resulting from the conversion of an AFTN message, the *originator* heading field shall identify the indirect user who originated the AFTN message. It shall be structured as specified in Table 2.8/ Part 4/2.

2.3.4.2.2.4.   Upon generation of an IPM resulting from the conversion of an AFTN message, the *primary-recipients* heading field shall include the identification of the recipient(s) of the AFTN message. It shall be structured as specified in Table 2.8/ Part 4/1.

2.3.4.2.2.5.   Upon generation of an IPM resulting from the conversion of an AFTN message, the element *repertoire* shall take the abstract value "ia5".

2.3.4.2.2.6.   Upon generation of an IPM resulting from the conversion of an AFTN message, the element(s) *recipient* in the *primary-recipients* heading field shall identify the recipient(s) of the AFTN message. It shall be structured as specified in Table 2.8/ Part 4/2.

2.3.4.2.2.7.   Upon generation of an IPM resulting from the conversion of an AFTN message, 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 2.8 / Part 5/1.2.2, has the value "SS".

Note.- The value "nrn" is required only for compliance with the base standards, as specified in ISO/IEC 10021-7, 7.1.2 b).

2.3.4.2.2.8.   Upon generation of an IPM resulting from the conversion of an AFTN message, this element shall take the form of an O/R Address, and it shall be converted as specified in 2.3.4.2.1.4.

2.3.4.2.2.9.   Upon generation of an IPM resulting from the conversion of an AFTN message, the element *user* in the *this-IPM* heading field shall be the O/R address of the indirect user who originated the AFTN message, and it shall be converted as specified in 2.3.4.2.1.4.1.

2.3.4.2.3.   Generation of Message Transfer Envelope

2.3.4.2.3.1.   Each of the elements composing the Message Transfer Envelope conveyed with an IPM resulting from the conversion of an AFTN message shall be processed according to the classification defined in 2.3.2.3.8.

2.3.4.2.3.2.   These elements which are classified as "g", "g1" and "t" in the column "support" of Table 2.9 shall be handled according to the specification in the section referred to in the column "mapping action" of Table 2.9.

Note 1.-   Table 2.9 is structured as a PRL derived from the ISPICS Proforma included in ISO/IEC ISP 10611-3. The columns "Base" and "Profile" are extracted from this specification and specify 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 2.9. MessageTransfer for conveyance of an IPM

PART 1 : AMH11/A.1.4.2	MESSAGETRANSFER				
Ref	**Element**	**Base**	**Profile**	**Support**	**Mapping Action / Notes**
1	MessageTransferEnvelope	m	m	t	see below
1.1	(per message fields)				
1.1.1	message-identifier	m	m	g	see Part 2/1
1.1.2	originator-name	m	m	t	see 2.3.4.2.3.3
1.1.3	original-encoded-information-types	m	m-	g	see 2.3.4.2.3.4 and Part 2/3
1.1.4	content-type	m	m-	g	see 2.3.4.2.3.5 and Part 2/8
1.1.5	content-identifier	m	m	g1	see 2.3.4.2.3.6
1.1.6	priority	m	m	t	see 2.3.4.2.1.3
1.1.7	per-message-indicators	m	m	g	see Part 2/4
1.1.8	deferred-delivery-time	o	m-	x	-
1.1.9	per-domain-bilateral-information	o	m-	g1	see 2.3.4.2.3.7 and Part 2/5
1.1.10	trace-information	m	m	g	see Part 2/6
1.1.11	extensions	m	m	g/x	see 2.3.4.2.3.8 and Part 3/1
1.1.11.1	recipient-reassignment-prohibited	o	m	g	see 2.3.4.2.3.9
1.1.11.2	dl-expansion-prohibited	o	m	g	see 2.3.4.2.3.10
1.1.11.3	conversion-with-loss-prohibited	o	m	g	see 2.3.4.2.3.11
1.1.11.4	latest-delivery-time	o	m-	x	-
1.1.11.5	originator-return-address	o	m-	x	-
1.1.11.6	originator-certificate	o	m-	x	-
1.1.11.7	content-confidentiality-algorithm-identifier	o	m-	x	-

1.1.11.8	message-origin-authentication-check	o	m-	x	-
1.1.11.9	message-security-label	o	m-	x	-
1.1.11.10	content-correlator	m	m	g1	see 2.3.4.2.3.6
1.1.11.11	dl-expansion-history	m	m-	x	see Note 2
1.1.11.12	internal-trace-information	m	m	g	see Part 3/5
1.2	per-recipient-fields	m	m	t	see below
1.2.1	recipient-name	m	m	t	see 2.3.4.2.3.12
1.2.2	originally-specified-recipient-number	m	m	g	see 2.3.4.2.3.13
1.2.3	per-recipient-indicators	m	m	g	see 2.3.4.2.3.14
1.2.4	explicit-conversion	o	m-	x	-
1.2.5	extensions	m	m	x	-
2	content	m	m	t	see 2.3.4.2.2

PART 2 : AMH11/A.1.5 **COMMON DATA TYPES**					
Ref	**Element**	**Base**	**Profile**	**Support**	**Mapping Action / Notes**
1	MTSIdentifier				
1.1	global-domain-identifier	m	m	g	see 2.3.4.2.3.15 and Part 2/2
1.2	local-identifier	m	m	g	see 2.3.4.2.3.16
2	GlobalDomainIdentifier				
2.1	country-name	m	m	g	see 2.3.4.2.3.17
2.2	administration-domain-name	m	m	g	see 2.3.4.2.3.18
2.3	private-domain-identifier	m	m	g	see 2.3.4.2.3.19
3	EncodedInformationTypes				
3.1	built-in-encoded-information-types	m	m	g	see 2.3.4.2.3.4

3.2	(non-basic parameters)	o	m-	x	-
3.3	extended-encoded-information-types	m	m	x	-
4	PerMessageIndicators				
4.1	disclosure-of-other-recipients	m	m	g	see 2.3.4.2.3.20
4.2	implicit-conversion-prohibited	m	m	g	see 2.3.4.2.3.21
4.3	alternate-recipient-allowed	m	m	g	see 2.3.4.2.3.22
4.4	content-return-request	o	m-	x	-
4.5	reserved	o	m-	x	-
4.6	bit-5	o	m-	x	-
4.7	bit-6	o	m-	x	-
4.8	service-message	o	m-	x	-
5	PerDomainBilateralInformation				
5.1	country-name	m	m-	g1	see 2.3.4.2.3.23
5.2	administration-domain-name	m	m-	g1	see 2.3.4.2.3.23
5.3	private-domain-identifier	o	m-	g1	see 2.3.4.2.3.23
5.4	bilateral-information	m	m-	g1	see 2.3.4.2.3.24
6	TraceInformation				
6.1	TraceInformationElement	m	m	g	see below
6.1.1	global-domain-identifier	m	m	g	see 2.3.4.2.3.25 and Part 2/2
6.1.2	domain-supplied-information	m	m	g	see below
6.1.2.1	arrival-time	m	m	g	see 2.3.4.2.3.26
6.1.2.2	routing-action	m	m	g	see below

6.1.2.2.1	relayed	m	m	g	see 2.3.4.2.3.27
6.1.2.2.2	rerouted	o	c1	x	see Note 3
6.1.2.3	attempted-domain	o	c1	x	see Note 3
6.1.2.4	(additional actions)				
6.1.2.4.1	deferred-time	m	c2	x	-
6.1.2.4.2	converted-encoded-information-types	o	m-	x	-
6.1.2.4.3	other-actions	o	m-	x	-
6.1.2.4.3.1	redirected	o	m-	x	see Note 4
6.1.2.4.3.2	dl-operation	o	m-	x	see Note 2
8	ContentType				
8.1	built-in	m	m-	g	see 2.3.4.2.3.5
8.2	extended	o	m-	x	-
PART 3 : AMH11/A.1.6 **EXTENSION DATA TYPES**					
Ref	**Element**	**Base**	**Profile**	**Support**	**Mapping Action / Notes**
1	ExtensionField				
1.1	type	m	m	g	see below
1.1.1	standard-extension	m	m	g	see 2.3.4.2.3.8
1.1.2	private-extension	o	m-	x	-
1.2	criticality	m	m	g	see 2.3.4.2.3.8
1.3	value	m	m	g	see 2.3.4.2.3.8
5	InternalTraceInformation				
5.1	global-domain-identifier	m	m	g	see 2.3.4.2.3.25

5.2	mta-name	m	m	g	see 2.3.4.2.3.28
5.3	mta-supplied-information	m	m	g	see below
5.3.1	arrival-time	m	m	g	see 2.3.4.2.3.26
5.3.2	routing-action	m	m	g	see below
5.3.2.1	relayed	m	m	g	see 2.3.4.2.3.27
5.3.2.2	rerouted	o	c1	x	see Note 3
5.3.3	attempted	o	c1	x	see Note 3
5.3.4	(additional actions)				
5.3.4.1	deferred-time	m	c2	x	-
5.3.4.2	converted-encoded-information-types	o	m-	x	-
5.3.4.3	other-actions	o	m-	x	-
5.3.4.3.1	redirected	o	m-	x	see Note 4
5.3.4.3.2	dl-operation	o	m-	x	see Note 2

m- =   see ISO/IEC ISP 10611-3

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

Note 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.

Note 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.

Note 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.

2.3.4.2.3.3. Upon generation of a Message Transfer Envelope resulting from the conversion of an AFTN message, the value of the element *originator-name* shall be the address of the indirect user who originated the AFTN message. It shall take the form of an O/R Address and it shall be converted as specified in 2.3.4.2.1.4.1.

2.3.4.2.3.4. Upon generation of a Message Transfer Envelope resulting from the conversion of an AFTN message, the element *original-encoded-information-types* shall take the abstract-value "ia5-text", which is a value of type BuiltInEncodedInformationTypes, and shall be formed as specified in Table 2.9/ Part 2/ 3.

2.3.4.2.3.5. Upon generation of a Message Transfer Envelope resulting from the conversion of an AFTN message, the element *content-type* shall take the abstract-value "interpersonal-messaging-1984", which is a value of type BuiltInContentType, and shall be formed as specified in Table 2.9/ Part 2/ 8.

2.3.4.2.3.6. Upon generation of a Message Transfer Envelope resulting from the conversion of an AFTN message, the generation of this element shall be optional, as a matter of policy local to the ATS Messaging Organization operating the AFTN/AMHS Gateway.

2.3.4.2.3.7. Upon generation of a Message Transfer Envelope resulting from the conversion of an AFTN message, the generation of the element *per-domain-bilateral-information* shall be optional, as a matter of policy local to the ATS Messaging Organization operating the AFTN/AMHS Gateway. If present, it shall be generated as specified in Table 2.9/ Part 2/ 5.

2.3.4.2.3.8. Upon generation of a Message Transfer Envelope resulting from the conversion of an AFTN message, the only extensions used shall be of type "standard-extension" and they shall be the *recipient-reassignment-prohibited*, *dl-expansion-prohibited* and *conversion-with-loss-prohibited* elements. Their criticality shall be as specified in ISO/IEC 10021-4, Figure 2, and the values taken shall be as specified in 2.4.3.2.3.9 to 2.3.4.2.3.11.

2.3.4.2.3.9. Upon generation of a Message Transfer Envelope resulting from the conversion of an AFTN message, the element *recipient-reassignment-prohibited* shall take its default abstract-value, which is "recipient-reassignment-allowed".

2.3.4.2.3.10. Upon generation of a Message Transfer Envelope resulting from the conversion of an AFTN message, the element *dl-expansion-prohibited* shall take its default abstract-value, which is "DL-expansion-allowed".

2.3.4.2.3.11. Upon generation of a Message Transfer Envelope resulting from the conversion of an AFTN message, the element *conversion-with-loss-prohibited* shall take its default abstract-value, which is "conversion-with-loss-allowed".

2.3.4.2.3.12. Upon generation of a Message Transfer Envelope resulting from the conversion of an AFTN message, the value of the element *recipient-name* in each of the *per-recipient-fields* elements shall be respectively the address of each addressee indicated in the AFTN message. It shall take the form of an O/R Address and it shall be converted as specified in 2.3.4.2.1.4.2.

2.3.4.2.3.13. Upon generation of a Message Transfer Envelope resulting from the conversion of an AFTN message, 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.

2.3.4.2.3.14. Upon generation of a Message Transfer Envelope resulting from the conversion of an AFTN message, the components of the element *per-recipient-indicators* in each of the *per-recipient-fields* elements shall be generated as follows:

   a)   the *responsibility* element shall take the abstract-value "responsible";

   b)   the *originating-MTA-report-request* element shall take the abstract-value "non-delivery-report"; and

   c)   the *originator-report-request* shall take the abstract-value "non-delivery-report".

2.3.4.2.3.15. Upon generation of a Message Transfer Envelope resulting from the conversion of an AFTN message, the element *global-domain-identifier* in the *MTS-identifier* shall identify the Management Domain built by the ATS Messaging Organization operating the AFTN/AMHS Gateway, and it shall be composed as specified in Table 2.9 / Part 2/2.

2.3.4.2.3.16. Upon generation of a Message Transfer Envelope resulting from the conversion of an AFTN message, 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 Management Domain built by the ATS Messaging Organization operating the AFTN/AMHS Gateway.

2.3.4.2.3.17. Upon generation of a Message Transfer Envelope resulting from the conversion of an AFTN message, or of a Report Transfer Envelope, the element *country-name* shall be encoded as a Printable String and it shall identify the MD corresponding to an ATS Messaging Organization by taking either of the following values:

   a)   the two-character alphabetical country-indicator as specified in ISO 3166 for the country, or for one of the countries, where the ATS Messaging Organization has been registered as a Management Domain, if the ATS Messaging Organization has been subject to national or multi-national registration; or

   b)   a two-character alphabetical indicator dedicated to an international organization, if the ATS Messaging Organization has been subject to international registration as defined in Recommendation ITU-T X.666.

Note.- This element has the same value as the country-name used in the MF-Addresses of users belonging to the ATS Messaging Organization as specified in 2.1.5.3.2.

2.3.4.2.3.18. Upon generation of a Message Transfer Envelope resulting from the conversion of an AFTN message, or of a Report Transfer Envelope, the element *administration-domain-name* shall be encoded as a Printable String if present, and it shall identify an ATS Messaging Organization, depending on its status, by either of the following:

a)   taking the name of the ADMD under which the ATS Messaging Organization has been registered, either nationally or internationally, if the ATS Messaging Organization operates as an ADMD; or

b)   taking the name of the ADMD to which the ATS Messaging Organization is connected, if the ATS Messaging Organization operates as a PRMD; or

c)   taking the value single-space if the ATS Messaging Organization operates as a PRMD and is unique with regard to the country-name identifying the area where it is registered, either nationally or internationally.

Note 1.- The element under item a) has the same value as the ADMD-name used in the MF-Addresses of users belonging to an ATS Messaging Organization operating as an ADMD, as specified in 2.1.5.3.3.

Note 2.- The element under item b) has the same value as the ADMD-name used in the MF-Addresses of users belonging to an ATS Messaging Organization operating as a PRMD, as specified in 2.1.5.3.4, item a).

Note 3.- The element under item c) relates to the situation of an ATS Messaging Organization operating as a PRMD, as specified in 2.1.5.3.4, item b).

2.3.4.2.3.19. Upon generation of a Message Transfer Envelope resulting from the conversion of an AFTN message, or of a Report Transfer Envelope, this element *private-domain-identifier* shall be encoded as a Printable String if present, and it shall identify an ATS Messaging Organization, depending on its status, by either of the following:

a)   taking the name of the PRMD under which the ATS Messaging Organization has been registered, either with an ADMD, or nationally or internationally, if the ATS Messaging Organization operates as an PRMD; or

c)   not being used in the global-domain-identifier if the ATS Messaging Organization operates as an ADMD.

Note.- The element under item a) has the same value as the PRMD-name used in the MF-Addresses of users belonging to an ATS Messaging Organization operating as a PRMD, as specified in 2.1.5.3.3.

2.3.4.2.3.20. Upon generation of a Message Transfer Envelope resulting from the conversion of an AFTN message, the element *disclosure-of-other-recipients* shall take its default abstract-value, which is "disclosure-of-other-recipients-prohibited".

2.3.4.2.3.21. Upon generation of a Message Transfer Envelope resulting from the conversion of an AFTN message, the element *implicit-conversion-prohibited* shall take its default abstract-value, which is "implicit-conversion-allowed".

2.3.4.2.3.22. Upon generation of a Message Transfer Envelope resulting from the conversion of an AFTN message, the element *alternate-recipient-allowed* shall take the abstract-value "alternate-recipient-allowed".

2.3.4.2.3.23. Upon generation of a Message Transfer Envelope resulting from the conversion of an AFTN message, the elements *country-name*, *administration-domain-name* and *private-domain-identifier* shall be used if, and only if, the element *bilateral-information* as specified in 2.3.4.2.3.24 is present. They shall together identify the ATS Messaging Organization for which the bilateral-information is intended, and they shall take the values as specified in 2.3.4.2.3.17, 2.3.4.2.3.18 and 2.3.4.2.3.19 respectively.

2.3.4.2.3.24. Upon generation of a Message Transfer Envelope resulting from the conversion of an AFTN message, the generation of this element shall be optional, as a matter of bilateral agreement between the ATS Messaging Organization operating the AFTN/AMHS Gateway and an other ATS Messaging Organization.

2.3.4.2.3.25. Upon generation of a Message Transfer Envelope resulting from the conversion of an AFTN message, or of a Report Transfer Envelope, the element *global-domain-identifier* in the *trace-information* or in the *internal-trace-information* shall identify the Management Domain built by the ATS Messaging Organization operating the AFTN/AMHS Gateway, and it shall be composed as specified in Table 2.9 / Part 2/2.

2.3.4.2.3.26. Upon generation of a Message Transfer Envelope resulting from the conversion of an AFTN message, or of a Report Transfer Envelope, 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.

2.3.4.2.3.27. Upon generation of a Message Transfer Envelope resulting from the conversion of an AFTN message, or of a Report Transfer Envelope, the element *routing-action* in the first element of *trace-information* or of *internal-trace-information* shall take the abstract-value "relayed".

2.3.4.2.3.28. Upon generation of a Message Transfer Envelope resulting from the conversion of an AFTN message, or of a Report Transfer Envelope, 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.

Note.- The structure of the mta-name of the Message Transfer and Control Unit included in an AFTN/AMHS Gateway within an ATS Messaging Organization is a matter of policy internal to the ATS Messaging Organization.

2.3.4.3.   Conversion of AFTN Service Messages Acknowledging SS Messages

This section refers to the conversion of an AFTN Service Message Acknowledging a SS Message by the Message Transfer and Control Unit of an AFTN/AMHS Gateway. To simplify the vocabulary in section 2.3.4.3 and its subsections, the Service Message is called the acknowledgement message, the SS AFTN Message which it acknowledges is called the subject message and the SS IPM which was initially converted into the subject message is called the subject IPM.

Note.- The use of the term subject IPM as defined above is consistent with the terminology of the base standards.

2.3.4.3.1.   *Initial processing of AFTN Service Message*

2.3.4.3.1.1. Upon reception by the Message Transfer and Control Unit of an acknowledgement message, passed from the AFTN Component to be conveyed in the AMHS, the Message Transfer and Control Unit shall determine from the *origin* of the subject message found in the *text* of the acknowledgement message, whether this subject message previously passed through the Message Transfer and Control Unit. If the subject message did not pass through the Gateway, the procedure shall terminate and an error situation shall be logged and reported to a control position. Otherwise the provisions of 2.3.4.3.1.2 shall apply.

2.3.4.3.1.2. If the subject message previously passed through the Message Transfer and Control Unit, the Message Transfer and Control Unit shall then determine whether the subject IPM was received from the AMHS without or with *receipt-notification-request*. In the first case the acknowledgement message shall be processed as specified in 2.3.4.3.1.3, in the latter case the acknowledgement message shall be processed as specified in 2.3.4.3.1.4.

2.3.4.3.1.3. If the subject IPM had been received from the AMHS without *receipt-notification-request*, an error shall be reported to a control position, and the acknowledgement message shall be converted into an IPM conveyed with a Message Transfer Envelope as specified in section 2.3.4.2.

2.3.4.3.1.4. If the subject IPM had been received from the AMHS with *receipt-notification-request*, the 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 section 2.3.4.3.1.5.

2.3.4.3.1.5. When the provisions of 2.3.4.3.1.4 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 2.3.4.3.2;

> b)   the specification of how the RN is generated, as included in 2.3.4.3.3; and

> c)   the provisions of 2.3.4.2.3 concerning the generation of the Message Transfer Envelope, with the exception of the differences specified in 2.3.4.3.4.

2.3.4.3.2.   *Use of AFTN Service Message components*

2.3.4.3.2.1.   Each component of an AFTN Service Message acknowledging a SS message shall be processed for the generation of a RN according to the classification defined in 2.3.2.3.8.

2.3.4.3.2.2.   These components which are classified as "t" or "c" in the column "support" of Table 2.10 shall be translated into the AMHS parameter specified in the column "AMHS parameter" of Table 2.10 and according to the specification in the section referred to in the column "mapping action".

Note.- The Message Transfer and Control Unit actions related to logging are not included in Table 2.10, they are specified in 2.3.3.1.

Table 2.10- Use of AFTN Service Message Components

AFTN Message Part	Component	Support	AMHS parameter	Mapping action
Heading	Start-of-Heading Character	-	-	–
	Transmission Identification	d	-	-
Address	Alignment Function	-	-	-
	Priority Indicator	t	priority (see Table 2.9/Part 1/1.1.6)	see 2.3.4.2.1.3
	Addressee Indicator	t	recipient-name (see Table 2.9/Part 1/1.2.1)	see 2.3.4.2.1.4.2
	Alignment Function	-	-	–
Origin	Filing Time	t	receipt-time (see Table 2.11/Part 2/7.1)	see 2.3.4.3.2.4
	Originator Indicator	t	ipn-originator (see Table 2.11/Part 2/2) originator-name (see Table 2.9/Part 1/1.1.2)	see 2.3.4.3.2.3 see 2.3.4.2.1.4.1
	Priority Alarm	d	-	-
	Optional Heading Information	d	-	-
	Alignment Function	-	-	-
	Start-of-Text Character	-		-
Text		d	-	see 2.3.4.3.2.1
Ending	Alignment Function	-	-	-
	Page-feed sequence	-	-	-
	End-of-Text Character	-	-	-

Legend: d = discarded
           t = translated
           - = not applicable

2.3.4.3.2.3. Upon generation of a RN as the result of the receipt of an acknowledgement message by the Message Transfer and Control Unit, the *originator indicator* element of the acknowledgement message shall be translated into the *ipn-originator* element of the RN.

2.3.4.3.2.4. Upon generation of a RN as the result of the receipt of an acknowledgement message by the Message Transfer and Control Unit, the *filing time* of the acknowledgement message shall be converted into the *receipt-time* element, which is of ASN.1 type UTCTime, in compliance with the following:

a)   the YY figures (characters 1 and 2 of the string) in the *receipt-time* element shall identify the year and shall be generated as appropriate by the Message Transfer and Control Unit;

b)   the MM figures (characters 3 and 4 of the string) in the *receipt-time* element shall identify the month and shall be generated as appropriate by the Message Transfer and Control Unit;

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

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

e)   the eleventh and last character in the string composing the *receipt-time* element shall take the value "Z" and shall be appended by the Message Transfer and Control Unit.

2.3.4.3.3.   Generation of RN

2.3.4.3.3.1.   Each of the elements composing the RN resulting from the receipt of an acknowledgement message in the Message Transfer and Control Unit shall be processed according to the classification defined in 2.3.2.3.8.

2.3.4.3.3.2.   These elements are classified as "g" or "t" in the column "support" of Table 2.11 shall be either generated or translated according to the specification in the section referred to in the column "mapping action" of Table 2.11.

Note 1.- Table 2.11 is structured as a PRL derived from the profile specification included in 2.2 and consequently from the ISPICS Proforma included in ISO/IEC ISP 12062-2 (AMH21). The columns "Base" and "Profile" under "Origination" are extracted from this specification and specify the static capability of an IPM AU supporting the Basic ATS Message 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 2.11. RN Generation

PART 1 : AMH21/A.1.1	SUPPORTED INFORMATION OBJECTS				
Ref	Element	Origination		Support	Mapping Action / Notes
		Base	Profile		
1	Interpersonal Message (IPM)	m	m	-	out of the scope of this section
2	Interpersonal Notification (IPN)	m	m		see Part 2
PART 2 : AMH21/A.1.4	IPN FIELDS				
Ref	Element	Origination		Support	Mapping Action / Notes
		Base	Profile		
1	subject-ipm	m	m	g	see 2.3.4.3.3.3
2	ipn-originator	o	m	t	see 2.3.4.3.2.3 and Part 3/2
3	ipm-preferred-recipient	m	m	g2	see 2.3.4.3.3.4
4	conversion-eits	o	o	g2	see 2.3.4.3.3.5
5	notification-extensions	o	i	x	-
6	non-receipt-fields	m	m	x	-
7	receipt-fields	o	o	t	see below
7.1	receipt-time	m	m	t	see 2.3.4.3.2.4
7.2	acknowledgment-mode	o	o	g	see 2.3.4.3.3.6
7.3	suppl-receipt-info	o	o	x	-
7.4	rn-extensions	o	i	x	-
8	other-notification-type-fields	o	i	x	-

PART 3 : AMH21/A.1.5	COMMON DATA TYPES				
Ref	Element	Origination		Support	Mapping Action / Notes
		Base	Profile		
2	ORDescriptor				
2.1	formal-name	m	m	t	see 2.3.4.3.3.7
2.2	free-form-name	o	o	x	
2.3	telephone-number	o	o	x	

g =　　　generated
g2 =　　conditionally generated
t =　　　translated
x =　　　excluded (not used)

2.3.4.3.3.3.　Upon generation of a RN as the result of the receipt of an acknowledgement message by the Message Transfer and Control Unit, the element *subject-ipm* shall take the value of the *this-IPM* heading field of the subject IPM.

2.3.4.3.3.4.　Upon generation of a RN as the result of the receipt of an acknowledgement message by the Message Transfer and Control Unit, the element *ipm-preferred-recipient*, if present, shall identify the recipient of the subject IPM which gave rise to the receipt of the acknowledgement message by the Message Transfer and Control Unit (as a result of the receipt by its addressee of the subject message). This element shall be the *O/R descriptor* of the recipient of the subject IPM. It shall be present if, and only if, it would be different from the *ipn-originator* specified in 2.3.4.3.2.3 and it would not be the result of a DL-expansion.

2.3.4.3.3.5.　Upon generation of a RN as the result of the receipt of an acknowledgement message by the Message Transfer and Control Unit, the element *conversion-eits*, if present, shall take the value of the encoded-information-types of the subject IPM received by the Message Transfer and Control Unit. It shall be present if, and only if, this encoded-information-types is different of the *originally-encoded-information-types* included in the subject IPM.

2.3.4.3.3.6.　Upon generation of a RN as the result of the receipt of an acknowledgement message by the Message Transfer and Control Unit, the element *acknowledgement-mode* shall take the abstract-value "manual", which is its default value.

2.3.4.3.3.7.　Upon generation of a RN as the result of the receipt of an acknowledgement message by thc Message Transfer and Control Unit, this element shall take the form of an O/R Address and be converted from the *originator indicator* of the acknowledgement message as specified in 2.3.4.2.1.4.1.

2.3.4.3.4.   Generation of Message Transfer Envelope

2.3.4.3.4.1.   The elements composing the Message Transfer Envelope which is conveyed with a RN resulting from the receipt of an acknowledgement message by the Message Transfer and Control Unit, which are different from the specification of section 2.3.4.2.3 shall be processed according to the specification in the section referred to in the column "mapping action" of Table 2.12.

2.3.4.3.4.2.   An element subject to the provisions of 2.3.4.3.4.1 shall be processed according to the classification defined in 2.3.2.3.8, and in accordance with the the specification referred to in the column "mapping action" of Table 2.12.

Note.- Table 2.12 is structured as an extract of Table 2.9. The references used in the part titles and in the column "Ref" are those of Table 2.9.

Table 2.12.- MessageTransfer Envelope generation for conveyance with a RN (Differences with Table 2.9)

PART 1 : AMH11/A.1.4.2	MESSAGETRANSFER				
Ref	Element	Base	Profile	Support	Mapping Action / Notes
1	MessageTransferEnvelope	m	m	t	see below
1.1	(per message fields)				
1.1.3	original-encoded-information-types	m	m-	x	-
1.1.6	priority	m	m	t	see 2.3.4.3.4.3
1.1.7	per-message-indicators	m	m	g	see Part 2/4
1.2	per-recipient-fields	m	m	t	see below
1.2.1	recipient-name	m	m	t	see 2.3.4.3.4.4
1.2.3	per-recipient-indicators	m	m	g	see 2.3.4.3.4.5
2	content	m	m	t	see 2.3.4.3.3
PART 2 : AMH11/A.1.5	COMMON DATA TYPES				
Ref	Element	Base	Profile	Support	Mapping Action / Notes
4	PerMessageIndicators				
4.2	implicit-conversion-prohibited	m	m	g	see 2.3.4.3.4.6

g =   generated
t =   translated
x =   excluded (not used)

2.3.4.3.4.3.   Upon generation of a Message Transfer Envelope conveyed with a RN resulting from the receipt of an acknowledgement message, the element *priority* shall take the same value as that of the subject IPM.

2.3.4.3.4.4.   Upon generation of a Message Transfer Envelope conveyed with a RN resulting from the receipt of an acknowledgement message, the element *recipient-name* shall identify the originator of the subject IPM. It shall take the form of an O/R Address.

2.3.4.3.4.5.   Upon generation of a Message Transfer Envelope conveyed with a RN resulting from the receipt of an acknowledgement message, the components of the element *per-recipient-indicators* shall be generated as follows:

        a)   the *responsibility* element shall take the abstract-value "responsible";

        b)   the *originating-MTA-report-request* element shall take the abstract-value "non-delivery-report"; and

        c)   the *originator-report-request* shall take the abstract-value "no-report".

2.3.4.3.4.6.   Upon generation of a Message Transfer Envelope conveyed with a RN resulting from the receipt of an acknowledgement message, the element *implicit-conversion-prohibited* shall take the abstract-value "implicit-conversion-prohibited".

2.3.4.4.   Conversion of AFTN Service Messages related to unknown addressee indicators

This section refers to the conversion of an AFTN Service Message requesting correction by the originator of a message received with an unknown addressee indicator by the Message Transfer and Control Unit of an AFTN/AMHS Gateway. To simplify the vocabulary in section 2.3.4.4 and its subsections, the service message received by the Message Transfer and Control Unit from the AFTN Component is called the "unknown address service message", the AFTN Message which it is related to and which included the unknown addressee indicators is called the "subject AFTN message" and the AMHS message which was initially converted into the subject message is called the "subject AMHS message".

2.3.4.4.1.   Initial Processing of the AFTN Service Message

2.3.4.4.1.1.   Upon reception by the Message Transfer and Control Unit of an unknown address service message, passed from the AFTN Component to be conveyed in the AMHS, the Message Transfer and Control Unit shall determine whether the corresponding subject AMHS message previously passed through the Message Transfer and Control Unit, based on the origin of the subject AFTN message found as specified in Annex 10, Vol. II, 4.4.11.13.3, item 3). If the subject AMHS message did not pass through the Message Transfer and Control Unit, the procedure shall terminate and an error situation shall be logged and reported to a control position. Otherwise the provisions of 2.3.4.4.1.2 shall apply.

2.3.4.4.1.2.   If the subject AMHS message previously passed through the Message Transfer and Control Unit, then the third line of Message Text of the unknown address service message shall be parsed to determine the unknown addressee indicator(s) which caused the generation of the unknown address service message. This or these addressee indicators shall be found as specified in Annex 10, Vol. II, 4.4.11.13.3, item 8). If no valid addressee indicator can be found in compliance with the aforementioned procedure, the procedure shall terminate and an error situation shall be logged and reported to a control position. Otherwise the provisions of 2.3.4.4.1.3 shall apply.

2.3.4.4.1.3.   Each addressee indicator determined as unknown as the result of 2.3.4.4.1.2 shall be converted into an unknown recipient O/R address in the same way as specified for an originator indicator in 2.3.4.2.1.4.1, with the same result if the translation cannot be achieved. For each unknown recipient O/R address determined as aforementioned, the provisions of 2.3.4.4.1.4 shall apply.

2.3.4.4.1.4.   For each unknown recipient O/R address, the *per-recipient-indicators* in the corresponding *per-recipient-fields* of the subject AMHS message shall be analysed to determine the value of the *originator-report-request* and of the *originating-MTA-report-request* elements. If for a given recipient, either of these elements has the value "report", of if the *originating-MTA-report-request* element has the value "audited-report", then the procedure shall terminate for this unknown recipient, which shall be discarded, and an error situation shall be logged and reported to a control position. Otherwise, the provisions of 2.3.4.4.1.5 shall apply for the unknown recipient being considered.

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

2.3.4.4.1.5.   For each unknown recipient O/R address which has not been subject to the generation of a delivery-report, the Message Transfer and Control Unit shall determine if it has already generated a non-delivery report in relation with the same subject AMHS message and with the same message recipient. If

such a non-delivery report has been generated, then the procedure shall terminate for this unknown recipient, which shall be discarded. Otherwise, the provisions of 2.3.4.4.1.6 shall apply for the unknown recipient being considered.

Note.- This clause aims at avoiding the generation of a multiple non-delivery-reports in relation with a single subject AMHS message which would have been splitted in several AFTN messages when converted from the AMHS to the AFTN, as the result of 2.3.5.2.1.4.

2.3.4.4.1.6. A non-delivery report related to the unknown recipient O/R addresses which have not been discarded as the result of 2.3.4.4.1.4 and 2.3.4.4.1.5 shall be generated as specified in 2.3.5.6 using the elements of the subject message, and with the addition to 2.3.5.6, that the *actual-recipient-name* elements in each *per-recipient-fields* element of the report shall be the unknown recipient O/R addresses as determined in 2.3.4.4.1.5.

2.3.5.   AMHS to AFTN Conversion

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 2.3.2.2.

The actions specified in this section shall be performed by the Message Transfer and Control Unit of an AFTN/AMHS Gateway.

2.3.5.1.   Control Function

2.3.5.1.1. Upon reception by the Message Transfer and Control Unit of an AMHS message or probe passed by the ATN Component, the *content-type* element in the Message Transfer Envelope or in the Probe Transfer Envelope shall be analysed. If the abstract-value of the element is neither "interpersonal-messaging-1984", nor "interpersonal-messaging-1988", then the message or probe shall be rejected and a non-delivery report shall be generated as specified in section 2.3.5.6, for all the message recipients for which the *responsibility* element of the *per-recipient-indicators* had the abstract-value "responsible". The *non-delivery-reason-code* and *non-delivery-diagnostic-code* elements of the non-delivery report shall take the abstract-values "unable-to-transfer" and "content-type-not-supported", respectively. Otherwise the message, which is then either an IPM or an IPN, shall be processed as specified in 2.3.5.1.2, or the probe shall be processed for conveyance test as specified in 2.3.5.5.

Note 1.- The message recipients towards which the Message Transfer and Control Unit should convey 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 the whole section 2.3.5 the term "message recipient" refers to such a recipient, unless otherwise specified.*

Note 2.- Support of other content-types, e.g. edi-messaging, may be added in the CNS/ATM-2 Package.

2.3.5.1.2. Upon reception by the Message Transfer and Control Unit of an AMHS message whose *content-type* is either "interpersonal-messaging-1984" or "interpersonal-messaging-1988" passed from the ATN Component, the message shall be processed for conversion into an AFTN message in either of the following manners, depending on the nature of the content, whether it is an IPM or an IPN:

   a)   if the content is an IPM, the message shall be processed for conversion into an AFTN message as specified in 2.3.5.2;

   b)   if the content is an IPN which is a Receipt Notification (RN), the message shall be processed for conversion into an AFTN service message as specified in 2.3.5.3;

   c)   if the content is an IPN but not a RN, the message shall be discarded, an error shall be logged and reported to a control position and the processing by the Message Transfer and Control Unit shall terminate.

2.3.5.1.3. 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 2.3.5.4.

Note.- The result of the processing applied to a non-delivery report may be its conversion into an AFTN service message requesting correction by the originator of a message received with an unknown addressee indicator.

2.3.5.1.4. Upon reception by the MTCU of an MHS information object other than those referred to in clauses 2.3.5.1.1 to 2.3.5.1.3 above, the object shall be discarded, an error shall be logged and reported to a control position and the processing by the Message Transfer and Control Unit shall terminate.

Note 1.- Such an event may normally not occur under normal operating circumstances.

Note 2.- The Message Transfer and Control Unit requests non-delivery-reports, but never delivery-reports when generating AMHS messages.

2.3.5.1.5. Upon completion by the Message Transfer and Control Unit of the processing specified in clauses 2.3.5.1.1 to 2.3.5.1.3 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.

2.3.5.1.6. If the generation of a report is required in relation with the result of the processing specified in clauses 2.3.5.1.1 or 2.3.5.1.2 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 message or probe, an appropriate AMHS report shall be generated as specified in 2.3.5.6.

2.3.5.2.   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 2.3.5.2.1;

b)   the specification of how the AFTN message is generated and how the AFTN message components are mapped from AMHS parameters, as included in 2.3.5.2.2;

c)   the specification of how the elements of the received IPM are handled, as included in 2.3.5.2.3; and

d)   the specification of how the Message Transfer Envelope elements are handled, as included in section 2.3.5.2.4.

2.3.5.2.1.   *Initial processing of AMHS Messages*

2.3.5.2.1.1. Upon reception by the Message Transfer and Control Unit of an IPM conveyed with a Message Transfer Envelope, the following elements of the Message Transfer Envelope shall be examined to determine if the Message Transfer and Control Unit is able to handle the current *encoded-information-types* of the message:

a)   the current encoded-information-types which is determined as the value of the latest *converted-encoded-information-types*, if existing, in the *trace-information element*, or as the value of *original-encoded-information-types* element if the previous does not exist;

b)   *implicit-conversion-prohibited* in the *per-message-indicators*; and

c)   *conversion-with-loss-prohibited* in the *extensions* of the per message fields.

The ability of the Message Transfer and Control Unit to handle the current *encoded-information-types* of the message shall be determined as follows:

a)   if the value of the element *implicit-conversion-prohibited* is "prohibited", then the message shall be rejected for all the message recipients, and a non-delivery report shall be generated as specified in section 2.3.5.6. The *non-delivery-reason-code* and *non-delivery-diagnostic-code* elements of the non-delivery report shall take the abstract-values "conversion-not-performed" and "implicit-conversion-prohibited", respectively, and the *supplementary-information* element shall take the value "unable to convert to AFTN" in all the *per-recipient-fields* elements of the report;

b)   for each message recipient, if the value of the current encoded-information-types is not built-in or extended "ia5-text", then the message shall be rejected for that recipient, and a non-delivery report shall be generated as specified in section 2.3.5.6. The *non-delivery-reason-code* and *non-delivery-diagnostic-code* elements of the non-delivery report shall take the abstract-values "unable-to-transfer" and "encoded-information-types-unsupported", respectively;

c)   if the value of the current encoded-information-types is built-in or extended "ia5-text", and the value of the element *conversion-with-loss-prohibited* is "prohibited", and the conversion of the message as specified in 2.3.5.2.2 to 2.3.5.2.4 would result in the loss of information, then the message shall be rejected for all the message recipients, and a non-delivery report shall be generated as specified in section 2.3.5.6. The *non-delivery-reason-code* element of the non-delivery report shall take the abstract-value "conversion-not-performed". The *non-delivery-diagnostic-code* element shall take one of the abstract-values among "line-too-long", if at least one line in the message exceeded 69 characters, or "punctuation-symbol-loss", if at least one punctuation symbol would have been converted into a question-mark, or "alphabetical-character-loss" if at least one alphabetical character would have been converted into a question-mark, or "multiple-information-loss" if several of the aforementioned situations would have occurred. The *supplementary-information* element shall take the value "unable to convert to AFTN" in all the *per-recipient-fields* elements of the report;

d)   if the value of the current encoded-information-types is "ia5-text" and none of the situations in items a) to c) occurs, then the message text shall be processed as specified in 2.3.5.2.1.2.

Note 1.- The concept of loss of information, as referred to in item c) above, is defined in CCITT X.408.

Note 2.- The value of the explicit-conversion *element in the* per-recipient-fields *is not examined since the Message Transfer and Control Unit does not implement the optional IPM Conversion Functional Group as defined in ISO/IEC ISP 12062-1.*

2.3.5.2.1.2. A message which felt under item d) of 2.3.5.2.1.1 shall be processed in either of the following manners, depending on the type of the body part(s) in the IPM body:

a)   if there are multiple body parts in the message body, then the message shall be rejected and a non-delivery report shall be generated as specified in section 2.3.5.6, for all the message recipients. The *non-delivery-reason-code* and *non-delivery-diagnostic-code* elements of the non-delivery report shall take the abstract-values "unable-to-transfer" and "content-syntax-error", respectively. The *supplementary-information* element shall take the value "unable to convert to AFTN due to multiple body parts" in all the *per-recipient-fields* elements of the report; otherwise the following shall apply;

b) if the body part type is neither "ia5-text", nor a standard extended body part type "ia5-text-body-part", nor a standard extended body part type "general-text-body-part" of which the repertoire set description is either Basic (ISO 646) or Basic-1 (ISO 8859-1), nor "message" with the body part types of the innermost IPM being of the aforementioned types, nor a standard extended body part type "message-body-part" with the body part types of the innermost IPM being either "ia5-text" or "ia5-text-body-part" or "general-text-body part", then the message shall be rejected and a non-delivery report shall be generated as specified in section 2.3.5.6, for all the message recipients. The *non-delivery-reason-code* and *non-delivery-diagnostic-code* elements of the non-delivery report shall take the abstract-values "unable-to-transfer" and "content-syntax-error", respectively. The *supplementary-information* element shall take the value "unable to convert to AFTN due to unsupported body part type" in all the *per-recipient-fields* elements of the report; otherwise the following shall apply;

c) in all other cases the message shall be processed as specified in 2.3.5.2.1.3.

Note 1.- The case of message body parts may result of a subject IPM having been forwarded at a receiving AMHS UA. This case is further detailed in 2.3.5.2.3.4.

Note 2.- If the local policy defined in 2.3.5.2.2.9 would result in a message rejection, then such rejection may take place at this stage.

2.3.5.2.1.3. A message processed as specified in 2.3.5.2.1.2 shall then be processed in either of the following manners, depending on whether or not the text included in its single body part is structured in compliance with section 2.2.3.2:

a) if the text structure does not comply with the requirements of section 2.2.3.2, then the message shall be rejected and a non-delivery report shall be generated as specified in section 2.3.5.6, for all the message recipients. The *non-delivery-reason-code* and *non-delivery-diagnostic-code* elements of the non-delivery report shall take the abstract-values "unable-to-transfer" and "content-syntax-error", respectively. The *supplementary-information* element shall take the value "unable to convert to AFTN due to aTS-Message-Header syntax error" in all the *per-recipient-fields* elements of the report; or

b) if the text structure complies with the requirements of section 2.2.3.2, then the message shall be processed as specified in 2.3.5.2.1.4.

Note.- The compliance requested to meet the condition of item b) includes the requirement that the 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.

2.3.5.2.1.4. A message meeting the condition in item b) of 2.3.5.2.1.3 above shall then be processed in either of the following manners, depending on the length of the *aTS-Message-Text* element in the message body:

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 D cannot be properly achieved by the gateway, then the message shall be rejected and a non-delivery report shall be generated as specified in section 2.3.5.6, for all the message recipients. The *non-delivery-reason-code* and *non-delivery-diagnostic-code* elements of the non-delivery report shall take the abstract-values "unable-to-transfer" and "content-too-long", respectively. The *supplementary-information* shall take the value "unable to convert to AFTN due to message text length" in all the *per-recipient-fields* elements of the report; or

b) if the length of the *aTS-Message-Text* element exceeds 1800 characters, and if the procedure proposed in Annex 10, Volume II, Attachment D can apply in the gateway, then the message shall be split, internally to the Message Transfer and Control Unit, into several messages in accordance with the aforementioned Annex 10 procedure. For conversion purposes, each of the resulting messages shall be considered to have the same Message Transfer Envelope, the same IPM Heading and the aTS-Message-Header as the message subject to the splitting. Only the *aTS-Message-Text* element shall vary between the different resulting messages. Each of these messages shall then be processed as specified in 2.3.5.2.1.5; or

c) if the length of the *aTS-Message-Text* element does not exceed 1800 characters, then the message shall be processed as specified in 2.3.5.2.1.5.

Note.- This clause places no specific requirement on the way in which it should be implemented.

2.3.5.2.1.5. A message resulting from the situations in items b) and c) of 2.3.5.2.1.4 above shall then be processed in either of the following manners, depending on the number of message recipients towards which the Message Transfer and Control Unit should convey the message:

a) if this number exceeds 21 message recipients, then the gateway shall attempt to split the message, internally to the Message Transfer and Control Unit, into several messages, each of them with no more than 21 message recipients. For conversion purposes, each of the resulting messages shall be considered to have the same *per-message-fields* in the Message Transfer Envelope, and the same *content*. Only the *per-recipient-fields* elements in the Message Transfer Envelope shall vary between the different resulting messages. Each of these messages shall then be processed as specified in 2.3.5.2.2 to 2.3.5.2.4; or

b) if this number exceeds 21 message recipients, and if, due to system resource limitation, the splitting attempt made by the gateway as specified in item a) above cannot be properly achieved, then the message shall be rejected and a non-delivery report shall be generated as specified in section 2.3.5.6, for all the message recipients. The *non-delivery-reason-code* and *non-delivery-diagnostic-code* elements of the non-delivery report shall take the abstract-values "unable-to-transfer" and "too-many-recipients", respectively. The *supplementary-information* shall take the value "unable to convert to AFTN due to number of recipients" in all the *per-recipient-fields* elements of the report; or

      c)   if this number does not exceed 21 message recipients, then the message shall be processed as specified in 2.3.5.2.2 to 2.3.5.2.4.

Note 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 clause.

Note 2.- This clause places no specific requirement on the way in which it should be implemented.

Note 3.- The combination of 2.3.5.2.1.4 and 2.3.5.2.1.5 above may result in a very high number of AFTN messages being generated from one single AMHS message. Items 2.3.5.2.1.4 a) and 2.3.5.2.1.5 b) may, as a local matter, be used under such circumstances to avoid flooding the AFTN.

2.3.5.2.2.   Generation of AFTN Message

2.3.5.2.2.1.   Each message resulting from the processing defined in 2.3.5.2.1.5 above shall be converted by the Message Transfer and Control Unit into an AFTN Message, of which the components shall be processed according to the classification defined in 2.3.2.3.8.

2.3.5.2.2.2.   Those components which are classified as "g" in the column "support" of Table 2.13 shall be generated in compliance with the provisions of Annex 10, Volume II referred to in the column "mapping action".

2.3.5.2.2.3.   Those components which are classified as "t" or "c" in the column "support" of Table 2.13 shall be converted from the AMHS parameter specified in the column "converted from AMHS parameter" of Table 2.13 and according to the specification in the section referred to in the column "mapping action".

Table 2.13. AFTN Message Generation

AFTN Message Part	Component	Support	Converted from AMHS parameter	Mapping action
Heading	Start-of-Heading Character	x	-	-
	Transmission Identification	x	-	see 2.3.5.2.2.4
Address	Alignment Function	g	-	see Annex 10, Volume II, 4.4.16.2.1
	Priority Indicator	t	aTS-Message-Priority (see Table 2.14/ Part 6/1.2)	see 2.3.5.2.2.5
	Addressee Indicator(s)	t	recipient-name (see Table 2.15/Part 1/1.2.1)	see 2.3.5.2.2.6.2
	Alignment Function	g	-	see Annex 10, Volume II, 4.4.16.2.1
Origin	Filing Time	t	aTS-Message-Filing-Time (see Table 2.14/Part 6/1.3)	see 2.3.5.2.2.7
	Originator Indicator	t	originator-name (see Table 2.15/Part 1/1.1.2)	see 2.3.5.2.2.6.1
	Priority Alarm	g	-	see Annex 10, Volume II, 4.4.16.2.2
	Optional Heading Information	c	aTS-Message-Optional-Heading-Info (see Table 2.14/Part 6/1.4)	see 2.3.5.2.2.8
	Alignment Function	g	-	see Annex 10, Volume II, 4.4.16.2.2
	Start-of-Text Character	g	-	see Annex 10, Volume II, 4.4.16.2.2
Text		t	aTS-Message-Text (see Table 2.14/Part 6/2)	see 2.3.5.2.2.9
Ending	Alignment Function	g	-	see Annex 10, Volume II, 4.4.16.3.12
	Page-feed sequence	g	-	see Annex 10, Volume II, 4.4.16.3.12
	End-of-Text Character	g	-	see Annex 10, Volume II, 4.4.16.3.12

Legend: x = excluded (not used)
                 c = conditionally translated
                 g = generated
                 t = translated

2.3.5.2.2.4. As specified in 2.3.2.5.3, this element shall not be generated by the Message Transfer and Control Unit but rather by the AFTN Component. It shall be 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.

2.3.5.2.2.5. The value of the *Priority Indicator* of the converted AFTN message shall be the value of the *priority-indicator* in the *ATS-message-priority* element of the AMHS message. If the value is "SS", then the procedure specified in 2.3.5.2.3.3 shall apply.

Note.- This value is always a valid AFTN priority indicator since an AMHS message, if it contains an invalid value, has been previously rejected as a result of 2.3.5.2.1.3 item a).

2.3.5.2.2.6. The value of an AF-address included in the converted AFTN message shall be converted from an O/R address as respectively specified in 2.3.5.2.2.6.1 and 2.3.5.2.2.6.2 depending whether it is an originator O/R address or a recipient O/R address.

2.3.5.2.2.6.1. The originator O/R address included in an AMHS message shall be translated into the originator indicator of the converted AFTN Message as follows, after preliminary conversion of the value of all AMHS address attributes from lower case IA5IRV characters, if any, to upper case IA5IRV characters:

       a)   if the *organization-name* attribute has the value "AFTN", then the originator indicator shall take the value of the first element of the *organizational-unit-names* attribute and the translation process shall terminate, if this value is a syntactically valid AF-Address. In all other cases the procedure described in item b) shall apply;

       b)   an AF-Address matching exactly the O/R address of the originator shall be looked for in the User address look-up table maintained in the Message Transfer and Control Unit. Upon determination of an adequate entry in the look-up table, the originator indicator shall take the value of the AF-Address corresponding to that entry. If no adequate entry can be found in the look-up table, then the message shall be rejected and a non-delivery report shall be generated as specified in section 2.3.5.6, for all the message recipients. The *non-delivery-reason-code* and *non-delivery-diagnostic-code* elements of the non-delivery report shall take the abstract-values "unable-to-transfer" and "invalid-arguments", respectively. The *supplementary-information* shall take the value "unable to convert to AFTN due to unrecognized originator O/R address" in all the *per-recipient-fields* elements of the report.

Note.- This clause places no specific requirement on the way in which it should be implemented.

2.3.5.2.2.6.2. The recipient O/R address or set of recipient O/R addresses included in an AMHS message shall be translated as follows into the addressee indicator or sequence of addressee indicators, respectively, of the converted AFTN Message, after preliminary conversion of the value of all AMHS address attributes from lower case IA5IRV characters, if any, to upper case IA5IRV characters:

a) for each *recipient-name* element in the Message Transfer Envelope, the following procedure shall apply: if the *organization-name* attribute has the value "AFTN", then the addressee indicator translated for this message recipient shall take the value of the first element of the *organizational-unit-names* attribute and the translation process shall terminate, if this value is a syntactically valid AF-Address. Otherwise an AF-Address matching exactly the O/R address included in the *recipient-name* element shall be looked for in the User address look-up table maintained in the Message Transfer and Control Unit. Upon determination of an adequate entry in the look-up table, the addressee indicator translated for this message recipient shall take the value of the AF-Address corresponding to that entry. If no adequate entry can be found in the look-up table, then the message shall be rejected for this message recipient and a non-delivery report shall be generated as specified in section 2.3.5.6. The *non-delivery-reason-code* and *non-delivery-diagnostic-code* elements of the non-delivery report shall take the abstract-values "unable-to-transfer" and "unrecognised-OR-name", respectively; and

b) after all the *recipient-name* elements have been processed as defined in item a) above, then the sequence of addressee indicators of the AFTN message, if any, shall be constructed as specified in Annex 10, Vol. II, 4.4.16.2.1.

Note 1.- As a result of 2.3.5.2.1.5, the number of AF-addresses included in the sequence of addressee indicators described in item b) above does never exceed 21 addresses.

Note 2.- 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.

Note 3.- This clause places no specific requirement on the way in which it should be implemented.

2.3.5.2.2.7. The value of the *Filing Time* of a converted AFTN message shall be the value of the filing-time component in the aTS-Message-Filing-Time element of the AMHS message.

Note.- This value is always a valid AFTN filing time since an AMHS message, if it contains an invalid value, has been previously rejected as a result of 2.3.5.2.1.3 item a).

2.3.5.2.2.8. The value of the *Optional Heading Information* of a converted AFTN message shall be the value of the *optional-heading-information* in the *aTS-Message-Optional-Heading-Info* element, if present, of the IPM text of the AMHS message. If the *aTS-Message-Optional-Heading-Info* element is not present in the AMHS message, the *Optional Heading Information* component shall be omitted in the converted AFTN message.

2.3.5.2.2.9. 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)   if the character set which is used extends to more than the strict ISO-646 character set (i.e. IA5IRV), then each character which is not in the ISO-646 character set shall, as a matter of policy local to the ATS Messaging Organization operating the AFTN/AMHS Gateway, either be converted into an IA5IRV character according to locally defined conversion rules, or cause message rejection and generation of a non-delivery report as specified in section 2.3.5.6, for all the message recipients. The *non-delivery-reason-code* and *non-delivery-diagnostic-code* elements of the non-delivery report shall take the abstract-values "unable-to-transfer" and "content-syntax-error", respectively. The *supplementary-information* element shall take the value "unable to convert to AFTN due to unsupported body part type" in all the *per-recipient-fields* elements of the report;

b)   then, if the result of a) has not been a message rejection, each IA5IRV character, if it is in lower case, shall be converted into the equivalent upper case character;

c)   then all characters or character sequences in the text, if any, which use is not authorized in Annex 10, Volume II, 4.1.2 shall also be replaced with question-marks;

d)   the text resulting from items a), b) and c) above shall be the content of the Text part of the converted AFTN message, except in case of message rejection as specified in item a).

Note 1.- The locally defined conversion rules mentioned in item a) may be for example CCITT Recommendation X.408.

Note 1.- 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.

Note 2.- The conversion from lower to upper case is required since only upper case characters are authorised in the AFTN, as specified in Annex 10, Volume II, 4.1.2.

2.3.5.2.3.   Use of IPM elements

2.3.5.2.3.1. 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 according to the classification defined in 2.3.2.3.8 and as specified in the column "support" of Table 2.14.

2.3.5.2.3.2. The elements composing the IPM shall be used according to the specification in the section referred to in the column "mapping action" of Table 2.14.

Note 1.- Table 2.14 is structured as a PRL derived from the profile specification included in 2.2 and consequently from the ISPICS Proforma included in ISO/IEC ISP 12062-2 as well as from Table 2.4 in section 2.2.3.2. The columns "Base" and "Profile" under "Reception" are extracted from this specification and specify the static capability of an IPM AU supporting the Basic ATS Message 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 2.14. Use of IPM Elements

PART 1 : AMH21/A.1.1 SUPPORTED INFORMATION OBJECTS					
Ref	Element	Reception		Support	Mapping Action / Notes
		Base	Profile		
1	Interpersonal Message (IPM)	m	m	t	see below
1.1	heading	m	m	t	see Part 2
1.2	body	m	m	t	see Part 3
2	Interpersonal Notification (IPN)	o	m	-	out of the scope of this section
PART 2 : AMH21/A.1.2 IPM HEADING FIELDS					
Ref	Element	Reception		Support	Mapping Action / Notes
		Base	Profile		
1	this-IPM	m	m	d	-
2	originator	m	m	d	-
3	authorizing-users	m	m	d	-
4	primary-recipients	m	m	d	see 2.3.5.2.3.3 and Part 5/1
5	copy-recipients	m	m	d	see 2.3.5.2.3.3 and Part 5/1
6	blind-copy-recipients	m	m	d	see 2.3.5.2.3.3 and Part 5/1
7	replied-to-IPM	m	m	d	-
8	obsoleted-IPMs	m	m	d	-
9	related-IPMs	m	m	d	-
10	subject	m	m	d	-
11	expiry-time	m	m	d	-
12	reply-time	m	m	d	-

13	reply-recipients	m	m	d	-
14	importance	m	m	d	-
15	sensitivity	m	m	d	-
16	auto-forwarded	m	m	d	-
17	extensions	m	m	d	-
17.1	incomplete-copy	o	m	d	-
17.2	languages	m	m	d	-
17.3	auto-submitted	o	i	d	-

PART 3 : AMH21/A.1.3   IPM BODY

Ref	Element	Reception		Support	Mapping Action / Notes
		Base	**Profile**		
1	ia5-text	o	m	t	see below
1.1	parameters	m	m	d	-
1.1.1	repertoire	m	m	d	-
1.2	data	m	m	t	see Part 6
2	voice	i	i	x	see Note 2
3	g3-facsimile	o	o	x	see Note 2
4	g4-class-1	o	o	x	see Note 2
5	teletex	o	o	x	see Note 2
6	videotex	o	o	x	see Note 2
7	encrypted	i	i	x	see Note 2
8	message	o	m	t	see below
8.1	parameters	m	m	d	-
8.1.1	delivery-time	o	m	d	-

8.1.2	delivery-envelope	o	m	d	-
8.2	data	m	m	t	see 2.3.5.2.3.4 and Part 6
9	mixed-mode	o	o	x	see Note 2
10	bilaterally-defined	o	o	x	see Note 2
11	nationally-defined	o	o	x	see Note 2
12	externally-defined	o	m	x/t	see Note 3 and Part 4

PART 4 : AMH21/A.1.3.1   EXTENDED BODY PART SUPPORT

Ref	Extended Body Part Type	Reception		Support	Mapping Action / Notes
		Base	**Profile**		
1	ia5-text-body-part	o	m	t	see Part 3/1
2	g3-facsimile-body-part	o	o	x	see Note 2
3	g4-class1-body-part	o	o	x	see Note 2
4	teletex-body-part	o	o	x	see Note 2
5	videotex-body-part	o	o	x	see Note 2
6	encrypted-body-part	i	i	x	see Note 2
7	message-body-part	o	m	t	see Part 3/8
8	mixed-mode-body-part	o	o	x	see Note 2
9	bilaterally-defined-body-part	o	o	x	see Note 2
10	nationally-defined-body-part	o	o	x	see Note 2
11	general-text-body-part	o	m	t/x	see 2.3.5.2.1.2, 2.3.5.2.3.5 and Part 6
12	file-transfer-body-part	o	i	x	see Note 2
13	voice-body-part	o	i	x	see Note 2
14	oda-body-part	o	o	x	see Note 2

PART 5 : AMH21/A.1.5	COMMON DATA TYPES				
Ref	Element	Reception		Support	Mapping Action / Notes
		Base	Profile		
1	RecipientSpecifier				
1.1	recipient	m	m	d	-
1.2	notification-requests	m	m	d	see below
1.2.1	rn	o	o	d	see 2.3.5.2.3.3
1.2.2	nrn	m	m	d	-
1.2.3	ipm-return	o	o	d	-
1.3	reply-requested	m	m	d	-
1.4	recipient-extensions	o	i	d	-

PART 6 : IPM SUPPORT OF THE BASIC ATS MESSAGE SERVICE					
Ref	Element	Reception		Support	Mapping Action / Notes
		Base	Profile		
1	aTS-Message-Header	-	m	t	see below
1.1	start-of-heading	-	m	-	-
1.2	aTS-Message-Priority	-	m	t	see below
1.2.1	priority-prompt	-	m	-	-
1.2.2	priority-indicator	-	m	t	see 2.3.5.2.2.5
1.2.3	priority-separator	-	m	-	-
1.3	aTS-Message-Filing-Time	-	m	t	see below
1.3.1	filing-time-prompt	-	m	-	-
1.3.2	filing-time	-	m	t	see 2.3.5.2.2.7
1.3.3	filing-time-separator	-	m	-	-
1.4	aTS-Message-Optional-Heading-Info	-	m	c	see below
1.4.1	oHI-prompt	-	m	-	-
1.4.2	optional-heading-information	-	m	t	see 2.3.5.2.2.8
1.4.3	oHI-separator	-	m	-	-
1.5	end-of-heading-blank-line	-	m	-	-
1.6	start-of-text	-	m	-	-
2	aTS-Message-Text	-	m	t	see 2.3.5.2.2.9

c =   conditionally translated
d =   discarded
t =   translated
x =   excluded
- =   not applicable

Note 2.- This body part type is excluded as the result of 2.3.5.2.1.2.

Note 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 defined in Part 4 and as the result of 2.3.5.2.1.2.

2.3.5.2.3.3.   If the *priority-indicator* of a received AMHS message has the value "SS", then the *notification-requests* element of each of the IPM heading field of type RecipientSpecifier, i.e. *primary-recipients*, *copy-recipients* and *blind-copy-recipients* shall be examined, if the *responsibility* element of the corresponding *per-recipient-fields* of the Message Transfer Envelope has the value "responsible". For each of these recipients, if the notification-requests element has not the abstract value "rn", an error shall be generated and reported to a control position.

Note 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 shall be ignored, considering that the Message Transfer and Control Unit cannot ensure the actual reception of the message by the end-user.

Note 2.- The error generated as specified above, if any, does not cause message rejection.

2.3.5.2.3.4. If the body-part type of the IPM included in an AMHS message is "message", then the AMHS message shall be converted as if the *body* of the innermost IPM included in the *data* component of the "message" body part were the *body* of the IPM being converted.

Note 1.- Such a situation may result from a forwarding operation which has been previously performed on a subject IPM at a receiving AMHS UA.

Note 2.- The use of the innermost IPM is due to the potentiality of multiple successive forwarding of the subject IPM having generated nested IPMs.

Note 3.- This specification places the same conditions on the body of the innermost IPM as on the body of an IPM converted into an AFTN message. In particular this implies that the body part type of the body of the innermost IPM is supported in the conversion process, i.e. that it is either" ia5-text" or "general-text".

2.3.5.2.3.5. The parameters component of a general-text body part shall identify the character set used for the message, as specified in ISO/IEC 10021-7, B.2. The data component of a general-text body part, composing the single body part of the IPM included in an AMHS message, shall be used for generation of the converted AFTN message as specified in Part 6 of Table 2.14.

2.3.5.2.4.   *Use of Message Transfer Envelope parameters*

2.3.5.2.4.1. 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 according to the classification defined in 2.3.2.3.8 and as specified in the column "support" of Table 2.15.

2.3.5.2.4.2.   The elements composing the Message Transfer Envelope shall be handled according to the specification in the section referred to in the column "mapping action" of Table 2.15.

Note 1.- Table 2.15 is structured as a PRL derived from the ISPICS Proforma included in ISO/IEC ISP 10611-3. The columns "Base" and "Profile" are extracted from this specification and specify 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.

Note 2.- Although not used for mapping, some elements may generate specific actions for the gateway in the handling of the considered message.

Note 3.- The Message Transfer and Control Unit actions related to logging are not included in Table 2.15, they are specified in 2.3.3.1.

Note 4.- 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 2.15. Use of the MessageTransfer Envelope

PART 1 : AMH11/A.1.4.2	MESSAGETRANSFER				
Ref	**Element**	**Base**	**Profile**	**Support**	**Mapping Action / Notes**
1	MessageTransferEnvelope	m	m	t	see below
1.1	(per message fields)				
1.1.1	message-identifier	m	m	d	-
1.1.2	originator-name	m	m	t	see 2.3.5.2.2.6.1
1.1.3	original-encoded-information-types	m	m-	d/x	see 2.3.5.2.1.1
1.1.4	content-type	m	m-	d/x	see 2.3.5.1.1
1.1.5	content-identifier	m	m	d	-
1.1.6	priority	m	m	d	-
1.1.7	per-message-indicators	m	m	d	see Part 2/4
1.1.8	deferred-delivery-time	o	m-	d	see 2.3.5.2.4.5
1.1.9	per-domain-bilateral-information	o	m-	d	see 2.3.5.2.4.6 and Part 2/5
1.1.10	trace-information	m	m	d	see Part 2/6
1.1.11	extensions	m	m	d/x	see 2.3.5.2.4.7 and Part 3/1
1.1.11.1	recipient-reassignment-prohibited	o	m	d	see 2.3.5.2.4.4
1.1.11.2	dl-expansion-prohibited	o	m	d	see 2.3.5.2.4.8
1.1.11.3	conversion-with-loss-prohibited	o	m	d/x	see 2.3.5.2.1.1
1.1.11.4	latest-delivery-time	o	m-	d/x	see 2.3.5.2.4.9
1.1.11.5	originator-return-address	o	m-	d	-
1.1.11.6	originator-certificate	o	m-	x	see 2.3.5.2.4.10
1.1.11.7	content-confidentiality-algorithm-identifier	o	m-	x	see 2.3.5.2.4.10

1.1.11.8	message-origin-authentication-check	o	m-	x	see 2.3.5.2.4.10
1.1.11.9	message-security-label	o	m-	x	see 2.3.5.2.4.10
1.1.11.10	content-correlator	m	m	d	-
1.1.11.11	dl-expansion-history	m	m-	d	-
1.1.11.12	internal-trace-information	m	m	d	-
1.2	per-recipient-fields	m	m	t	see below
1.2.1	recipient-name	m	m	t	see 2.3.5.2.2.6.2
1.2.2	originally-specified-recipient-number	m	m	d	-
1.2.3	per-recipient-indicators	m	m	d	-
1.2.4	explicit-conversion	o	m-	d	see 2.3.5.2.1.1
1.2.5	extensions	m	m	d/x	see 2.3.5.2.4.7 and Part 3/1
1.2.5.1	originator-requested-alternate-recipient	o	m-	d	see 2.3.5.2.4.4
1.2.5.2	requested-delivery-method	o	m-	d	see 2.3.5.2.4.11
1.2.5.3	physical-forwarding-prohibited	o	m-	x	see 2.3.5.2.4.12
1.2.5.4	physical-forwarding-address-request	o	m-	x	see 2.3.5.2.4.12
1.2.5.5	physical-delivery-modes	o	m-	x	see 2.3.5.2.4.12
1.2.5.6	registered-mail-type	o	m-	x	see 2.3.5.2.4.12
1.2.5.7	recipient-number-for-advice	o	m-	x	see 2.3.5.2.4.12
1.2.5.8	physical-rendition-attributes	o	m-	x	see 2.3.5.2.4.12
1.2.5.9	physical-delivery-report-request	o	m-	x	see 2.3.5.2.4.12
1.2.5.10	message-token	o	m-	x	see 2.3.5.2.4.10
1.2.5.11	content-integrity-check	o	m-	x	see 2.3.5.2.4.10
1.2.5.12	proof-of-delivery-request	o	m-	x	see 2.3.5.2.4.10
1.2.5.13	redirection-history	m	m-	d	-

2	content	m	m	t	see 2.3.5.2.3
PART 2 : AMH11/A.1.5 **COMMON DATA TYPES**					
Ref	**Element**	**Base**	**Profile**	**Support**	**Mapping Action / Notes**
4	PerMessageIndicators				
4.1	disclosure-of-other-recipients	m	m	d	-
4.2	implicit-conversion-prohibited	m	m	d/x	see 2.3.5.2.1.1
4.3	alternate-recipient-allowed	m	m	d	see 2.3.5.2.4.4
4.4	content-return-request	o	m-	d	-
4.5	reserved	o	m-	d	-
4.6	bit-5	o	m-	d	-
4.7	bit-6	o	m-	d	-
4.8	service-message	o	m-	d	-
5	PerDomainBilateralInformation				
5.1	country-name	m	m-	d	see 2.3.4.2.3.23
5.2	administration-domain-name	m	m-	d	see 2.3.4.2.3.23
5.3	private-domain-identifier	o	m-	d	see 2.3.4.2.3.23
5.4	bilateral-information	m	m-	d	see 2.3.4.2.3.24
6	TraceInformation				
6.1	TraceInformationElement	m	m	d	-
6.1.1	global-domain-identifier	m	m	d	-
6.1.2	domain-supplied-information	m	m	d	-
6.1.2.1	arrival-time	m	m	d	-

6.1.2.2	routing-action	m	m	d	-
6.1.2.2.1	relayed	m	m	d	-
6.1.2.2.2	rerouted	o	c1	d	-
6.1.2.3	attempted-domain	o	c1	d	-
6.1.2.4	(additional actions)			d	-
6.1.2.4.1	deferred-time	m	c2	d	-
6.1.2.4.2	converted-encoded-information-types	o	m-	d	see 2.3.5.2.1.1
6.1.2.4.3	other-actions	o	m-	d	-
6.1.2.4.3.1	redirected	o	m-	d	-
6.1.2.4.3.2	dl-operation	o	m-	d	-

PART 3 : AMH11/A.1.6	EXTENSION DATA TYPES				
Ref	**Element**	**Base**	**Profile**	**Support**	**Mapping Action / Notes**
1	ExtensionField				
1.1	type	m	m	d/x	see below
1.1.1	standard-extension	m	m	d/x	see 2.3.5.2.4.7
1.1.2	private-extension	o	m-	d/x	see 2.3.5.2.4.7
1.2	criticality	m	m	d/x	see 2.3.5.2.4.7
1.3	value	m	m	d	-

m- =   see ISO/IEC ISP 10611-3
c1 =   if rerouting is supported then m else m-
c2 =   if deferred delivery is supported then m else m-
d =   discarded
t =   translated
x =   excluded

*2.3.5.2.4.3. **Editor's Note:** this clause to be deleted and following clauses to be renumbered accordingly.*

2.3.5.2.4.4.   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.

2.3.5.2.4.5.   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.

2.3.5.2.4.6.   If the elements *country-name*, *administration-domain-name* and *private-domain-identifier* in an element of the *per-domain-bilateral-information* together identify the ATS Messaging Organization operating the AFTN/AMHS Gateway, the use made of the *bilateral-information* element shall be a local matter. For mapping purposes the whole *per-domain-bilateral-information* element shall be simply discarded.

2.3.5.2.4.7.   If any extension-field set to "CRITICAL FOR TRANSFER" or to "CRITICAL FOR DELIVERY" is present in the *extensions* of the Message Transfer Envelope and not semantically understood by the Message Transfer and Control Unit, then the message shall be rejected and a non-delivery report shall be generated as specified in 2.3.5.6, either for all the message recipients if the extension is part of the *per-message-fields* or for the considered message recipient if the extension is part of the *per-recipient-fields*. The values of the *non-delivery-reason-code* and of the *non-delivery-diagnostic-code* elements of the report shall be "unable-to-transfer" and "unsupported-critical-function", respectively. If there is no criticality given then the element shall be simply discarded.

2.3.5.2.4.8.   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.

2.3.5.2.4.9.   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 message shall be rejected and a non-delivery report shall be generated as specified in 2.3.5.6 for all the message recipients. The *non-delivery-reason-code* and of the *non-delivery-diagnostic-code* elements of the non-delivery report shall take the abstract-values "transfer-failure" and "maximum-time-expired", respectively.

2.3.5.2.4.10.   The Message Transfer and Control Unit does not implement Security Elements of Service. Thus, if any security-related extension-field set to "CRITICAL FOR DELIVERY" is present in the *extensions* of the Message Transfer Envelope, then the message shall be rejected and a non-delivery report shall be generated as specified in 2.3.5.6, either for all the message recipients if the extension is part of the *per-message-fields* or for the considered message recipient if the extension is part of the *per-recipient-fields*. The values of the *non-delivery-reason-code* and of the *non-delivery-diagnostic-code* elements of the report shall be "unable-to-transfer" and "unsupported-critical-function", respectively.

2.3.5.2.4.11.   The element *requested-delivery-method* shall be discarded by the Message Transfer and Control Unit.

Note.- The Message Transfer and Control Unit will handle 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).

2.3.5.2.4.12. 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, then the message shall be rejected and a non-delivery report shall be generated as specified in 2.3.5.6, either for all the message recipients if the extension is part of the *per-message-fields* or for the considered message recipient if the extension is part of the *per-recipient-fields*. The values of the *non-delivery-reason-code* and of the *non-delivery-diagnostic-code* elements of the report shall be "physical-rendition-not-performed" and "unsupported-critical-function", respectively.

2.3.5.3.   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 service message acknowledging the SS 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 2.3.5.3.1;

a)   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 2.3.5.3.2;

b)   the specification of how the elements of the received RN are handled, as included in 2.3.5.3.3; and

c)   the specification of how the Message Transfer Envelope elements are handled, as included in section 2.3.5.3.4.

Note.- The terms introduced in 2.3.4.3 are also used in this section.

2.3.5.3.1.   *Initial processing of AMHS Receipt Notifications*

2.3.5.3.1.1.   Upon reception by the Message Transfer and Control Unit of a RN, passed from the ATN Component to be potentially converted into an AFTN service message acknowledging a SS message, the Message Transfer and Control Unit shall determine whether the subject IPM has been initially generated by the Message Transfer and Control Unit, using the *subject-ipm* element of the RN. If the subject IPM has not been initially generated by the Message Transfer and Control Unit, the RN shall be rejected, and a non-delivery report shall be generated as specified in section 2.3.5.6. The *non-delivery-reason-code* and *non-delivery-diagnostic-code* elements of the non-delivery report shall take the abstract-values "unable-to-transfer" and "invalid-arguments", respectively, and the *supplementary-information* element shall take the value "unable to convert RN to AFTN Ack service message due to misrouted RN", and an error situation shall be logged and reported to a control position. Otherwise the provisions of 2.3.5.3.1.2 shall apply.

2.3.5.3.1.2.   For an AMHS RN passed from the ATN Component to the Message Transfer and Control Unit and not rejected as the result of 2.3.5.3.1.1, the Message Transfer and Control Unit shall determine whether the *priority indicator* of the subject AFTN message initially converted by the Message Transfer and Control Unit was "SS". If the *priority indicator* of the subject AFTN message was different from "SS", the RN shall be discarded and an error situation shall be logged and reported to a control position. Otherwise the provisions of 2.3.5.3.1.3 shall apply.

2.3.5.3.1.3.   For an AMHS RN passed from the ATN Component to the Message Transfer and Control Unit and not rejected as the result of 2.3.5.3.1.2, an error situation shall be logged and reported to a control position if the abstract-value of the *priority* element in the Message Transfer Envelope conveyed with the RN differs from "urgent". In all cases the provisions of 2.3.5.3.2 shall apply.

2.3.5.3.2. *Generation of AFTN acknowledgement message*

2.3.5.3.2.1. Each AMHS RN received by the Message Transfer and Control Unit and not rejected as the result of 2.3.5.3.1 shall be converted into an AFTN acknowledgement message, whose components shall be processed according to the classification defined in 2.3.2.3.8 and as specified in the column "support" of Table 2.16, if the processing is different from the specification of 2.3.5.2.2. Otherwise the specification of 2.3.5.2.2 shall apply.

2.3.5.3.2.2. These components which are classified as "g" shall be generated in compliance with the provisions of Annex 10, Volume II or with the clause referred to in the column "mapping action".

2.3.5.3.2.3. These components which are classified as "t" shall be converted from the AMHS parameter specified in the column "converted from AMHS parameter" of Table 2.16 and according to the specification in the section referred to in the column "mapping action".

Table 2.16. Generation of AFTN Service Message acknowledging a SS Message

AFTN Message Part	Component	Support	converted from AMHS parameter	Mapping action
Address	Priority Indicator	g	-	see 2.3.5.3.2.4
Origin	Filing Time	t	receipt-time (see Table 2.17/Part 1/7.1)	see 2.3.5.3.2.5
	Optional Heading Information	x	-	-
Text		t	subject-IPM (see Table 2.17/Part 1/1) recipient-name (see Table 2.19/Part 1/1.2.1)	see 2.3.5.3.2.6

Legend: g = generated
      t = translated
      x = excluded (not used)

2.3.5.3.2.4. 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.

2.3.5.3.2.5. In an AFTN acknowledgement message, generated as the result of the conversion of an AMHS RN message, the *Filing Time* component, shall be a date-time group as specified in Annex 10, Vol. II, 4.4.16.2.2.1, and it shall take the value of the six characters between the fifth and tenth position from the *receipt-time* element of the RN.

Note.- As specified in Annex 10, Vol. II, 3.4.2, the resulting element includes a date-time-group comprising the date of the month and the hours and minutes in UTC.

2.3.5.3.2.6. 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, Vol. II, 4.4.16.6 using the *Origin* of the subject AFTN message.

2.3.5.3.3.   Use of RN fields

2.3.5.3.3.1. Each of the elements composing the RN to be converted into an AFTN acknowledgement message in an AFTN/AMHS Gateway shall be processed according to the classification defined in 2.3.2.3.8 and as specified in the column "support" of Table 2.17.

2.3.5.3.3.2. The elements composing the RN shall be handled according to the specification in the section referred to in the column "mapping action" of Table 2.17.

Note 1.- Table 2.17 is structured as a PRL derived from the profile specification included in 2.2 and consequently from the ISPICS Proforma included in ISO/IEC ISP 12062-2 (AMH21). The columns "Base" and "Profile" under "Reception" are extracted from this specification and specify the static capability of an IPM AU supporting the Basic ATS Message 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 2.17. Use of RN fields

PART 1: AMH21/A.1.4	IPN FIELDS				
Ref	**Element**	**Reception**		**Support**	**Mapping Action / Notes**
		Base	**Profile**		
1	subject-ipm	m	m	d	see 2.3.5.3.1.1
2	ipn-originator	m	m	d	-
3	ipm-preferred-recipient	m	m	d	-
4	conversion-eits	m	m	d	
5	notification-extensions	o	i	-	
6	non-receipt-fields	o	m	-	out of the scope of this section
7	receipt-fields	o	m	t	see below
7.1	receipt-time	m	m	t	see 2.3.5.3.2.5
7.2	acknowledgment-mode	m	m	d	-
7.3	suppl-receipt-info	o	o	d	-
7.4	rn-extensions	o	i	-	-
8	other-notification-type-fields	o	i	-	-

d =   discarded
t =   translated
- =   out of scope

2.3.5.3.4.   *Use of Message Transfer Envelope parameters conveyed with a RN*

2.3.5.3.4.1. The elements composing the Message Transfer Envelope conveyed with a RN to be converted into an AFTN acknowledgement message shall be used as specified in section 2.3.5.2.4, with the exception of those elements included in Table 2.18 which shall be used according the specification included in the clause referred to in the column "Mapping Action" of Table 2.18.

Note 1.- Table 2.18 is structured as an extraction of Table 2.15.

Table 2.18. Use of the MessageTransfer Envelope conveyed with a RN (differences from Table 2.15)

PART 1 : AMH11/A.1.4.2 MESSAGETRANSFER					
Ref	Element	Base	Profile	Support	Mapping Action / Notes
1	MessageTransferEnvelope	m	m	t	see below
1.1	(per message fields)				
1.1.3	original-encoded-information-types	m	m-	d	see 2.3.5.3.4.2
1.1.7	per-message-indicators	m	m	d	see Part 2/4
1.1.10	trace-information	m	m	d	see Part 2/6
1.2	per-recipient-fields	m	m	d	see below
1.2.1	recipient-name	m	m	d	see 2.3.5.3.4.3
2	content	m	m	t	see 2.3.5.3.3
PART 2 : AMH11/A.1.5 COMMON DATA TYPES					
Ref	Element	Base	Profile	Support	Mapping Action / Notes
4	PerMessageIndicators				
4.2	implicit-conversion-prohibited	m	m	d	see 2.3.5.3.4.2
6	TraceInformation				
6.1	TraceInformationElement	m	m	d	-
6.1.2	domain-supplied-information	m	m	d	-
6.1.2.4	(additional actions)			d	-
6.1.2.4.2	converted-encoded-information-types	o	m-	d	see 2.3.5.3.4.2

m- =   see ISO/IEC ISP 10611-3

c1 =   if rerouting is supported then m else m-

c2 =   if deferred delivery is supported then m else m-

d =   discarded

t =   translated

x =   excluded

2.3.5.3.4.2.   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 Service Message acknowledging a SS message.

2.3.5.3.4.3.   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.

Note.-   The Message Transfer and Control Unit uses the information contained in the subject AFTN message to construct an AFTN acknowledgement message.

2.3.5.4. 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 2.3.5.4.1;

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 2.3.5.4.2;

c) the specification of how the Report Transfer Envelope elements are handled, as included in section 2.3.5.4.3.

To simplify the vocabulary in section 2.3.5.4 and its subsections, the initial AMHS message which caused the generation in the AMHS of the Non-Delivery Report is called the AMHS subject message. The initial AFTN message from which the AMHS subject message was converted is called the AFTN subject message.

Note.- The use of the term subject message as defined above is consistent with the terminology of the base standards.

2.3.5.4.1. Initial processing of AMHS Non-Delivery Reports

2.3.5.4.1.1. 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 Message Transfer and Control Unit shall determine whether the AMHS subject message has been initially generated by the Message Transfer and Control Unit, using the *subject-identifier* element of the non-delivery report. If the AMHS subject message has not been initially generated by the Message Transfer and Control Unit, the report shall be discarded, an error situation shall be logged and reported to a control position and the procedure shall terminate. Otherwise the provisions of 2.3.5.4.1.2 shall apply.

2.3.5.4.1.2. If the AMHS subject message had been generated by the Message Transfer and Control Unit, the report shall be processed by the Message Transfer and Control Unit in either of the following manners, depending on the value of the *non-delivery-reason-code* and of the *non-delivery-diagnostic-code* elements:

a) if the *non-delivery-reason-code* has the abstract-value "unable-to-transfer" and if the *non-delivery-diagnostic-code* has the abstract-value "unrecognised-OR-name", then the Message Transfer and Control Unit shall convert the report into an AFTN service message as specified in 2.3.5.4.2; or

b) in any other case the report shall be simply discarded.

Note.- The reason for discarding all reports but those meeting the condition in item a) above, is that in general there is no equivalent AFTN service message into which the non-delivery report could be converted.

2.3.5.4.1.3. If the *originally-intended-recipient-name* element is present in a *per-recipient-fields* element and if it has a value which is different from that of the *actual-recipient-name* element, then this *per-recipient-fields* element of the report shall be discarded. If all *per-recipient-fields* elements of the report are discarded, then the whole report shall be discarded.

Note.- The reason for discarding such parts of the reports is that the unrecognized-OR-name is no more that of a recipient specified by the indirect user in the AFTN, but rather one resulting from redirection or DL-expansion which the message originator in the AFTN has no knowledge about.

2.3.5.4.2.   *Generation of AFTN service message*

2.3.5.4.2.1. Each AMHS Non-Delivery Report received by the Message Transfer and Control Unit and meeting the condition of item a) in 2.3.5.4.1.2 shall be converted into an AFTN service message to the originator of the AFTN subject message, indicating that an unknown addressee indicator was specified in the AFTN subject message and formatted as specified in Annex 10, Volume II, 4.4.11.13.3. The components of the AFTN service message shall be processed according to the classification defined in 2.3.2.3.8 and as specified in the column "support" of Table 2.19.

2.3.5.4.2.2. These components which are classified as "g" shall be generated in compliance with the provisions of Annex 10, Volume II or with the clause referred to in the column "mapping action".

2.3.5.4.2.3. These components which are classified as "t" shall be converted from the AMHS parameter specified in the column "converted from AMHS parameter" of Table 2.19 and according to the specification in the section referred to in the column "mapping action".

Table 2.19. Generation of AFTN Service Message indicating an unknown addressee indicator

AFTN Message Part	Component	Support	converted from AMHS parameter	Mapping action
Heading	Start-of-Heading Character	g	-	see Annex 10, Volume II, 4.4.16.1.1
	Transmission Identification	g	-	see Annex 10, Volume II, 4.4.16.1.1
Address	Alignment Function	g	-	see Annex 10, Volume II, 4.4.16.2.1
	Priority Indicator	g	-	see 2.3.5.4.2.4
	Addressee Indicator(s)	g	-	see 2.3.5.4.2.5
	Alignment Function	g	-	see Annex 10, Volume II, 4.4.16.2.1
Origin	Filing Time	g	-	see 2.3.5.4.2.6
	Originator Indicator	g	-	see 2.3.5.4.2.7
	Priority Alarm	g	-	see Annex 10, Volume II, 4.4.16.2.2
	Optional Heading Information	x	-	-
	Alignment Function	g	-	see Annex 10, Volume II, 4.4.16.2.2
	Start-of-Text Character	g	-	see Annex 10, Volume II, 4.4.16.2.2
Text		t	actual-recipient-name (see Table 2.20/Part 1/2.2.1)	see 2.3.5.4.2.8
Ending	Alignment Function	g	-	see Annex 10, Volume II, 4.4.16.3.12
	Page-feed sequence	g	-	see Annex 10, Volume II, 4.4.16.3.12
	End-of-Text Character	g	-	see Annex 10, Volume II, 4.4.16.3.12

Legend: g = generated
t = translated
x = excluded (not used)

2.3.5.4.2.4. In an AFTN service message indicating that an unknown addressee indicator has been specified in the AFTN subject message, the *Priority Indicator* component shall take the value of the priority indicator of the AFTN subject message.

2.3.5.4.2.5. In an AFTN service message indicating that an unknown addressee indicator has been specified in the AFTN subject message, the *Addressee Indicator(s)* component shall contain a single AF-Address which is the originator indicator of the AFTN subject message.

2.3.5.4.2.6. In an AFTN service message indicating that an unknown addressee indicator has been specified in the AFTN subject message, the filing time component, expressed as a date-time group in compliance with Annex 10, Vol. II, 4.4.16.2.2.1, shall take the value of the time at which the AFTN service message is generated by the Message Transfer and Control Unit.

2.3.5.4.2.7. In an AFTN service message indicating that an unknown addressee indicator has been specified in the AFTN subject message, the originator indicator shall be the AFTN Address of the AFTN Component of the AFTN/AMHS Gateway, as defined in 2.3.2.1.16.

2.3.5.4.2.8. In an AFTN service message indicating that an unknown addressee indicator has been specified in the AFTN subject message, the value of the *Message Text* component shall be generated as follows:

- a) the first line shall be composed as specified in Annex 10, Vol. II, 4.4.11.13.3, items 1) to 4), using the origin of the AFTN subject message;.

- b) the second line shall be composed as specified in Annex 10, Vol. II, 4.4.11.13.3, items 5) and 6), using the line-following-the-heading of the AFTN subject message;

- c) the third and following lines as appropriate shall be composed as specified in Annex 10, Vol. II, 4.4.11.13.3, items 7) to 9), using the AF-address(es) translated as specified in 2.3.5.4.2.9 from the *actual-recipient-name* elements of the *per-recipient-fields* of the Non-Delivery Report which were not discarded as the result of 2.3.5.4.1.3;

2.3.5.4.2.9. Each *actual-recipient-name* element used to generate an AFTN Service Message as specified in item c) of 2.3.5.4.2.8 above shall be translated into an AF-address as follows, after preliminary conversion of the value of all AMHS address attributes from lower case IA5IRV characters, if any, to upper case IA5IRV characters:

- a) if the *organization-name* attribute has the value "AFTN", then the AF-address shall take the value of the first element of the *organizational-unit-names* attribute, if this value is a syntactically valid AF-Address. In all other cases the procedure described in item b) shall apply;

- b) an AF-Address matching exactly the O/R address of the originator shall be looked for in the User address look-up table maintained in the Message Transfer and Control Unit. Upon determination of an adequate entry in the look-up table, the translated AF-address shall take the value of the AF-Address corresponding to that entry. If no adequate entry can be found in the look-up table, then the O/R address shall be discarded and an error shall be reported to a control position.

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2.3.5.4.3.   *Use of Report Transfer Envelope and Content parameters*

2.3.5.4.3.1. 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 according to the classification defined in 2.3.2.3.8 and as specified in the column "support" of Table 2.20.

2.3.5.4.3.2. These elements shall be handled according to the specification in the section referred to in the column "mapping action" of Table 2.20.

Note 1.- Table 2.20 is structured as a PRL derived from the ISPICS Proforma included in ISO/IEC ISP 10611-3. The columns "Base" and "Profile" are extracted from this specification and specify 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.

Note 2.- Although not used for mapping, some elements may generate specific actions for the gateway in the handling of the considered report.

Note 3.- The Message Transfer and Control Unit actions related to logging are not included in Table 2.15, they are specified in 2.3.3.1

Table 2.20. Use of Report Transfer Envelope and Content parameters

A.1.4.3 ReportTransfer					
Ref	**Element**	**Base**	**Profile**	**Support**	**Mapping Action / Notes**
1	ReportTransferEnvelope	m	m	d	-
2	ReportTransferContent	m	m	t	see below
2.1	(per report fields)				
2.1.1	subject-identifier	m	m	d	see 2.3.5.4.2.4
2.1.2	subject-intermediate-trace-information	o	m	d	-
2.1.3	original-encoded-information-types	m	m	d	-
2.1.4	content-type	m	m	d	-
2.1.5	content-identifier	m	m	d	-
2.1.6	returned-content	o	m-	d	-
2.1.7	additional-information	o	m-	d	-
2.1.8	extensions	m	m	d	-
2.2	per-recipient-fields	m	m		
2.2.1	actual-recipient-name	m	m	t	see 2.3.5.4.2.8
2.2.2	originally-specified-recipient-number	m	m	d	-
2.2.3	per-recipient-indicators	m	m	d	-
2.2.4	last-trace-information	m	m	d	-
2.2.5	originally-intended-recipient-name	m	m	x	see 2.3.5.4.1.3
2.2.6	supplementary-information	o	m-	d	-
2.2.7	extensions	m	m	d	-

d =   discarded

t =   translated

x =   excluded

2.3.5.5.   Action upon reception of AMHS Probe

2.3.5.5.1. Upon reception by the Message Transfer and Control Unit of an AMHS probe which content type is either "interpersonal-messaging-1984" or "interpersonal-messaging-1988", the following elements of the Probe Transfer Envelope shall be examined to determine if the Message Transfer and Control Unit is able to handle the current *encoded-information-types* of the probe:

  a)   the current encoded-information-types which is determined as the value of the latest *converted-encoded-information-types*, if existing, in the *trace-information element*, or as the value of *original-encoded-information-types* element if the previous does not exist;

  b)   *implicit-conversion-prohibited* in the *per-message-indicators*; and

  c)   *conversion-with-loss-prohibited* in the *extensions* of the per message fields.

The ability of the Message Transfer and Control Unit to handle the current *encoded-information-types* of the probe shall be determined as follows:

  a)   for each probe recipient, if the value of the current encoded-information-types is not built-in or extended "ia5-text", then the probe shall be rejected for that recipient, and a non-delivery report shall be generated as specified in section 2.3.5.6. The *non-delivery-reason-code* and *non-delivery-diagnostic-code* elements of the non-delivery report shall take the abstract-values "unable-to-transfer" and "encoded-information-types-unsupported", respectively;

  b)   if the value of the current encoded-information-types is built-in or extended "ia5-text", and the value of the element *implicit-conversion-prohibited* is "prohibited", then the probe shall be rejected for all the message recipients, and a non-delivery report shall be generated as specified in section 2.3.5.6. The *non-delivery-reason-code* and *non-delivery-diagnostic-code* elements of the non-delivery report shall take the abstract-values "conversion-not-performed" and "implicit-conversion-prohibited", respectively, and the *supplementary-information* element shall take the value "unable to convert to AFTN" in all the *per-recipient-fields* elements of the report.

  c)   if the value of the current encoded-information-types is built-in or extended "ia5-text" and none of the situations in items a) or b) occurs, then the probe shall be further processed for conveyance test as specified in 2.3.5.5.2.

2.3.5.5.2. A probe meeting the condition in item c) of 2.3.5.5.1 above shall then be processed in either of the following manners, depending on the value of the element *content-length* in the Probe Transfer Envelope:

a) if, due to system resource limitation, the *content-length* exceeds the conversion capability of the Message Transfer and Control Unit, then the probe shall be rejected and a non-delivery report shall be generated as specified in section 2.3.5.6, for all the message recipients. The *non-delivery-reason-code* and *non-delivery-diagnostic-code* elements of the non-delivery report shall take the abstract-values "unable-to-transfer" and "content-too-long", respectively; or

b) otherwise the probe shall be further processed for conveyance test as specified in 2.3.5.5.3.

Note.- 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 ATS Messaging Organization operating the AFTN/AMHS Gateway.

2.3.5.5.3. A probe resulting from the situation in item b) of 2.3.5.5.2 above shall then be processed in either of the following manners, depending on the number of probe recipients for which the Message Transfer and Control Unit should test conveyance:

a) if this number exceeds 21 probe recipients, then the gateway shall attempt to split the probe, internally to the Message Transfer and Control Unit, into several probes, each of them with no more than 21 message recipients. For conveyance test purposes, each of the resulting probes shall be considered to have the same *per-probe-fields* in the Probe Transfer Envelope. Only the *per-recipient-fields* elements in the Probe Transfer Envelope shall vary between the different resulting probes. Each of these probes shall then be processed as specified in 2.3.5.5.4; or

b) if this number exceeds 21 probe recipients, and if, due to system resource limitation, the splitting attempt made by the gateway as specified in item a) above cannot be properly achieved, then the probe shall be rejected and a non-delivery report shall be generated as specified in section 2.3.5.6, for all the probe recipients. The *non-delivery-reason-code* and *non-delivery-diagnostic-code* elements of the non-delivery report shall take the abstract-values "unable-to-transfer" and "too-many-recipients", respectively; or

c) if this number does not exceed 21 probe recipients, then the message shall be processed as specified in 2.3.5.5.4.

2.3.5.5.4. A probe resulting from the situations in items a) or c) of 2.3.5.5.3 above shall then be processed as specified in 2.3.5.5.4.1 to 2.3.5.5.4.3, for the performance of the probe conveyance test, concerning the ability of the Message Transfer and Control Unit to convert the O/R addresses contained in the probe.

2.3.5.5.4.1. The ability to translate the *originator-name* element of the Probe Transfer Envelope into an AF-address shall be determined as follows, after preliminary conversion of the value of all AMHS address attributes from lower case IA5IRV characters, if any, to upper case IA5IRV characters:

a)   if the *organization-name* attribute has the value "AFTN", then the ability to translate the *originator-name* into an originator indicator shall be set to "true" if the value of the first element of the *organizational-unit-names* attribute is a syntactically valid AF-Address. In all other cases the procedure described in item b) shall apply;

b)   an AF-Address matching exactly the O/R address of the originator shall be looked for in the User address look-up table maintained in the Message Transfer and Control Unit. Upon determination of an adequate entry in the look-up table, then the ability to translate the O/R address into an originator indicator shall be set to "true". If no adequate entry can be found in the look-up table, then the probe shall be rejected and a non-delivery report shall be generated as specified in section 2.3.5.6, for all the probe recipients. The *non-delivery-reason-code* and *non-delivery-diagnostic-code* elements of the non-delivery report shall take the abstract-values "unable-to-transfer" and "invalid-arguments", respectively. The *supplementary-information* shall take the value "unable to convert to AFTN due to unrecognized originator O/R address" in all the *per-recipient-fields* elements of the report.

2.3.5.5.4.2.   The ability to translate each *recipient-name* element of the Probe Transfer Envelope into an AF-address shall be determined as follows, after preliminary conversion of the value of all AMHS address attributes from lower case IA5IRV characters, if any, to upper case IA5IRV characters:

a)   if the *organization-name* attribute has the value "AFTN", then the ability to translate this *recipient-name* into an addressee indicator shall be set to "true" if the value of the first element of the *organizational-unit-names* attribute is a syntactically valid AF-Address. In all other cases the procedure described in item b) shall apply;

b)   an AF-Address matching exactly the O/R address of the recipient shall be looked for in the User address look-up table maintained in the Message Transfer and Control Unit. Upon determination of an adequate entry in the look-up table, then the ability to translate the O/R address into an addressee indicator shall be set to "true". If no adequate entry can be found in the look-up table, then the probe shall be rejected for this probe recipient and a non-delivery report shall be generated as specified in section 2.3.5.6. The *non-delivery-reason-code* and *non-delivery-diagnostic-code* elements of the non-delivery report shall take the abstract-values "unable-to-transfer" and "unrecognised-OR-name", respectively.

2.3.5.5.4.3.   If the ability to translate the *originator-name* and the ability to translate all the *recipient-names* have the value "true" as the result of 2.3.5.5.4.1 and 2.3.5.5.4.2 above, then the probe conveyance test shall be considered successful and a delivery-report shall be generated as specified in 2.3.5.6, if requested.

2.3.5.6.   Generation of AMHS Reports

2.3.5.6.1.   *General*

The AMHS message which causes a report to be generated by the Message Transfer and Control Unit in an AFTN/AMHS Gateway is denominated "subject message", unless otherwise specified. A "message recipient" designates a recipient of the subject message, whose *responsibility* element in the *per-recipient-indicators* has the abstract-value "responsible" in the message received by the Message Transfer and Control Unit.

2.3.5.6.1.1. A non-delivery report shall be generated by the Message Transfer and Control Unit for each message or probe which was rejected as the result of the procedures described in sections 2.3.5.1.1, 2.3.5.2 and 2.3.5.5, either for all the message recipients or for certain message recipients.

*2.3.5.6.1.2. **Recommendation**.- When the generation of a non-delivery report is required in relation with the rejection of the subject message for more than one recipient of the subject 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.*

2.3.5.6.1.3. For each AMHS message which was converted by the Message Transfer and Control Unit as the result of the procedures defined in 2.3.5.2.2 to 2.3.5.2.4 and then succefully passed to the AFTN Component as specified in 2.3.5.1.6, a delivery report shall be generated by the Message Transfer and Control Unit for each message recipient of which either the *originating-MTA-report*, or the *originator-report,* or both bit components in the *per-recipient-indicators* element have the value "1".

*2.3.5.6.1.4. **Recommendation**.- When the generation of a delivery report is required as specified in 2.3.5.6.1.3 for more than one recipient of the subject 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.*

2.3.5.6.1.5. When the generation of a delivery report is required in relation with the result of a probe conveyance test as specified in 2.3.5.5, the clauses 2.3.5.6.1.3 to 2.3.5.6.1.4 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.

2.3.5.6.1.6. A report resulting from the clauses above shall be generated as specified in 2.3.5.6.2.

2.3.5.6.2.   Generation of Report Transfer Envelope and Content

2.3.5.6.2.1. Each report resulting from the specification of 2.3.5.6.1 shall be generated by the Message Transfer and Control Unit, in the form of an AMHS Report Transfer Envelope and Report Transfer Content, of which the components shall be processed according to the classification defined in 2.3.2.3.8 and as specified in the column "support" of Table 2.21.

2.3.5.6.2.2. These elements which are classified as "g" or "g2" shall be either generated or conditionally generated according to the specification in the section referred to in the column "generation action" of Table 2.21.

Note 1.- Table 2.21 is structured as a PRL derived from the ISPICS Proforma included in ISO/IEC ISP 10611-3. The columns "Base" and "Profile" are extracted from this specification and specify 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 2.21. Generation of AMHS Report Transfer

PART 1 : AMH11/A.1.4.3	REPORTTRANSFER				
Ref	Element	Base	Profile	Support	Generation action
1	ReportTransferEnvelope	m	m	g	see below
1.1	report-identifier	m	m	g	see 2.3.5.6.2.3 and Part 2/1
1.2	report-destination-name	m	m	g	see 2.3.5.6.2.6
1.3	trace-information	m	m	g	see 2.3.5.6.2.7
1.4	extensions	m	m		see 2.3.5.6.2.8
1.4.1	message-security-label	o	m-	x	-
1.4.2	originator-and-DL-expansion-history	m	m	g2	see 2.3.5.6.2.9
1.4.3	reporting-DL-name	o	m-	x	-
1.4.4	reporting-MTA-certificate	o	m-	x	-
1.4.5	report-origin-authentication-check	o	m-	x	-
1.4.6	internal-trace-information	m	m	g	see Part 2.3.5.6.2.10
2	ReportTransferContent	m	m	g	see below
2.1	(per report fields)				
2.1.1	subject-identifier	m	m	g	see 2.3.5.6.2.11
2.1.2	subject-intermediate-trace-information	o	m	g	see 2.3.5.6.2.12
2.1.3	original-encoded-information-types	m	m	g	see 2.3.5.6.2.13
2.1.4	content-type	m	m	g	see 2.3.5.6.2.14
2.1.5	content-identifier	m	m	g2	see 2.3.5.6.2.15
2.1.6	returned-content	o	m-	g2	see 2.3.5.6.2.16
2.1.7	additional-information	o	m-	x	-

2.1.8	extensions	m	m		see 2.3.5.6.2.8
2.1.8.1	content-correlator	m	m	g2	see 2.3.5.6.2.17
2.2	per-recipient-fields	m	m		see below
2.2.1	actual-recipient-name	m	m	g	see 2.3.5.6.2.18
2.2.2	originally-specified-recipient-number	m	m	g	see 2.3.5.6.2.19
2.2.3	per-recipient-indicators	m	m	g	see 2.3.5.6.2.20
2.2.4	last-trace-information	m	m	g	see Part 2/7
2.2.5	originally-intended-recipient-name	m	m	g2	see 2.3.5.6.2.26
2.2.6	supplementary-information	o	m-	g2	see 2.3.5.6.2.27
2.2.7	extensions	m	m		see 2.3.5.6.2.8
2.2.7.1	redirection-history	m	m	g2	see 2.3.5.6.2.28
2.2.7.2	physical-forwarding-address	o	m-	x	-
2.2.7.3	recipient-certificate	o	m-	x	-
2.2.7.4	proof-of-delivery	o	m-	x	-

PART 2 : AMH11/A.1.5   COMMON DATA TYPES

Ref	Element	Base	Profile	Support	Notes/References
1	MTSIdentifier				
1.1	global-domain-identifier	m	m	g	see 2.3.5.6.2.4 and Part 2/2
1.2	local-identifier	m	m	g	see 2.3.5.6.2.5
2	GlobalDomainIdentifier				
2.1	country-name	m	m		see 2.3.4.2.3.17
2.2	administration-domain-name	m	m		see 2.3.4.2.3.18
2.3	private-domain-identifier	m	m		see 2.3.4.2.3.19

7	LastTraceInformation				
7.1	arrival-time	m	m	g	see 2.3.5.6.2.21
7.2	converted-encoded-information-types	m	m	g2	see 2.3.5.6.2.22
7.3	report-type	m	m	g	see below
7.3.1	delivery	m	m	g2	see below
7.3.1.1	message-delivery-time	m	m	g	see 2.3.5.6.2.23
7.3.1.2	type-of-MTS-user	m	m	g	see 2.3.5.6.2.24
7.3.2	non-delivery	m	m	g2	see below
7.3.2.1	non-delivery-reason-code	m	m	g	see 2.3.5.6.2.25
7.3.2.2	non-delivery-diagnostic-code	m	m	g	see 2.3.5.6.2.25
PART 3 : AMH11/A.1.6	**EXTENSION DATA TYPES**				
1	ExtensionField				
1.1	type	m	m	g	see below
1.1.1	standard-extension	m	m	g	see 2.3.5.6.2.8
1.1.2	private-extension	o	m-	x	-
1.2	criticality	m	m	g	see 2.3.5.6.2.8
1.3	value	m	m	g	see 2.3.5.6.2.8

m- =   see ISO/IEC ISP 10611-3
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)

2.3.5.6.2.3. Upon generation of an AMHS report by the Message Transfer and Control Unit, the element *report-identifier* in the Report Transfer Envelope shall 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, section 12.2.1.3.1.1. It shall be composed as specified in Table 2.21/Part 2/1.

2.3.5.6.2.4. Upon generation of an AMHS report by the Message Transfer and Control Unit, the element *global-domain-identifier* in the *report-identifier*, or in the *trace-information*, or in the *internal-trace-information* shall identify the Management Domain built by the ATS Messaging Organization operating the AFTN/AMHS Gateway, and it shall be composed as specified in Table 2.21/Part 2/2.

2.3.5.6.2.5. Upon generation of an AMHS report by the Message Transfer and Control Unit, 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 Management Domain built by the ATS Messaging Organization operating the AFTN/AMHS Gateway.

2.3.5.6.2.6. Upon generation of an AMHS report by the Message Transfer and Control Unit, the *report-destination-name* element in the Report Transfer Envelope shall be either the last OR-name in the *DL-expansion-history* element, if present, of the subject message as defined in Table 2.15/Part 1/1.1.11.11, or in the *originator-name* of the subject message, as defined in Table 2.15/Part 1/1.1.2, if there is no *DL-expansion-history* element in the subject message.

2.3.5.6.2.7. Upon generation of an AMHS report by the Message Transfer and Control Unit, the first *trace-information-element* in the *trace-information* of the Report Transfer Envelope shall be generated as specified in Table 2.9/Part 2/6.

2.3.5.6.2.8. Upon generation of an AMHS report by the Message Transfer and Control Unit, only extensions of type "standard-extension" as defined in the base standards shall be used, as further specified in the classification of Table 2.21.

2.3.5.6.2.9. Upon generation of an AMHS report by the Message Transfer and Control Unit, the *originator-and-DL-expansion-history* element shall be generated if a *DL-expansion-history* element as defined in Table 2.15/Part 1/1.1.11.11 was present in the subject message. The *originator-and-DL-expansion-history* element shall then be the sequence of the *originator-name* of the subject message, as defined in Table 2.15/Part 1/1.1.2, and of the aforementioned *DL-expansion-history* element of the subject message.

2.3.5.6.2.10. Upon generation of an AMHS report by the Message Transfer and Control Unit, the first *internal-trace-information-element* in the *internal-trace-information* of the Report Transfer Envelope shall be generated as specified in Table 2.9/Part 3/5.

2.3.5.6.2.11. Upon generation of an AMHS report by the Message Transfer and Control Unit, the *subject-identifier* element in the Report Transfer Content shall take the value of the *message-identifier* element of the subject message as defined in Table 2.15/Part 1/1.1.1.

2.3.5.6.2.12. Upon generation of an AMHS report by the Message Transfer and Control Unit, the *subject-intermediate-trace-information* element in the Report Transfer Content shall take the value which the *trace-information* element of the subject message as defined in Table 2.15/Part 1/1.1.10 had when the subject message entered the Management Domain built by the ATS Messaging Organization operating the Message Transfer and Control Unit, if and only if the *originating-MTA-report* and *originating-MTA-non-delivery-report* bit components in the *per-recipient-indicators* of all the subject message recipients in the subject Message Transfer Envelope are set to "1".

2.3.5.6.2.13. Upon generation of an AMHS report by the Message Transfer and Control Unit, 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 message as defined in Table 2.15/Part 1/1.1.3.

2.3.5.6.2.14. Upon generation of an AMHS report by the Message Transfer and Control Unit, the *content-type* element in the Report Transfer Content shall take the value of the *content-type* element of the subject message as defined in Table 2.15/Part 1/1.1.4.

2.3.5.6.2.15. Upon generation of an AMHS report by the Message Transfer and Control Unit, the *content-identifier* element in the Report Transfer Content shall take the value of the *content-identifier* element of the subject message as defined in Table 2.15/Part 1/1.1.5, if present. Otherwise the element shall not be present in the report.

2.3.5.6.2.16. If the *content-return-request* bit components in the *per-message-indicators* of the subject message in the subject Message Transfer Envelope is set to "1", the *returned-content* element shall not be required to be present in a Report Transfer Content generated by the Message Transfer and Control Unit. If generated, this element shall take the value of the *content* of the subject message.

Note.- 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.

2.3.5.6.2.17. Upon generation of an AMHS report by the Message Transfer and Control Unit, the *content-correlator* element in the Report Transfer Content shall take the value of the *content-correlator* element of the subject message as defined in Table 2.15/Part 1/1.1.11.10, if present. Otherwise the element shall not be present in the report.

2.3.5.6.2.18. Upon generation of an AMHS report by the Message Transfer and Control Unit, 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 message as defined in Table 2.15/Part 1/1.2.1.

2.3.5.6.2.19. Upon generation of an AMHS report by the Message Transfer and Control Unit, 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 message as defined in Table 2.15/Part 1/1.2.2.

2.3.5.6.2.20.   Upon generation of an AMHS report by the Message Transfer and Control Unit, the *per-recipient-indicators* element in a *per-recipient-fields* element of the Report Transfer Content shall take the value of the corresponding *per-recipient-indicators* element in the *per-recipient-fields* of the subject message as defined in Table 2.15/Part 1/1.2.3.

2.3.5.6.2.21.   Upon generation of an AMHS report by the Message Transfer and Control Unit, 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 message entered the Management Domain built by the ATS Messaging Organization operating the AFTN/AMHS Gateway, as found in the last *trace-information-element* of the subject message, as defined in Table 2.15/Part 2/6.1.2.1.

2.3.5.6.2.22.   Upon generation of an AMHS report by the Message Transfer and Control Unit, the *converted-encoded-information-types* element in the *last-trace-information* of a *per-recipient-fields* element shall take the last value of the *converted-encoded-information-types* element in the *trace-information* of the subject message, if any, as defined in Table 2.15/Part 2/6.1.2.4.2. If no such element is present in the *trace-information* of the subject message, the element *converted-encoded-information-types* shall not be present in the report.

2.3.5.6.2.23.   Upon generation of an AMHS delivery-report by the Message Transfer and Control Unit, the *message-delivery-time* element in the *last-trace-information* of a *per-recipient-fields* element shall be the time at which the subject message has been successfully passed to the AFTN Component by the Message Transfer and Control Unit.

2.3.5.6.2.24.   Upon generation of an AMHS delivery-report by the Message Transfer and Control Unit, the *type-of-MTS-user* element in the *last-trace-information* of a *per-recipient-fields* element shall take the abstract-value "other".

2.3.5.6.2.25.   Upon generation of an AMHS non-delivery-report by the Message Transfer and Control Unit, 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 section of these SARPs which caused the generation of the non-delivery-report.

2.3.5.6.2.26.   Upon generation of an AMHS report by the Message Transfer and Control Unit, the *originally-intended-recipient-name* element in a *per-recipient-fields* element shall take the value of the first O/R name found in the *redirection-history* element of the subject message, if present, as defined in Table 2.15/Part 1/1.2.5.13. If there is no *redirection-history* element in the subject message, the *originally-intended-recipient-name* element shall not be present in the report.

2.3.5.6.2.27.   Upon generation of an AMHS report by the Message Transfer and Control Unit, the *supplementary-information* element in a *per-recipient-fields* element shall take either:

> 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 section of these SARPs which caused the generation of the report if it is a non-delivery-report.

2.3.5.6.2.28.   Upon generation of an AMHS report by the Message Transfer and Control Unit, the *redirection-history* element in a *per-recipient-fields* element shall take the value of the *redirection-history* element of the subject message, if present, as defined in Table 2.15/Part 1/1.2.5.13. If there is no *redirection-history* element in the subject message, the *redirection-history* element shall not be present in the report.

3.   ATN PASS-THROUGH SERVICE

3.1

The ATN Pass-Through Service shall provide a point-to-point logical connection over the ATN from an AFTN/ATN Type A Gateway to another AFTN/ATN Type A Gateway, to carry AFTN Messages in IA-5 format encapsulated by the ATS Message Type A Protocol Stack.

Note.- The ATN Pass-Through Service is not be visible to users at AFTN stations.

3.1.1   System level provisions

The gateway processing shall assume that all messages received from users, are constructed in strict accordance with ICAO Annex 10, Volume II paragraph 4.4.16.1 through 4.4.16.3.12. Except as required during normal operations, messages shall not otherwise be checked for proper format or for properly coded or missing fields.

3.1.2

AFTN/ATN Type A Gateways shall employ a combination of higher level protocols, mapping functions and basic communication services to ensure a standard of message delivery at least equivalent to that provided by the AFTN. In all cases the gateway shall make a best effort to effect proper delivery of all received messages.

Note 1.– A State may choose to connect an AFTN/ATN Type A Gateway to the AFTN only via its AFTN centre. In this case some requirements placed on the AFTN component may not have to be fulfilled provided that the AFTN centre and AFTN/ATN Type A Gateway together fulfill all requirements.

Note 2.– An AFTN/ATN Type A Gateway uses IA-5 characters internally. If it is connected to an AFTN centre which is capable of using only ITA-2 coding, a conversion to/from IA-5 is assumed in the AFTN component.

3.1.3

AFTN service messages shall not be generated by the gateway and propagated through the ATN., with the exception of Service messages having end-to-end significance as defined in ICAO Annex 10, Volume II, paragraph 4.4.11.1, 4.4.11.13.3 and 4.4.10.1.6.1.

3.2. AFTN/ATN TYPE A GATEWAY SPECIFICATION

An AFTN/ATN Type A Gateway shall consist of the following three logical components:

> a)   AFTN component;

> b)   ATN component; and

c)   Message transfer and control unit.

3.2.1   AFTN component

The AFTN component shall handle the interface to the AFTN and provide an interface to the message transfer and control unit. The AFTN component shall implement all the applicable requirements of ICAO Annex 10, Volume II in a manner so as to be indistinguishable from an operational AFTN station.

3.2.2.1 The AFTN component shall incorporate an AFTN procedure handler that shall provide for all AFTN functions prescribed for the interface to the AFTN.

3.3.2   ATN component

The ATN component shall allow the gateway to function as an end system on the ATN by implementing the ATS Message Type A Protocol stack. The application interface to this component shall be the non-Confirmed Dialogue Service.

3.3.2.1   ATS Message protocol stack Type A Specification

The type A protocol stack shall consist of :

a)   Association Control Service Element (ACSE); and

b)   Fast Byte procedures.

Note.- The SARPs for items a) and b) are found in Annex 10, Volume III, Sub-Volume 4.

3.3.3   Message Transfer and Control Unit

The Message Transfer and Control Unit (MTCU) is an application internal to the AFTN/ATN Type A Gateway which provides for the processing of messages, and message exchange between the AFTN component and the ATN component within the gateway. It shall consist of:

a)   a set of general functions; and

b)   mapping functions to interface with the AFTN and ATN components.

3.3.3.1 When a message is received from the AFTN, the heading line shall be stripped in accordance with ICAO Annex 10, Volume II, paragraph 4.4.20. When a message is transmitted to an adjacent AFTN centre or station, a properly constructed heading line as defined in ICAO Annex 10, Volume II, paragraph 4.4.16.1.1 shall be inserted.

3.3.3.2 The MTCU component shall provide the necessary short term message retention, as specified in 4.4.1.7.1, to fulfill the requirements of bi-directional message transfer.

3.3.3.3 The mapping of AFTN messages onto the ATS Message Type A Protocol Stack shall result in the complete AFTN message being exchanged as a User-data parameter across the interface with the Dialogue Service. Message buffer and control functions shall be provided to ensure the integrity and priority ordering of all messages exchanged over the AFTN and the ATN.

3.3.3.4 In case of multiple ATN destinations the MTCU shall perform address stripping and message replication if more than one exit gateway is identified.

3.3.3.5 Messages that can not be mapped to the appropriate exit gateway shall be cause the generation of a service message to the originator advising of an invalid addresses as in Annex 10, Vol. II, 4.4.11.3.

3.3.3.6 **Recommendation.-** *The MTCU should implement long term message retention in accordance with Annex 10, Volume II, paragraph 4.4.1.17 unless this function is provided by an associated AFTN centre.*

3.4   USE OF THE TYPE A PROTOCOL STACK

The MTCU shall pass to the Dialogue Service, in IA-5 character string sequence, the name for the remote Application Service Object (ASO) and its ICAO location code. The ASO name assigned for Type A gateways shall be GWA.

3.4.1   Recommendation.- *Local implementations may support alternate routing for messages where an alternate AFTN/ATN Type A Gateway can provide a path for the message to reach its ultimate destination.*

3.4.2   Priority handling

AFTN messages shall be selected from an output message queue for transmission over the ATN according to the table of priorities as defined in Annex 10, Vol. II, 4.4.1.2.1.

3.4.2.1 For the transmission of messages across the ATN, the AFTN transmission priorities shall map to ATN priorities in accordance with Table 3-1.

Table 3-1 AFTN/ATN Priority Mapping

AFTN TRANSMISSION PRIORITY	ULA QUALITY OF SERVICE PARAMETER
1	1
2	3
3	5

3.4.3   Message transfer

Receipt of Dialogue Service user data containing an AFTN message shall result in the complete AFTN message being passed to the message transfer and control unit.

3.4.3.1   Message encapsulation

A complete AFTN message shall be equivalent to the Dialogue Service User Data field.

3.4.4   Error handling

All error conditions shall be recorded in an electronic error log and optionally reported to a local system console.

3.4.5   System Administration

Each gateway implementation shall provide a method of local system administration for maintaining tables, system parameters and supervision of the system.