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AERONAUTICAL TELECOMMUNICATIONS NETWORK PANEL(ATNP)

WORKING GROUP 3 - APPLICATIONS AND UPPER LAYERS

SUBGROUP 1 - GROUND APPLICATIONS SUBGROUP

Draft SARPs for the ATN CNS/ATM-1 Package

Sub-Volume 3, Part 1

ATS Message Handling Services over the ATN

Version 1.0z (WG3 baseline version)

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Summary

This document is a version 1.0z (WG3 baseline version) of the Draft SARPs for ATS Message Handling Services over the ATN, resulting from the sixth WG3 meeting in Brussels, to become Part 1 of Sub-Volume 3 of the ATN CNS/ATM-1 Package Draft SARPs.

Document Control Log

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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
All	25/03/96	1.0a (1st amended proposal)	incorporation of the Brisbane WG3 meeting conclusions : important editorial changes, limited technical changes (3.1.2.2.1.2.1, 3.1.2.2.2.2.1, 3.1.2.2.2.2.4, and 3.1.2.3.5.3.2.1)
All	15/04/96	1.0b (2nd amended proposal)	incorporation of the Brussels SG1 meeting conclusions
All	23/04/96	1.0z (baseline version)	incorporation of the sixth WG3 meeting (Brussels) conclusions

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

Reference	Date	Title of reference

Table of Contents

3.1.1. APPLICATION OVERVIEW

3.1.1.1. INTRODUCTION

3.1.1.1.1. Purpose

3.1.1.1.1.1. This document contains draft Standards and Recommended Practices (SARPs) for the ATS Message Handling Services (MHS) applications over the ATN. The ATS Message Handling Services allow ATS Messages to be exchanged between service users, using the Aeronautical Telecommunication Network (ATN) as defined in Sub-Volume 5 of the CNS/ATM-1 Package SARPs to provide the media and lower layer protocols to conduct these exchanges.

3.1.1.1.1.2. Two ATS Message Handling Services are defined in this document. They are the ATS Message Service and the ATN Pass-Through Service.

Note.- These ATS Message Handling Services 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.

3.1.1.1.2. Background

3.1.1.1.2.1. ATS Message Service

3.1.1.1.2.1.1. 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. 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.

3.1.1.1.2.1.2. Two levels of service are intended to be defined within the ATS Message Service:
a) the Basic ATS Message Service.
b) the Extended ATS Message Service.

3.1.1.1.2.1.3. The CNS/ATM-1 Package ATS Message Service supports only the Basic ATS Message Service. The Extended ATS Message Service could be incorporated in future packages.

3.1.1.1.2.2. ATN Pass-Through Service

The ATN Pass-Through Service is the ATS Message Handling Service offered over the ATN by the use of the Dialogue Service and of the associated upper layer architecture as specified in Sub-Volume 4, to exchange AFTN Messages formatted in IA-5 in compliance with the provisions of Annex 10, Volume II.

3.1.1.1.2.3. End systems performing ATS Message Handling Services

3.1.1.1.2.3.1. The provisions for ATS Message Handling Services as specified in these SARPs apply to a set of ATN End Systems as specified in Sub-Volume 5 of the CNS/ATM-1 Package SARPs, Chapter 5.2. Four types of ATN End Systems are defined in this document:

a) an ATS Message Server,
b) an ATS Message User Agent,
c) an AFTN/AMHS Gateway, and
d) an AFTN/ATN Type A Gateway.

3.1.1.1.2.3.2. Connections may be established over the Internet Communications Service between any pair constituted of these ATN End Systems and listed in Table 3.1.1-1.

Table 3.1.1-1 Communications between ATN End Systems implementing ATS Message Handling Services

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

Note.- Although included in Table 3.1.1-1, the communication between an ATS Message Server and an ATS Message User Agent is not specified in this document.

3.1.1.1.3. Structure of Document

3.1.1.1.3.1. Chapter 3.1.1: OVERVIEW contains the document's purpose and structure, and a summary of the functionalities offered by the ATS Message Handling Services defined in these SARPs.

3.1.1.1.3.2. Chapter 3.1.2: ATS MESSAGE SERVICE contains three sections as follows:

a) Section 3.1.2.1: System Level Provisions, provides a high level specification of the application and of the environment in which it operates;

b) Section 3.1.2.2: ATS Message Service Specification, provides the detailed specification of the service and protocol requirements for each type of ATN End System (ATS Message User Agent and ATS Message Server) implementing the ATS Message Service;

c) Section 3.1.2.3: AFTN/AMHS Gateway Specification, provides the detailed specification of an AFTN/AMHS Gateway and of the related functional requirements such as conversion.

3.1.1.1.3.3. Chapter 3.1.3: ATN PASS-THROUGH SERVICE contains three sections as follows:

a) Section 3.1.3.1: System Level Provisions, provides a high level specification of the application and of the environment in which it operates;

b) Section 3.1.3.2: ATN Pass-Through Service Specification, provides the detailed specification of the protocol requirements between two AFTN/ATN Type A Gateways implementing the ATN Pass-Through Service;

c) Section 3.1.3.3: AFTN/ATN Type A Gateway Specification, provides the detailed specification of an AFTN/ATN Type A Gateway and of the related functional requirements.

3.1.1.1.4. Explanation of Terms

3.1.1.1.4.1. Acronyms

The following abbreviations are used in this document:

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
AMHxx	Application Message Handling xx (ISP Taxonomy)
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
DIR	Use of Directory
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
RED	Redirection
RN	Receipt Notification
RTSE	Reliable transfer service element
SEC	Security
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
XF-Address	Translated address

3.1.1.1.4.2. General Definitions

For the purpose of this document, the following definitions apply:

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

b) **AF-Address:** either an AFTN addressee indicator as specified in Annex 10, Volume II, 4.4.3.1.2 and 4.4.16.2.1.3 which is used to locate AMHS users, either direct or indirect, in the AFTN address space or a PDAI as specified in Annex 10, Volume II, 4.4.15.

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

c) **AFTN/AMHS Gateway:** an ATN End system which provides bi-directional interworking between users of the ATS Message Service and users connected to the AFTN.

d) **AFTN/ATN Type A Gateway:** an ATN End system which 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.

e) **AFTN/ATN Type B Gateway:** another designation of the AFTN/AMHS Gateway.

f) **AMHS Management Domain:** a MHS Management Domain formed by an ATS organisation for the management of that part of the AMHS which is under its responsibility.

g) **AMHS Message:** an instance of the category of information object defined as message in ISO 10021-2 and conveyed in the AMHS. It is composed of an envelope and of a content.

h) **AMHS Probe:** an instance of the category of information object defined as probe in ISO 10021-2 and conveyed in the AMHS. It is a class of message containing only an envelope which is conveyed by the MTAs from one user up to the MTA serving other users, used to determine the deliverability of messages.

i) **AMHS Report:** an instance of the category of information object defined as report in ISO 10021-2 and conveyed in the AMHS. It is 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.

j) **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 2.- An ATS Message may convey additional information associated with functions or procedures to be performed in relation with the message.

k) **ATS Message Handling Service:** a set of 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.

Note 3.- Correlation of units of data may optionally be performed by the service provider on the request of the service user.

l) **ATS Message Handling System (AMHS):** the set of computing and communication resources implemented by ATS organizations to provide the ATS Message Service.

m) **ATS Message Protocol Stack Type A:** the protocol implemented between two ATN End Systems which support the ATN Pass-Through Service.

n) **ATS Message Protocol Stack Type B:** the set of protocols implemented between ATN End Systems which support the ATS Message Service.

o) **ATS Message Server:** an ATN End system which provides the relay function included in the ATS Message Service. It may also optionally provide the storage function included in the ATS Message Service.

p) **ATS Message Service provider:** the combination formed by an ATS Message Server and an ATS Message User Agent.

q) **ATS Message User Agent:** an ATN End system which provides an interface to the ATS Message Service for an ATS Message Service user.

r) **content:** that part of an AMHS message which the MTAs neither examines nor modifies, except for conversion, during its conveyance of the message.

s) **direct user:** an ATS Message Service user who engages in the ATS Message Service at an ATS Message User Agent.

Note 4.- Direct users may belong to two subgroups as follows:

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

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

t) **envelope:** that part of an AMHS message which bears all the information necessary for the conveyance of the message by the ATS Message Servers towards its destination.

Note 5.- The information carried by the envelope varies along the conveyance of the message towards its destination.

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

v) **message recipient:** a recipient of an AMHS message, whose *responsibility* element in the *per-recipient-indicators* has the abstract-value "responsible" in the message received by an AFTN/AMHS Gateway.
w) **MF-Address:** an instance of the AMHS address form which is used to locate a direct or indirect AMHS user in the AMHS address space.
x) **subject AFTN message:** an AFTN message which causes an AFTN service message or an AMHS report to be generated.
y) **subject AMHS message:** an AMHS message which causes an AFTN service message or an AMHS report to be generated.
z) **subject IPM:** the IPM which is the content of an AMHS message and which causes an AMHS Receipt Notification to be generated.
aa) **unknown address AFTN service message:** an AFTN service message requesting correction by the originator of a message received with an unknown addressee indicator.

3.1.1.1.4.3. Conventions for Expressing Requirements

3.1.1.1.4.3.1. The following conventions apply for expressing requirements in this document:

a) **shall** used to state a mandatory requirement.
b) **should** used to state a recommended practice.

3.1.1.1.4.3.2. The classifications defined in the ISPs apply for expressing conformance requirements - i.e. static capability - in this document. These classifications include the following elements, of which the complete definition may be found in each referenced ISP:

a) **mandatory full support** (m).
b) **mandatory minimal support** (m-).
c) **mandatory O/R name minimal support** (m1) (see ISO/IEC ISP 12062-2).
d) **optional support** (o).
e) **conditional support** (c).
f) **out of scope** (i).
g) **not applicable** (-).

3.1.1.1.4.3.3. The following conventions apply, with the same definitions as in the ISPs, for expressing conformance requirements - i.e. static capability - for the ATN support of parameters or elements in the ATS Message Service and in the ATN Pass-Through Service:

a) **mandatory full support** (M).
b) **mandatory minimal support** (M-).
c) **mandatory O/R name minimal support** (M1).
d) **optional support** (O).
e) **conditional support** (C).
f) **out of scope** (I).
g) **not applicable** (-).

3.1.1.1.4.3.4. The following classification applies for expressing dynamic behaviour requirements - i.e. the action performed by the ATN end system - related to parameters or elements in the PRLs included in this document, for the specification of the AFTN/AMHS Gateway:

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

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

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

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

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

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

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

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

3.1.1.1.5. References

The following references are used within the document:

[1] ISO/IEC 646: 1991, Information Technology - ISO 7-bit coded character set for information interchange.

[2] ISO 3166: 1993, Codes for the representation of names and countries.

[3] ISO/IEC 8859-1:1987, Information processing - 8-bit single-byte coded graphic character sets - Part 1: Latin alphabet No. 1.

[4] ISO/IEC 10021-1: 1990, Information Technology – Text Communication – Message-Oriented Text Interchange System (MOTIS), Part 1: System and Service Overview, amended and corrected by:

a) ISO/IEC 10021-1/Cor.1:1991
b) ISO/IEC 10021-1/Cor.2:1991
c) ISO/IEC 10021-1/Cor.3:1992
d) ISO/IEC 10021-1/Cor.4:1992
e) ISO/IEC 10021-1/Cor.5:1992
f) ISO/IEC 10021-1/Cor.6:1994
g) ISO/IEC 10021-1/Am.2:1994

Note 1.- References [4] to [10], and [23] to [29], are implied by the ISPs, which themselves refer to the ISO/IEC 10021 (1990) and CCITT X.400 (1992) Standards and Recommendations, and include a reference to some of the technical corrigenda and amendments published by ISO between 1991 and 1994. The definitive list of applicable ISO/IEC Amendments and Corrigenda is defined in Annex C to each part of ISO/IEC ISP 10611 and ISO/IEC ISP 12062.

[5] ISO/IEC 10021-2: 1990, Information Technology – Text Communication – Message-Oriented Text Interchange System (MOTIS), Part 2: Overall Architecture, amended and corrected by:

a) ISO/IEC 10021-2/Cor.1:1991
b) ISO/IEC 10021-2/Cor.2:1991
c) ISO/IEC 10021-2/Cor.3:1992
d) ISO/IEC 10021-2/Cor.4:1992
e) ISO/IEC 10021-2/Cor.5:1993
f) ISO/IEC 10021-2/Cor.6:1994
g) ISO/IEC 10021-2/Cor.7:1994
h) ISO/IEC 10021-2/Am.1:1993
i) ISO/IEC 10021-2/Am.2:1994

[6] ISO/IEC 10021-3: 1990, Information Technology – Text Communication – Message-Oriented Text Interchange System (MOTIS), Part 3: Abstract Service Definition Conventions, amended and corrected by:

a) ISO/IEC 10021-3/Cor.1:1992

[7] ISO/IEC 10021-4: 1990, Information Technology – Text Communication – Message-Oriented Text Interchange System (MOTIS), Part 4: Message Transfer System: Abstract Service Definition and Procedures, amended and corrected by:

a) ISO/IEC 10021-4/Cor.1:1991
b) ISO/IEC 10021-4/Cor.2:1991
c) ISO/IEC 10021-4/Cor.3:1992
d) ISO/IEC 10021-4/Cor.4:1992
e) ISO/IEC 10021-4/Cor.5:1992
f) ISO/IEC 10021-4/Cor.6:1993
g) ISO/IEC 10021-4/Cor.7:1994

h) ISO/IEC 10021-4/Cor.8:1994
i) ISO/IEC 10021-4/Am.1:1994

[8] ISO/IEC 10021-5: 1990, Information Technology – Text Communication – Message-Oriented Text Interchange System (MOTIS), Part 5: Message Store: Abstract Service Definition, amended and corrected by:

a) ISO/IEC 10021-5/Cor.1:1991
b) ISO/IEC 10021-5/Cor.2:1991
c) ISO/IEC 10021-5/Cor.3:1992
d) ISO/IEC 10021-5/Cor.4:1992
e) ISO/IEC 10021-5/Cor.5:1992
f) ISO/IEC 10021-5/Cor.6:1993
g) ISO/IEC 10021-5/Cor.7:1994

[9] ISO/IEC 10021-6: 1990, Information Technology – Text Communication – Message-Oriented Text Interchange System (MOTIS), Part 6: Protocol Specifications, amended and corrected by:

a) ISO/IEC 10021-6/Cor.1:1991
b) ISO/IEC 10021-6/Cor.2:1991
c) ISO/IEC 10021-6/Cor.3:1992
d) ISO/IEC 10021-6/Cor.4:1992
e) ISO/IEC 10021-6/Cor.5:1992
f) ISO/IEC 10021-6/Cor.6:1993
g) ISO/IEC 10021-6/Cor.7:1994

[10] ISO/IEC 10021-7: 1990, Information Technology – Text Communication – Message-Oriented Text Interchange System (MOTIS), Part 7: Interpersonal Messaging System, amended and corrected by:

a) ISO/IEC 10021-7/Cor.1:1991
b) ISO/IEC 10021-7/Cor.2:1991
c) ISO/IEC 10021-7/Cor.3:1992
d) ISO/IEC 10021-7/Cor.4:1992
e) ISO/IEC 10021-7/Cor.5:1992
f) ISO/IEC 10021-7/Cor.6:1993
g) ISO/IEC 10021-7/Cor.7:1994
h) ISO/IEC 10021-7/Cor.8:1994

[11] ISO/IEC ISP 10611-1: 1994, Information Technology - International Standardized Profiles AMH1n - Message Handling Systems - Common Messaging, Part 1 : MHS Service Support.

[12] ISO/IEC ISP 10611-2: 1994, Information Technology - International Standardized Profiles AMH1n - Message Handling Systems - Common Messaging, Part 2 : Specification of ROSE, RTSE, ACSE, Presentation and Session Protocols for use by MHS.

[13] ISO/IEC ISP 10611-3: 1994, Information Technology - International Standardized Profiles AMH1n - Message Handling Systems - Common Messaging, Part 3 : AMH11 - Message Transfer (P1).

[14] ISO/IEC ISP 10611-4: 1994, Information Technology - International Standardized Profiles AMH1n - Message Handling Systems - Common Messaging, Part 4 : AMH12 - MTS Access (P3).

[15] ISO/IEC ISP 10611-5: 1994, Information Technology - International Standardized Profiles AMH1n - Message Handling Systems - Common Messaging, Part 5 : AMH13 - MS Access (P7).

[16] ISO/IEC ISP 11188-1: 1995, Information Technology - International Standardized Profile - Common upper layer requirements - Part 1: Basic connection oriented requirements.

[17] ISO/IEC ISP 12062-1: 1994, Information Technology - International Standardized Profiles AMH2n - Message Handling Systems - Interpersonal Messaging, Part 1 : IPM MHS Service Support.

[18] ISO/IEC ISP 12062-2: 1994, Information Technology - International Standardized Profiles AMH2n - Message Handling Systems - Interpersonal Messaging, Part 2 : AMH21 - IPM Content.

[19] ISO/IEC ISP 12062-3: 1994, Information Technology - International Standardized Profiles AMH2n - Message Handling Systems - Interpersonal Messaging, Part 3 : AMH22 - IPM Requirements for Message Transfer (P1).

[20] ISO/IEC ISP 12062-4: 1994, Information Technology - International Standardized Profiles AMH2n - Message Handling Systems - Interpersonal Messaging, Part 4 : AMH23 - IPM Requirements for MTS Access (P3).

[21] ISO/IEC ISP 12062-5: 1994, Information Technology - International Standardized Profiles AMH2n - Message Handling Systems - Interpersonal Messaging, Part 5 : AMH24 - IPM Requirements for Enhanced MS Access (P7).

[22] CCITT Recommendation X.121(1992), International numbering plan for public data networks.

[23] CCITT Recommendation X.400(1992), Message handling system and service overview.

[24] CCITT Recommendation X.402(1992), Message handling systems: Overall architecture.

[25] CCITT Recommendation X.408(1988), Message handling systems: Encoded information type conversion rules.

[26] CCITT Recommendation X.411(1992), Message handling systems: Message transfer system: Abstract service definition and procedures.

[27] CCITT Recommendation X.413(1992), Message handling systems: Message store: Abstract service definition.

[28] CCITT Recommendation X.419(1992), Message handling systems: Protocol specifications.

[29] CCITT Recommendation X.420(1992), Message handling systems: Interpersonal messaging system.

[30] ITU-T Recommendation X.666(1995), Procedures for registration of international and multinational organization names.

[31] ICAO Annex 10, Volume II; fifth Edition, July 1995.

Note 2.- The fifth Edition of Annex 10, Volume II includes the provisions of Amendment 70.

[32] ICAO Document 7910, Location Indicators.

[33] ICAO Document 8585, Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services.

3.1.1.2. APPLICATION FUNCTIONALITIES

3.1.1.2.1. The Basic ATS Message Service meets the basic requirements of the MHS Profiles published by ISO/IEC as International Standardized Profiles (ISPs), and it incorporates additional features to support the service offered by the AFTN. The Basic ATS Message Service is further specified in 3.1.2.2. This includes the specification of which ISPs apply in this context.

3.1.1.2.2. The ATN Pass-Through Service encapsulates and decapsulates AFTN messages at an AFTN/ATN type A Gateway, using the Dialogue Service and the associated upper layer protocol architecture. The ATN Pass-Through Service is further specified in 3.1.3.2.

3.1.1.3. APPLICABILITY

3.1.1.3.1. The implementation of the ATS Message Service is mandatory for conformance with these SARPs.

Note.- As a matter of organisations' policy, the implementation of the ATS message service may be deferred. In order to take early advantage of the enhanced connectivity provided by the ATN, Administrations and/or 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, provided that such an implementation has an external behaviour identical to that of an AFTN/AMHS Gateway and of an AFTN/ATN Type A Gateway, as appropriate.

3.1.1.3.2. The choice to implement the ATN Pass-Through Service does not exclude the requirement to implement the ATS Message Service at the earliest possible date.

3.1.1.3.3. The choice to implement the ATN Pass-Through Service implies the requirement to provide the interoperability facilities to the ATS Message Service implementations.

3.1.2. ATS MESSAGE SERVICE

3.1.2.1. SYSTEM LEVEL PROVISIONS

The ATS Message Service shall be implemented for conformance with these SARPs.

3.1.2.1.1. ATS Message Service Users

3.1.2.1.1.1. Direct users shall use the Basic ATS Message Service at an ATS Message User Agent.

3.1.2.1.1.2. 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 3.1.2.3.

3.1.2.1.2. AMHS Model

3.1.2.1.2.1. AMHS functional model

3.1.2.1.2.1.1. Model components

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

a) message transfer agent(s) (MTA),
b) user agent(s) (UA),
c) message store(s) (MS), and
d) access unit(s) (AU).

Note. The MHS Elements of Service and Protocols used by these functional objects are specified in 3.1.2.2 and 3.1.2.3.

3.1.2.1.2.1.2. ATS Message Server

An ATS Message Server shall include a MTA and optionally one or several MSs, as specified in 3.1.2.2.2.

3.1.2.1.2.1.3. ATS Message User Agent

An ATS Message User Agent shall include a UA as specified in 3.1.2.2.1.

3.1.2.1.2.1.4. AFTN/AMHS Gateway

An AFTN/AMHS Gateway shall include a MTA, which is part of the ATN Component of the AFTN/AMHS Gateway, and an AU, as specified in 3.1.2.3.

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

3.1.2.1.2.2. AMHS information model

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

a) messages;
b) probes; and
c) reports.

3.1.2.1.2.2.1. Messages

Note.- The provisions of these SARPs concerning MHS envelopes apply to Transfer Envelopes only .

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

3.1.2.1.2.2.2. Probes

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

3.1.2.1.2.2.3. Reports

AMHS reports shall be delivered only to direct ATS Message Service users.

3.1.2.1.2.3. Security model

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

Note.- 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.

3.1.2.1.2.4. 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.

3.1.2.1.3. Organization of the AMHS

The AMHS shall be organisationally composed of AMHS Management Domains.

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

3.1.2.1.4. AMHS Management Domain configurations

3.1.2.1.4.1. Minimal set of systems

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

a) an ATS Message Server and one or several ATS Message User Agents;
b) an AFTN/AMHS Gateway; or
c) any combination of a) and b).

3.1.2.1.4.2. Interconnection between two AMHS Management Domains

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

a) a connection between two ATS Message Servers;
b) a connection between an ATS Message Server and an AFTN/AMHS Gateway; or
c) a connection between two AFTN/AMHS Gateways.

3.1.2.1.5. Naming and addressing principles

3.1.2.1.5.1. AMHS Naming and Addressing

3.1.2.1.5.1.1. AMHS O/R Names

For the support of the Basic ATS Message Service, the O/R name of an AMHS user shall comprise:

a) the O/R address of the AMHS user, called an MF-address; and
b) optionally the directory name of the AMHS user, if the policy of the AMHS Management Domain, to which the AMHS user belongs, includes the local support of directory-names.

Note.- As a matter of policy local to an AMHS Management Domain, the directory name component of an O/R name may be used by the implementation of the Optional DIR FG.

3.1.2.1.5.1.2. Structure of a MF-Address

The MF-Address of an AMHS user shall comprise:

a) a set of attributes as specified in 3.1.2.1.5.1.3, identifying the AMHS Management Domain of which the AMHS user, either direct or indirect, is a service-user; and
b) a set of attributes as specified in 3.1.2.1.5.1.4, identifying uniquely the AMHS user within the AMHS Management Domain, in compliance with the AMHS addressing scheme implemented by the AMHS Management Domain.

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

3.1.2.1.5.1.3. AMHS Management Domain identifier

The attributes identifying an AMHS Management Domain shall include the following standard attributes as specified in ISO/IEC 10021-2, section 18.3, depending on the status under which the AMHS Management Domain has elected to operate:

a) *country-name*,
b) *administration-domain-name*,
c) *private-domain-name*, if the AMHS Management Domain has elected to operate as a PRMD.

3.1.2.1.5.1.4. AMHS Addressing Schemes

3.1.2.1.5.1.4.1. General provisions

Note 1.- It is a matter of policy local to each AMHS Management Domain to implement either a locally defined AMHS Addressing Scheme, or a Common AMHS Addressing Scheme, or a combination of these. The single Common ICAO AMHS Addressing Scheme defined in the CNS/ATM-1 Package is the XF-Addressing Scheme. Other Common Aeronautical Industry AMHS Addressing Schemes may be defined by appropriate Aeronautical Industry bodies, and maintained in the form of a documentation separate from ICAO SARPs.

Note 2.- Each AMHS Addressing Scheme includes the set of attributes identifying the AMHS Management Domain as specified in 3.1.2.1.5.1.3.

3.1.2.1.5.1.4.2. XF-Addressing Scheme

The XF-Address of a direct or indirect AMHS user shall be composed exclusively of the following:

a) an AMHS Management Domain identifier as specified in 3.1.2.1.5.1.3;
b) an *organization-name* attribute:
   1) as specified in ISO/IEC 10021-2, Section 18.5,
   2) taking the 4-character value "AFTN", and
   3) encoded as a Printable String; and
c) an *organizational-unit-names* attribute:
   1) as specified in ISO/IEC 10021-2, Section 18.5,
   2) comprising a sequence of one single element, which takes the 8-character alphabetical value of the AF-Address of the user, and
   3) encoded as a Printable String.

Note 1.- An XF-Address is a particular MF-Address of which the attributes identifying the user within an AMHS Management Domain (i.e. those attributes other than country-name, administration-domain-name and private-domain-name) may be converted by an algorithmic method to and from an AF-Address. The algorithmic method requires the additional use of look-up tables which are limited, i.e. which include only a list of AMHS Management Domains rather than a list of individual users, to determine the full MF-address of the user.

Note 2.- No distinction is made between upper case and lower case.

3.1.2.1.5.2. Upper Layer Naming and Addressing

3.1.2.1.5.2.1. Application Process Titles

3.1.2.1.5.2.1.1. **Recommendation.-** *The Application Process Title of an ATS Message Server should be as specified in Sub-Volume 4, clause 3.3.2.*

3.1.2.1.5.2.1.2. **Recommendation.-** *The Application Process Title of an AFTN/AMHS Gateway should be as specified in Sub-Volume 4, clause 3.3.2.*

3.1.2.1.5.2.1.3. **Recommendation.-** *The Application Process Title of an ATS Message User Agent should be as specified in Sub-Volume 4, clause 3.3.2.*

3.1.2.1.5.2.2. Application Entity Qualifiers

3.1.2.1.5.2.2.1. **Recommendation.-** *The Application Entity Qualifier of an ATS Message Server should be AMS (7).*

3.1.2.1.5.2.2.2. **Recommendation.-** *The Application Entity Qualifier of an AFTN/AMHS Gateway should be GWB (8).*

3.1.2.1.5.2.2.3. **Recommendation.-** *The Application Entity Qualifier of an ATS Message User Agent should be AUA (9).*

3.1.2.1.5.2.3. Transport Addresses

The TSAP of an ATS Message Server or of an ATS Message User Agent shall comply with the provisions of Sub-Volume 5, Chapter 5.4.

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

3.1.2.1.5.2.4. Session Addresses

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

Note 2.- The assignment and administration of session selectors is a matter local to an AMHS Management Domain.

3.1.2.1.5.2.5. Presentation Addresses

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

Note 2.- The assignment and administration of presentation selectors is a matter local to an AMHS Management Domain.

3.1.2.1.6. AMHS Routing and rerouting

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

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

3.1.2.1.7. AMHS Traffic logging upon origination

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

3.1.2.2. ATS MESSAGE SERVICE SPECIFICATION

3.1.2.2.1. ATS Message User Agent Specification

3.1.2.2.1.1. General

Note.- For the support of the Basic ATS Message Service, an ATS Message User Agent complies with :

a) profile AMH21 as specified in ISO/IEC ISP 12062-2;
b) 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;
c) the additional provisions relating to parameters generated at an ATS Message User Agent, as specified in 3.1.2.2.1.2; and
d) the provisions related to traffic logging as specified in 3.1.2.2.1.3.

3.1.2.2.1.2. Additional provisions on parameters

3.1.2.2.1.2.1. Message Content Profile Specification

In an ATS Message User Agent, the content of the Inter-Personal Messages conveyed in support of the Basic ATS Message 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 3.1.2-1 which are specific to the Basic ATS Message Service.

Note 1.- Table 3.1.2-1 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 AMHS Management Domain. 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 12062-4 or ISO/IEC ISP 12062-5, respectively, may be implemented.

Note 3.- The use of the ia5-text body part as specified in Table 3.1.2-1/AMH21/A1.3/1 ensures operability with both 1984 and 1988 IPM UAs for the exchange of unstructured character data.

Table 3.1.2-1 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 Message Service Support**	**CNS/ATM-1 Package SARPs reference**	**ISP 12062-2 Notes/References**
		Base	**ISP**	**Base**	**ISP**			
1	ia5-text	o	o	o	m	O/M		
1.2	data	m	m	m	m	M/M	3.1.2.2.3.2	
AMH21/A.1.3.1 Extended body part support								
Ref	**Extended Body Part Type**	**Origination**		**Reception**		**Basic ATS Message Service Support**	**CNS/ATM-1 Package SARPs reference**	**ISP 12062-2 Notes/References**
		Base	**ISP**	**Base**	**ISP**			
1	ia5-text-body-part	o	o	o	m	O/M		see AMH21/ A.1.3/1
11	general-text-body-part	o	m	o	m	M/M	3.1.2.2.3.2 and 3.1.2.2.1.1 c)	
AMH21/A.1.5 Common data types								
Ref	**Element**	**Origination**		**Reception**		**Basic ATS Message Service Support**	**CNS/ATM-1 Package SARPs reference**	**ISP 12062-2 Notes/References**
		Base	**ISP**	**Base**	**ISP**			
1	RecipientSpecifier							
1.2	notification-requests	o	o	m	m	M/M	3.1.2.2.3.3	
1.2.1	rn	o	o	o	o	M/M	3.1.2.2.3.3	
1.2.2	nrn	o	o	m	m	M/M		
2	ORDescriptor							

2.1	formal-name	m	m1	m	m1	M1/M1	3.1.2.2.3.1	

AMH21/A.1.3.2 General text repertoire support

Ref	Element	Repertoire identi-fier(s)	Origination		Reception		Basic ATS Message Service Support	Notes / Comments
			ISP (A)	ISP (B)	ISP (A)	ISP (B)		
1	Basic (ISO 646)	{1, 6}	m	m	m	m	M/M	Repertoire Group A
2	Basic-1 (ISO 8859-1)	{1, 6, 100}	o	m	o	m	O/O	Repertoire Group B

Legend : see 3.1.1.1.4.3
m = mandatory support
m1 = mandatory O/R name minimal support
o = optional support

3.1.2.2.1.2.2. 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 specified in 3.1.2.2.3.2.1 is "SS".

3.1.2.2.1.3. Traffic logging requirements at an ATS Message User Agent

Note.- The requirement expressed in 3.1.2.1.7 may be implemented in the ATS Message User Agent.

3.1.2.2.2. ATS Message Server Specification

3.1.2.2.2.1. General

Note.- For the support of the Basic ATS Message Service, an ATS Message Server complies with:

a) the profile specification expressed in 3.1.2.2.2.2; and
b) the provisions related to traffic logging as specified in 3.1.2.2.2.3.

3.1.2.2.2.2. Profile Specification

3.1.2.2.2.2.1. Requirements for Message Transfer (P1)

3.1.2.2.2.2.1.1. In an ATS Message Server, the P1 implementation of the IPM Service in support of the Basic ATS Message Service shall conform to:

a) the basic requirements of AMH22 as specified in Clause B.1 of ISO/IEC ISP 12062-2, Annex B; and
b) the additional requirements described in Clause B.2.2. for the support of the IPM Distribution List Functional Group.

Note 1.- 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, implying the mandatory support of the AMH111 Profile implementing the mts-transfer application context; and
b) the additional requirements specified for the Common Messaging DL Functional Group in annex A.2.2 of ISO/IEC ISP 10611-3.

Note 2.- As a consequence of Note 2 in 3.1.2.2.1.2.1, the optional implementation of Message Stores (MS) in an ATS Message Server, being related to the access protocol from an ATS Message User Agent to an ATS Message Server, is a matter local to each AMHS Management Domain.

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

3.1.2.2.2.2.2. Requirements for RTSE and ACSE

Note 1.- For an AMHS application, the application-context name which is used as a parameter in an A-ASSOCIATE is defined in the base standards (see ISO/IEC 10021-6).

Note 2.- The specification in 3.1.2.2.2.2.1 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.

3.1.2.2.2.2.3. Requirements for Presentation and Session Layers

Note.- The specification in 3.1.2.2.2.2.1 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.

3.1.2.2.2.2.4. Use of the Transport Service

3.1.2.2.2.2.4.1. The Basic ATS Message Service shall make use of the Connection Mode Transport Service as specified in Sub-Volume 5, Chapter 5.5.

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

3.1.2.2.2.2.4.2. 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 Residual Error Rate (RER) abstract-value "high".

3.1.2.2.2.2.4.3. 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 abstract-value "6", which corresponds to the message category "flight regularity messages".

3.1.2.2.2.2.4.4. 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 value of the ATN Security Label as specified in Sub-Volume 5, Chapter 5.6, which corresponds to:

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

c) "No Traffic Type Policy Preference".

3.1.2.2.2.3. Traffic logging requirements at an ATS Message Server

3.1.2.2.2.3.1. The long-term logging, for a period of at least thirty days, of events occurred at the ATS Message Server Transfer-Port and in the internal procedures of its MTA, shall include:

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.- 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 AMHS Management Domain operating the ATS Message Server.

3.1.2.2.2.3.2. For the long-term 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).

3.1.2.2.2.3.3. For the long-term 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".

3.1.2.2.2.3.4. For the long-term 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*.

3.1.2.2.2.3.5. For the long-term 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).

3.1.2.2.2.3.6. For the long-term 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.

3.1.2.2.2.3.7. For the long-term 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.*

3.1.2.2.3. Parameters

3.1.2.2.3.1. AMHS Addresses

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

3.1.2.2.3.2. Text

The body of an IP Message shall comprise a single body part carrying IA5 characters and structured as depicted in Table 3.1.2-2.

Note 1.- This body part structure and its components which are described in the subsequent clauses are specific to the Basic ATS Message Service.

Note 2.- This clause places no constraint on its implementation, which may take place at the level of the user-interface.

Table 3.1.2-2 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 3.1.2.2.3.2.1	see 3.1.2.2.3.2.1
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 3.1.2.2.3.2.2	see 3.1.2.2.3.2.2
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 3.1.2.2.3.2.3	see 3.1.2.2.3.2.3
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 3.1.2.2.3.2.4	see 3.1.2.2.3.2.4

Legend (see 3.1.1.1.4.3) :
M = mandatory support
O = optional support

3.1.2.2.3.2.1. ATS Message Priority

Each message shall be assigned to one of five priority groups which are designated, and have the value of, the priority indicators SS, DD, FF, GG and KK.

3.1.2.2.3.2.2. ATS Message Filing Time

Each message shall includea filing-time element, designated as a date-time group consisting of six numerical characters, the first two digits representing the date of the month and the last four digits the hours and minutes in UTC.

3.1.2.2.3.2.3. ATS Message Optional Heading Info

3.1.2.2.3.2.3.1. It shall be possible to associate an optional heading information with each message.

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

3.1.2.2.3.2.4. ATS Message Text

The ATS-Message-Text element shall be composed of IA5 characters with no further restriction.

3.1.2.2.3.3. Notification requests

The *notification-requests* element in a RecipientSpecifier in an IPM Heading shall take the abstract-value "rn" if, and only if, the value of the priority-indicator is "SS".

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

3.1.2.3. AFTN/AMHS GATEWAY SPECIFICATION

3.1.2.3.1. General

3.1.2.3.1.1. 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.

3.1.2.3.1.2. 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.– 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.

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

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

3.1.2.3.2. AFTN/AMHS Gateway components

3.1.2.3.2.1. AFTN component

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

a) all the applicable requirements of Annex 10, Volume II in a manner so as to be indistinguishable from an operational AFTN station by the AFTN centre to which the gateway is connected; and
b) additional requirements which are necessary due to the AFTN Component pertaining to an AFTN/AMHS Gateway.

3.1.2.3.2.1.2. If an AFTN/AMHS Gateway is connected to an AFTN centre which is capable of using only ITA-2 format, the AFTN component shall convert messages to/from the IA-5 format.

Note.- This allows the Message Transfer and Control Unit to use IA-5 characters internally, as specified in 3.1.2.3.2.3.2.

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

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

a) transfer to the Message Transfer and Control Unit to be processed as specified in 3.1.2.3.4 if the service message is an AFTN service message acknowledging the receipt of a SS message, as specified in Annex 10, Volume II, 4.4.10.1.6.1 and 4.4.16.6;
b) transfer to the Message Transfer and Control Unit to be processed as specified in 3.1.2.3.4 if the service message is an AFTN service message requesting correction of a message received with an unknown addressee indicator as specified in Annex 10, Volume II, 4.4.11.13.3;
c) processing as specified in 3.1.2.3.2.1.12 if the service message is an AFTN service message requesting from the originator repetition of an incorrectly received message when it is detected that a message has been mutilated, as specified in Annex 10, Volume II, 4.4.11.1 and 4.4.17.2.2; or
d) processing in compliance with the provisions of Annex 10, Volume II, without being passed to the Message Transfer and Control Unit, if the service message belongs to any other category of AFTN service message.

3.1.2.3.2.1.5. When received by an AFTN/AMHS Gateway, AFTN channel-check transmissions as specified in Annex 10, Volume II, 4.4.9.3 and 4.4.16.5 shall:

a) be handled by the AFTN Component in compliance with the provisions of Annex 10, Volume II; and
b) be prevented from being passed to the Message Transfer and Control Unit.

3.1.2.3.2.1.6. The AFTN Component shall pass all messages, other than those referred to in 3.1.2.3.2.1.4 c) and d), and in 3.1.2.3.2.1.5, received from the AFTN to the Message Transfer and Control Unit for processing as specified in 3.1.2.3.4, and provided that the conditions of 3.1.2.3.2.1.7 are met.

3.1.2.3.2.1.7. 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, paragraphs 4.4.16.1 through 4.4.16.3.12. and 4.4.16.6.

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

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

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

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

3.1.2.3.2.1.12. 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 AFTN Component shall perform one of the following actions:

a) terminate the procedure and report an error situation to a control position if the mutilated subject AFTN message did not pass through the gateway or if the AFTN Component is not in possession of an unmutilated copy of the subject AFTN message; or
b) reassume responsibility for the mutilated message and repeat the message in compliance with the provisions of Annex 10, Volume II, 4.4.11.3, if the mutilated message is detected as having passed through the gateway and if the AFTN Component is in possession of an unmutilated copy of the message.

Note.- 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.

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

3.1.2.3.2.1.14. The AFTN Component shall ensure that all information objects constructed by the Message Transfer and Control Unit for transmission over the AFTN are handled in accordance with the AFTN procedure, in application of 3.1.2.3.2.1.3 above.

3.1.2.3.2.1.15. 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, Volume II, as specified in 3.1.2.3.2.1.4 d) or 3.1.2.3.2.1.5, then the an error condition shall be logged and reported to a control position.

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

3.1.2.3.2.2. ATN Component

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

3.1.2.3.2.2.2. The ATN Component shall handle the interface to the AMHS, and provide an interface to the Message Transfer and Control Unit as specified in 3.1.2.3.2.4, implementing a MTA complying with the profile specification included in 3.1.2.2.2.2 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.

3.1.2.3.2.2.3. 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 behave as follows:

a) attempt to reroute the message or probe as specified in ISO/IEC 10021-4, 14.3.4.4;
b) if no alternate route is available in the MTA-routing tables or all such routes cannot be succesfully used, reject the message for all the message recipients, with the *non-delivery-reason-code* and *non-delivery-diagnostic-code* elements of the non-delivery report taking the abstract-values specified in the base standards (ISO/IEC 10021-4, 14.3.4.4., item 1)).

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

3.1.2.3.2.2.4. If the AMHS Management Domain operating an AFTN/AMHS Gateway desires to implement MHS optional functional groups in addition to the specification of 3.1.2.3.2.2.2 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 3.1.2.3.2.2.3 above for example.

3.1.2.3.2.2.5. The ATN Component shall ensure that all information objects constructed by the Message Transfer and Control Unit for transfer in the AMHS are handled in accordance with the procedures specified in the base standards for a relaying MTA implementing the profile specified in 3.1.2.2.2.2, in application of 3.1.2.3.2.2.2 above.

3.1.2.3.2.2.6. The ATN Component shall implement a traffic logging function identical to that of the MTA included in an ATS Message Server as specified in 3.1.2.2.2.3.

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

3.1.2.3.2.3. Message Transfer and Control Unit

3.1.2.3.2.3.1. 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, consisting of:

a) a set of general functions as specified in 3.1.2.3.3; and
b) AFTN/AMHS conversion functions as respectively specified in 3.1.2.3.4 for the AFTN to AMHS conversion and in 3.1.2.3.5 for the AMHS to AFTN conversion.

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

3.1.2.3.2.3.3. 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 3.1.2.3.4 and 3.1.2.3.5.6 to the ATN Component of the gateway, for further conveyance in the AMHS.

3.1.2.3.2.3.4. 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.

3.1.2.3.2.3.5. The Message Transfer and Control Unit in an AFTN/AMHS Gateway shall pass all the AFTN messages which it constructs in application of sections 3.1.2.3.5 and 3.1.2.3.4.2.1.4.2 to the AFTN Component of the AFTN/AMHS Gateway, for further conveyance in the AFTN.

3.1.2.3.2.3.6. 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 3.1.2-1, 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).

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

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

3.1.2.3.2.4.1. 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.

3.1.2.3.2.4.2. 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.

3.1.2.3.2.4.3. 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.

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

3.1.2.3.2.5.1. An AFTN message or service message passed by the AFTN Component to the Message Transfer and Control Unit in application of 3.1.2.3.2.1.4 items a) and b), 3.1.2.3.2.1.6 and 3.1.2.3.2.1.7 shall be:

a) transferred according to the table of priorities as specified in Annex 10, Volume II, 4.4.1.2.1; and
b) passed as received by the AFTN Component from the adjacent AFTN centre, with the possible exception of an ITA-2 to IA-5 conversion performed in application of 3.1.2.3.2.1.2, and including the unaltered AFTN heading if present in the received message.

3.1.2.3.2.5.2. An AFTN message or service message passed by the Message Transfer and Control Unit to the AFTN Component in application of 3.1.2.3.2.3.5 shall be:

a) transferred according to the table of priorities as specified in Annex 10, Volume II, 4.4.1.2.1; and
b) passed as constructed by the Message Transfer and Control Unit, and thus without message heading as specified in Annex 10, Volume II, 4.4.16.1.1.

3.1.2.3.2.5.3. The AFTN Component shall return to the Message Transfer and Control Unit, as the result of the transfer operation described in 3.1.2.3.2.5.2, the Transmission Identification, if any, constructed by the AFTN Component for the transmission of the message or service message over the AFTN.

3.1.2.3.2.6. AFTN/AMHS Gateway Control Position

3.1.2.3.2.6.1. 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.- Such errors are usually associated with a specification that an information object is to be automatically discarded.

3.1.2.3.2.6.2. The appropriate action to be undertaken on reporting of an error to an AFTN/AMHS Gateway control position shall be either:

a) a matter of policy which is either local to the AMHS Management Domain operating the AFTN/AMHS Gateway; or
b) subject to multilateral agreements.

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 AMHS Management Domain operating an AFTN/AMHS Gateway to try to reduce the occurrence of message rejection with the assistance of the control position.

3.1.2.3.3. General functions

3.1.2.3.3.1. Traffic logging

3.1.2.3.3.1.1. The Message Transfer and Control Unit shall perform long-term logging, as specified in 3.1.2.3.3.1.2 to 3.1.2.3.3.1.6, for a period of at least thirty days, of 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); and
i) AFTN service message indicating an unknown addressee indicator conveyance out (to the AFTN Component).

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

a) input *MTS-identifier*;
b) *IPM-identifier*, if any;
c) *common-fields* and either *receipt-fields* or *non-receipt-fields* or IPN, if any;
d) 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);
e) *arrival-time* and conveyance-time, if any;
f) origin of converted AFTN message or service message, if any; and
g) transmission identification of AFTN message(s) or service message(s), if returned by the AFTN Component.

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

a) origin 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.

3.1.2.3.3.1.4. For the long-term logging of information related to an AMHS Probe In, the following parameters, relating to the probe, shall be logged by the Message Transfer and Control Unit:

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*.

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

a) *report-identifier* (if report in);
b) *subject-identifier* (if report in);
c) action taken thereon if report in (discard, convert 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);
f) origin of subject AFTN message (if service message out and no report in); and
g) transmission identification of AFTN message or service message, if any.

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

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

3.1.2.3.3.2. Address look-up tables

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

a) a MD look-up table as specified in 3.1.2.3.3.2.1, for the algorithmic conversion of an AF-Address to an XF-Address; and
b) a user address look-up table of individual users as specified in 3.1.2.3.3.2.2, for the conversion of an AF-Address to and from an MF-Address of any AMHS Addressing Scheme.

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

3.1.2.3.3.2.1. MD look-up Tables

3.1.2.3.3.2.1.1. The MD look-up table maintained by in the Message Transfer and Control Unit shall include a list of entries identifying an organizational entity, which either is an AMHS Management Domain, or collectively uses the services of a given AMHS Management Domain, each entry comprising:

a) a string of characters identifying one of the following:
   1) a country (two-letter designator as specified in ICAO Document 7910);
   2) a location (four-letter designator as specified in ICAO Document 7910);
   3) 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

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

b) the set of attributes identifying either the AMHS Management Domain implemented by the organizational entity defined in a), if existing, or the AMHS Management Domain whose AFTN/AMHS Gateway may be used to communicate with indirect users within the aforementioned organisational entity, this set of attributes being composed of:
   1) country-name;
   2) ADMD-name; and
   3) PRMD-name (if any).

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

3.1.2.3.3.2.2. User address look-up Tables

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

a) the AF-Address of either an indirect user who also has a MF-Address, or of a direct user who has an AF-Address for communication with indirect users; and
b) the MF-Address of that user, either direct or indirect, including all its address attributes.

3.1.2.3.3.2.2.2. 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.

3.1.2.3.3.2.2.3. 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.

3.1.2.3.4. AFTN to AMHS Conversion

Note.- This section specifies the actions to be performed by an AFTN/AMHS Gateway upon reception of messages from the AFTN for conveyance in the AMHS, after the accomplishment of the AFTN-related procedures by the AFTN Component as specified in 3.1.2.3.2.1.

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3.1.2.3.4.1. Control function

3.1.2.3.4.1.1. Upon reception by the Message Transfer and Control Unit of a message passed from the AFTN Component, as the result of the provisions of 3.1.2.3.2.1.4 items a) and b), and of 3.1.2.3.2.1.6, the received message shall be processed in one of three mutually exclusive manners depending on the message category:

a) processing as specified in 3.1.2.3.4.3, if the received message is an AFTN service message acknowledging the receipt of a SS message as specified in Annex 10, Volume II, 4.4.16.6;
b) processing as specified in 3.1.2.3.4.4, if the received message is an AFTN service message requesting correction by the originator of a message received with an unknown addressee indicator as specified in Annex 10, Volume II, 4.4.11.13.3; or
c) processing as specified in 3.1.2.3.4.2, if the received message is other than those referred to in a) and b) above.

3.1.2.3.4.1.2. Upon completion of the processing specified in 3.1.2.3.4.1.1, the following transfers shall take place:

a) transfer of the resulting AMHS information objects, if any, to the ATN Component for conveyance in the AMHS; and
b) transfer of the resulting AFTN service messages, if any, to the AFTN Component for conveyance over the AFTN.

3.1.2.3.4.1.3. If, for any reason, the processing specified in clauses 3.1.2.3.4.1.1 and 3.1.2.3.4.1.2 cannot be properly achieved, the procedure shall unsuccessfully terminate, resulting in:

a) logging of the error situation and reporting to a control position; and
b) discarding of the AFTN message.

3.1.2.3.4.2. 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 3.1.2.3.4.2.1;
b) the specification of how the IPM is generated, as included in 3.1.2.3.4.2.2; and
c) the specification of how the Message Transfer Envelope elements are generated, as included in 3.1.2.3.4.2.3.

3.1.2.3.4.2.1. Use of AFTN Message components

3.1.2.3.4.2.1.1. Each component of an AFTN Message shall be processed as specified in the column "action" of Table 3.1.2-3.

3.1.2.3.4.2.1.2. These components which are classified as "T" or "T1" in the column "action" of Table 3.1.2-3 shall be translated into the AMHS parameter specified in the column "AMHS parameter" of Table 3.1.2-3 and according to the specification in the clausereferred to in the column "mapping".

Table 3.1.2-3 Use of AFTN Message Components

AFTN Message Part	Component	Action	AMHS parameter	Mapping
Heading	Start-of-Heading Character	-	-	–
	Transmission Identification	D	-	-
Address	Alignment Function	-	-	-
	Priority Indicator	T	ATS-Message-Priority (see Table 3.1.2-5/Part 5/1.2) priority (see Table 3.1.2-6/Part 1/1.1.6)	see 3.1.2.3.4.2.1.3
	Addressee Indicator(s)	T	primary-recipients (see Table 3.1.2-5/Part 2/4) recipient-name (see Table 3.1.2-6/Part 1/1.2.1)	see 3.1.2.3.4.2.1.4.2
	Alignment Function	-	-	–
Origin	Filing Time	T	ATS-Message-Filing-Time (see Table 3.1.2-5/Part 5/1.3)	see 3.1.2.3.4.2.1.5
	Originator Indicator	T	originator (see Table 3.1.2-5/Part 2/2) this-IPM (see Table 3.1.2-5/Part 2/1) originator-name (see Table 3.1.2-6/Part 1/1.1.2)	see 3.1.2.3.4.2.1.4.1
	Priority Alarm	D	-	-
	Optional Heading Information	T1	ATS-Message-Optional-Heading-Info (see Table 3.1.2-5/Part 5/1.4)	see 3.1.2.3.4.2.1.6
	Alignment Function	-	-	-
	Start-of-Text Character	-		-
Text		T	ATS-Message-Text (see Table 3.1.2-5/Part 5/2)	see 3.1.2.3.4.2.1.7
Ending	Alignment Function	-	-	-
	Page-feed sequence	-	-	-
	End-of-Text Character	-	-	-

Legend: (see 3.1.1.1.4.3.)
T1 = conditionally translated
D = discarded
T = translated
- = not applicable

3.1.2.3.4.2.1.3. The value of the priority indicator of an AFTN message shall be:

a) 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 3.1.2-4; and
b) 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 3.1.2-4.

Note.- The transport priority used for the conveyance of AMHS messages is specified in 3.1.2.2.2.2.4.

Table 3.1.2-4 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

3.1.2.3.4.2.1.4. The value of an AFTN address included in an AFTN message shall be converted into an MF-Address as respectively specified in 3.1.2.3.4.2.1.4.1 and 3.1.2.3.4.2.1.4.2 depending whether it is an originator indicator or an addressee indicator.

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

a) translation into the single MF-Address matching exactly the AF-Address of the originator, if such an MF-Address can be determined from the User address look-up table maintained in the Message Transfer and Control Unit; or
b) if a) cannot be achieved, translation into the XF-address constructed using the single Management Domain identified by the set of *country-name*, *administration-domain-name* and (if any) *private-domain-name* attributes, determined among the entries in the MD look-up table, if any, matching exactly the following character substrings of the AFTN address and selected among these entries, if several are found, on the basis of a decreasing order of precedence from 1) to 4):
    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; or
c) if no adequate entry can be found in the MD look-up table, or if the procedure defined in b) does not result in a single resulting MD, unsuccessful termination of the procedure resulting in:
    1) logging of the error situation and reporting to a control position, and
    2) discarding of the AFTN message.

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

3.1.2.3.4.2.1.4.2. Each addressee indicator of an AFTN Message shall be translated into the MF-Address included in a *recipient-name* of the converted AMHS message in the same way as an originator indicator, with the exception that the unsuccessful termination for one or several addressee indicators additionally results in the generation, in compliance with the provisions of Annex 10, Volume II, 4.4.11.13.3, of an AFTN service message requesting correction by the originator of a message received with an unknown addressee indicator, the unknown addressee indicator(s) included in item 8) of the text message taking the value of these addressee indicators for which the translation process failed.

3.1.2.3.4.2.1.5. 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.

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

a) convey the value of the Optional Heading Information of the AFTN message as the value of its optional-heading-information element, if the Optional Heading Information element is present in the AFTN message; or
b) be omitted in the converted AMHS message, if the Optional Heading Information element is not present in the AFTN message.

3.1.2.3.4.2.1.7. 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.

3.1.2.3.4.2.2. Generation of IPM

3.1.2.3.4.2.2.1. 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 as specified in the column "action" of Table 3.1.2-5.

3.1.2.3.4.2.2.2. These elements which are classified as "G" or "T" in the column "action" of Table 3.1.2-5 shall be either generated or translated according to the specification in the clause referred to in the column "mapping" of Table 3.1.2-5.

Note 1.- Table 3.1.2-5 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 3.1.2-2 in 3.1.2.2.3.2. The columns "Base" and "ISP" under "Origination" are extracted from ISO/IEC ISP 12062-2 and the column "Basic ATS Message Service" specifies 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 3.1.2-5 IPM Generation

PART 1 : AMH21/A.1.1 SUPPORTED INFORMATION OBJECTS						
Ref	**Element**	**Origination**			**Action**	**Mapping / Notes**
		Base	**ISP**	**Basic ATS Mess. Service**		
1	Interpersonal Message (IPM)	m	m	M	T	see Part 1/1.1 and 1.2
1.1	heading	m	m	M	T	see Part 2
1.2	body	m	m	M	T	see Part 3
2	Interpersonal Notification (IPN)	m	m	M	-	out of the scope of this section
PART 2 : AMH21/A.1.2 IPM HEADING FIELDS						
Ref	**Element**	**Origination**			**Action**	**Mapping / Notes**
		Base	**ISP**	**Basic ATS Mess. Service**		
1	this-IPM	m	m	M	T	see Part 4/3
2	originator	m	m	M	T	see 3.1.2.3.4.2.2.3 and Part 4/2
3	authorizing-users	o	o	O	X	-
4	primary-recipients	m	m	M	T	see 3.1.2.3.4.2.2.4 and Part 4/1
5	copy-recipients	m	m	M	X	-
6	blind-copy-recipients	o	o	O	X	-
7	replied-to-IPM	m	m	M	X	-
8	obsoleted-IPMs	o	o	O	X	-

9	related-IPMs	o	o	O	X	-
10	subject	m	m	M	X	-
11	expiry-time	o	o	O	X	-
12	reply-time	o	o	O	X	-
13	reply-recipients	o	o	O	X	-
14	importance	o	o	O	X	-
15	sensitivity	o	o	O	X	-
16	auto-forwarded	o	o	O	X	-
17	extensions	o	o	O	X	-
17.1	incomplete-copy	o	o	O	X	-
17.2	languages	o	o	O	X	-
17.3	auto-submitted	o	i	I	X	-

PART 3 : AMH21/A.1.3 IPM BODY

Ref	**Element**	**Origination**			**Action**	**Mapping / Notes**
		Base	**ISP**	**Basic ATS Mess. Service**		
1	ia5-text	o	o	M	T	see Part 3/1.1 and 1.2
1.1	parameters	m	m	M	G	see Part 3/1.1.1
1.1.1	repertoire	o	o	O	G	see 3.1.2.3.4.2.2.5
1.2	data	m	m	M	T	see Part 5
2	voice	i	i	I	X	-
3	g3-facsimile	o	o	O	X	-
4	g4-class-1	o	o	O	X	-
5	teletex	o	o	O	X	-

6	videotex	o	o	O	X	-
7	encrypted	i	i	I	X	-
8	message	o	o	O	X	-
9	mixed-mode	o	o	O	X	-
10	bilaterally-defined	o	o	O	X	-
11	nationally-defined	o	o	O	X	-
12	externally-defined	o	m	M	X	-

PART 4 : AMH21/A.1.5 COMMON DATA TYPES

Ref	**Element**	**Origination**			**Action**	**Mapping / Notes**
		Base	**ISP**	**Basic ATS Mess. Service**		
1	RecipientSpecifier					
1.1	recipient	m	m	M	T	see 3.1.2.3.4.2.2.6 and Part 4/2
1.2	notification-requests	o	o	M	T	see Part 4/1.2.1-1.2.3
1.2.1	rn	o	o	M	T	see 3.1.2.3.4.2.2.7
1.2.2	nrn	o	o	M	T	see 3.1.2.3.4.2.2.7
1.2.3	ipm-return	o	o	O	X	-
1.3	reply-requested	o	o	O	X	-
1.4	recipient-extensions	o	i	I	X	-
2	ORDescriptor					
2.1	formal-name	m	m1	M	T	see 3.1.2.3.4.2.2.8
2.2	free-form-name	o	o	O	X	-
2.3	telephone-number	o	o	O	X	-

3	IPMIdentifier					
3.1	user	m	m	M	T	see 3.1.2.3.4.2.2.9
3.2	user-relative-identifier	m	m	M	G	-

PART 5 : IPM SUPPORT OF THE BASIC ATS MESSAGE SERVICE

Ref	Element	Origination			Action	Mapping / Notes
		Base	ISP	Basic ATS Mess. Service		
1	ATS-Message-Header	-	-	M	T	see Part 5/1.1-1.6
1.1	start-of-heading	-	-	M	G	see 3.1.2.2.3.2
1.2	ATS-Message-Priority	-	-	M	T	see Part 5/1.2.1-1.2.3
1.2.1	priority-prompt	-	-	M	G	see 3.1.2.2.3.2
1.2.2	priority-indicator	-	-	M	T	see 3.1.2.3.4.2.1.3
1.2.3	priority-separator	-	-	M	G	see 3.1.2.2.3.2
1.3	ATS-Message-Filing-Time	-	-	M	T	see Part 5/1.3.1-1.3.3
1.3.1	filing-time-prompt	-	-	M	G	see 3.1.2.2.3.2
1.3.2	filing-time	-	-	M	T	see 3.1.2.3.4.2.1.5
1.3.3	filing-time-separator	-	-	M	G	see 3.1.2.2.3.2
1.4	ATS-Message-Optional-Heading-Info	-	-	O	T1	see Part 5/1.4.1-1.4.3
1.4.1	OHI-prompt	-	-	M	G	see 3.1.2.2.3.2
1.4.2	optional-heading-information	-	-	M	T	see 3.1.2.3.4.2.1.6
1.4.3	OHI-separator	-	-	M	G	see 3.1.2.2.3.2
1.5	end-of-heading-blank-line	-	-	M	G	see 3.1.2.2.3.2
1.6	start-of-text	-	-	M	G	see 3.1.2.2.3.2
2	ATS-Message-Text	-	-	M	T	see 3.1.2.3.4.2.1.7

Legend (see 3.1.1.1.4.3) :

m =	mandatory support
m1 =	minimal O/R name mandatory support
o =	optional support
i =	out of scope
- =	not applicable
G =	generated
T =	translated
X =	excluded (not used)

3.1.2.3.4.2.2.3. The *originator* heading field shall:

a) identify the indirect user who originated the AFTN message; and
b) be structured as specified in Table 3.1.2-5/ Part 4/2.

3.1.2.3.4.2.2.4. The *primary-recipients* heading field shall:

a) include the identification of the recipient(s) of the AFTN message; and
b) be structured as specified in Table 3.1.2-5/ Part 4/1.

3.1.2.3.4.2.2.5. The element *repertoire* shall take the abstract value "ia5".

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

a) identify the recipient(s) of the AFTN message; and
b) be structured as specified in Table 3.1.2-5/ Part 4/2.

3.1.2.3.4.2.2.7. The values "rn" and "nrn" shall be taken simultaneously by the element *notification-requests* if, and only if the element *priority-indicator* included in the message, as specified Table 3.1.2-5 / Part 5/1.2.2, has the value "SS".

3.1.2.3.4.2.2.8. The element *formal-name* shall:

a) take the form of an MF-Address; and
b) be converted as specified in 3.1.2.3.4.2.1.4.

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

a) be the MF-Address of the indirect user who originated the AFTN message; and
b) be converted as specified in 3.1.2.3.4.2.1.4.1.

3.1.2.3.4.2.3. Generation of Message Transfer Envelope

3.1.2.3.4.2.3.1. Each of the elements composing the Message Transfer Envelope conveyed with an IPM resulting from the conversion of an AFTN message shall be processed as specified in the column "action" of Table 3.1.2-6.

3.1.2.3.4.2.3.2. These elements which are classified as "G", "G1" and "T" in the column "action" of Table 3.1.2-6 shall be handled according to the specification in the clause referred to in the column "mapping" of Table 3.1.2-6.

Note 1.- Table 3.1.2-6 is structured as a PRL derived from the ISPICS Proforma included in ISO/IEC ISP 10611-3. The columns "Base" and "ISP" are extracted from ISO/IEC ISP 10611-3, and the column "Basic ATS Message Service" specifies the static capability of an AU, for the MT-Elements of Service, i.e. the ability to convey, handle and act in relation with the element. The references to the ISP Profile are indicated in the part titles as AMH11/ref where appropriate.

Table 3.1.2-6 MessageTransfer for conveyance of an IPM

PART 1 : AMH11/A.1.4.2 MESSAGETRANSFER						
Ref	**Element**	**Base**	**ISP**	**Basic ATS Mess. Service**	**Action**	**Mapping / Notes**
1	MessageTransferEnvelope	m	m	M	T	see Part 1/1.1 and 1.2
1.1	(per message fields)					
1.1.1	message-identifier	m	m	M	G	see Part 2/1
1.1.2	originator-name	m	m	M	T	see 3.1.2.3.4.2.3.3
1.1.3	original-encoded-information-types	m	m-	M-	G	see 3.1.2.3.4.2.3.4 and Part 2/3
1.1.4	content-type	m	m-	M-	G	see 3.1.2.3.4.2.3.5 and Part 2/8
1.1.5	content-identifier	m	m	M	G1	see 3.1.2.3.4.2.3.6
1.1.6	priority	m	m	M	T	see 3.1.2.3.4.2.1.3
1.1.7	per-message-indicators	m	m	M	G	see Part 2/4
1.1.8	deferred-delivery-time	o	m-	M-	X	-
1.1.9	per-domain-bilateral-information	o	m-	M-	G1	see 3.1.2.3.4.2.3.7 and Part 2/5
1.1.10	trace-information	m	m	M	G	see Part 2/6
1.1.11	extensions	m	m	M	G/X	see 3.1.2.3.4.2.3.8 and Part 3/1
1.1.11.1	recipient-reassignment-prohibited	o	m	M	G	see 3.1.2.3.4.2.3.9
1.1.11.2	dl-expansion-prohibited	o	m	M	G	see 3.1.2.3.4.2.3.10
1.1.11.3	conversion-with-loss-prohibited	o	m	M	G	see 3.1.2.3.4.2.3.11
1.1.11.4	latest-delivery-time	o	m-	M-	X	-

1.1.11.5	originator-return-address	o	m-	M-	X	-
1.1.11.6	originator-certificate	o	m-	M-	X	-
1.1.11.7	content-confidentiality-algorithm-identifier	o	m-	M-	X	-
1.1.11.8	message-origin-authentication-check	o	m-	M-	X	-
1.1.11.9	message-security-label	o	m-	M-	X	-
1.1.11.10	content-correlator	m	m	M	G1	see 3.1.2.3.4.2.3.6
1.1.11.11	dl-expansion-history	m	m-	M-	X	see Note 2
1.1.11.12	internal-trace-information	m	m	M	G	see Part 3/5
1.2	per-recipient-fields	m	m	M	T	see Part 1/1.2.1-1.2.5
1.2.1	recipient-name	m	m	M	T	see 3.1.2.3.4.2.3.12
1.2.2	originally-specified-recipient-number	m	m	M	G	see 3.1.2.3.4.2.3.13
1.2.3	per-recipient-indicators	m	m	M	G	see 3.1.2.3.4.2.3.14
1.2.4	explicit-conversion	o	m-	M-	X	-
1.2.5	extensions	m	m	M	X	-
2	content	m	m	M	T	see 3.1.2.3.4.2.2

PART 2 : AMH11/A.1.5 COMMON DATA TYPES

Ref	**Element**	**Base**	**ISP**	**Basic ATS Mess. Service**	**Action**	**Mapping / Notes**
1	MTSIdentifier					
1.1	global-domain-identifier	m	m	M	G	see 3.1.2.3.4.2.3.15 and Part 2/2
1.2	local-identifier	m	m	M	G	see 3.1.2.3.4.2.3.16
2	GlobalDomainIdentifier					

2.1	country-name	m	m	M	G	see 3.1.2.3.4.2.3.17
2.2	administration-domain-name	m	m	M	G	see 3.1.2.3.4.2.3.18
2.3	private-domain-identifier	m	m	M	G	see 3.1.2.3.4.2.3.19
3	EncodedInformationTypes					
3.1	built-in-encoded-information-types	m	m	M	G	see 3.1.2.3.4.2.3.4
3.2	(non-basic parameters)	o	m-	M-	X	-
3.3	extended-encoded-information-types	m	m	M	X	-
4	PerMessageIndicators					
4.1	disclosure-of-other-recipients	m	m	M	G	see 3.1.2.3.4.2.3.20
4.2	implicit-conversion-prohibited	m	m	M	G	see 3.1.2.3.4.2.3.21
4.3	alternate-recipient-allowed	m	m	M	G	see 3.1.2.3.4.2.3.22
4.4	content-return-request	o	m-	M-	X	-
4.5	reserved	o	m-	M-	X	-
4.6	bit-5	o	m-	M-	X	-
4.7	bit-6	o	m-	M-	X	-
4.8	service-message	o	m-	M-	X	-
5	PerDomainBilateralInformation					
5.1	country-name	m	m-	M-	G1	see 3.1.2.3.4.2.3.23
5.2	administration-domain-name	m	m-	M-	G1	see 3.1.2.3.4.2.3.23
5.3	private-domain-identifier	o	m-	M-	G1	see 3.1.2.3.4.2.3.23
5.4	bilateral-information	m	m-	M-	G1	see 3.1.2.3.4.2.3.24
6	TraceInformation					

6.1	TraceInformationElement	m	m	M	G	see Part 2/6.1.1 and 6.1.2
6.1.1	global-domain-identifier	m	m	M	G	see 3.1.2.3.4.2.3.25 and Part 2/2
6.1.2	domain-supplied-information	m	m	M	G	see Part 2/6.1.2.1-6.1.2.4
6.1.2.1	arrival-time	m	m	M	G	see 3.1.2.3.4.2.3.26
6.1.2.2	routing-action	m	m	M	G	see Part 2/6.1.2.2.1 and 6.1.2.2.2
6.1.2.2.1	relayed	m	m	M	G	see 3.1.2.3.4.2.3.27
6.1.2.2.2	rerouted	o	c1	C1	X	see Note 3
6.1.2.3	attempted-domain	o	c1	C1	X	see Note 3
6.1.2.4	(additional actions)					
6.1.2.4.1	deferred-time	m	c2	C2	X	-
6.1.2.4.2	converted-encoded-information-types	o	m-	M-	X	-
6.1.2.4.3	other-actions	o	m-	M-	X	-
6.1.2.4.3.1	redirected	o	m-	M-	X	see Note 4
6.1.2.4.3.2	dl-operation	o	m-	M-	X	see Note 2
8	ContentType					
8.1	built-in	m	m-	M-	G	see 3.1.2.3.4.2.3.5
8.2	extended	o	m-	M-	X	-

PART 3 : AMH11/A.1.6 EXTENSION DATA TYPES

Ref	**Element**	**Base**	**ISP**	**Basic ATS Mess. Service**	**Action**	**Mapping / Notes**
1	ExtensionField					
1.1	type	m	m	M	G	see Part 3/1.1.1 and 1.1.2

1.1.1	standard-extension	m	m	M	G	see 3.1.2.3.4.2.3.8
1.1.2	private-extension	o	m-	M-	X	-
1.2	criticality	m	m	M	G	see 3.1.2.3.4.2.3.8
1.3	value	m	m	M	G	see 3.1.2.3.4.2.3.8
5	InternalTraceInformation					
5.1	global-domain-identifier	m	m	M	G	see 3.1.2.3.4.2.3.25
5.2	mta-name	m	m	M	G	see 3.1.2.3.4.2.3.28
5.3	mta-supplied-information	m	m	M	G	see Part 3/5.3.1-5.3.4
5.3.1	arrival-time	m	m	M	G	see 3.1.2.3.4.2.3.26
5.3.2	routing-action	m	m	M	G	see Part 3/5.3.2.1-5.3.2.2
5.3.2.1	relayed	m	m	M	G	see 3.1.2.3.4.2.3.27
5.3.2.2	rerouted	o	c1	C1	X	see Note 3
5.3.3	attempted	o	c1	C1	X	see Note 3
5.3.4	(additional actions)					
5.3.4.1	deferred-time	m	c2	C2	X	-
5.3.4.2	converted-encoded-information-types	o	m-	M-	X	-
5.3.4.3	other-actions	o	m-	M-	X	-
5.3.4.3.1	redirected	o	m-	M-	X	see Note 4
5.3.4.3.2	dl-operation	o	m-	M-	X	see Note 2

Legend (see 3.1.1.1.4.3) :

m =	mandatory support
m- =	minimal mandatory support
o =	optional support
i =	out of scope
- =	not applicable
c1 =	if rerouting is supported then m else m-
c2 =	if deferred delivery is supported then m else m-
G =	generated
G1 =	optionally generated
T =	translated
X =	excluded

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.

3.1.2.3.4.2.3.3. The value of the element *originator-name* shall:

a) be the address of the indirect user who originated the AFTN message;
b) take the form of an MF-Address; and
c) be converted as specified in 3.1.2.3.4.2.1.4.1.

3.1.2.3.4.2.3.4. The element *original-encoded-information-types* shall:

a) take the abstract-value "ia5-text", which is a value of type BuiltInEncodedInformationTypes; and
b) be formed as specified in Table 3.1.2-6/ Part 2/ 3.

3.1.2.3.4.2.3.5. The element *content-type* shall:

a) take the abstract-value "interpersonal-messaging-1984", which is a value of type BuiltInContentType; and
b) be formed as specified in Table 3.1.2-6/ Part 2/ 8.

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

3.1.2.3.4.2.3.7. The element *per-domain-bilateral-information* shall be:

a) optionally generated, as a matter of policy local to the AMHS Management Domain operating the AFTN/AMHS Gateway; and
b) if present, structured as specified in Table 3.1.2-6/ Part 2/ 5.

3.1.2.3.4.2.3.8. The only extensions used shall:

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

b) contain the following elements:
   1) *recipient-reassignment-prohibited*;
   2) *dl-expansion-prohibited*; and
   3) *conversion-with-loss-prohibited* elements;
c) take a criticality value as specified in ISO/IEC 10021-4, Figure 2; and
d) take values as specified in 2.4.3.2.3.9 to 3.1.2.3.4.2.3.11, respectively.

3.1.2.3.4.2.3.9. The element *recipient-reassignment-prohibited* shall take its default abstract-value, which is "recipient-reassignment-allowed".

3.1.2.3.4.2.3.10. The element *dl-expansion-prohibited* shall take its default abstract-value, which is "DL-expansion-allowed".

3.1.2.3.4.2.3.11. The element *conversion-with-loss-prohibited* shall take its default abstract-value, which is "conversion-with-loss-allowed".

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

a) be the address of each addressee indicated in the AFTN message, respectively;
b) take the form of a MF-Address; and
c) be converted as specified in 3.1.2.3.4.2.1.4.2.

3.1.2.3.4.2.3.13. 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.

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

a) "responsible" for the *responsibility* element;
b) "non-delivery-report" for the *originating-MTA-report-request* element; and
c) "non-delivery-report" for the *originator-report-request* element.

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

a) identify the AMHS Management Domain operating the AFTN/AMHS Gateway; and
b) be composed as specified in Table 3.1.2-6 / Part 2/2.

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

3.1.2.3.4.2.3.17. The element *country-name* in the *global-domain-identifier* element of the *MTS-identifier* and of the first *trace-information-element* shall:

a) be part of the identification of the AMHS Management Domain operating the AFTN/AMHS Gateway by taking one of the following values:
   1) the two-character alphabetical country-indicator as specified in ISO 3166 for the country, or for one of the countries, where the AMHS Management Domain has been registered, if the AMHS Management Domain has been subject to national or multi-national registration; or

2) a two-character alphabetical indicator dedicated to an international organization, if the AMHS Management Domain has been subject to international registration as specified in CCITT Recommendation X.666; and

b) be encoded as a Printable String.

3.1.2.3.4.2.3.18. The element *administration-domain-name* in the *global-domain-identifier* element of the *MTS-identifier* and of the first *trace-information-element* shall:

a) be part of the identification of the AMHS Management Domain operating the AFTN/AMHS Gateway by taking one of the following values, depending on its status:
   1) the name of the ADMD under which the AMHS Management Domain has been registered, either nationally or internationally, if the AMHS Management Domain operates as an ADMD;
   2) the name of the ADMD to which the AMHS Management Domain is connected, if the AMHS Management Domain operates as a PRMD; or
   3) the value single-space if the AMHS Management Domain operates as a PRMD and is unique with regard to the *country-name* identifying the area where it is registered, either nationally or internationally; and

b) be encoded as a Printable String.

3.1.2.3.4.2.3.19. The element *private-domain-identifier* in the *global-domain-identifier* element of the *MTS-identifier* and of the first *trace-information-element* shall be handled in one of the following manners, depending on the status under which the AMHS Management Domain operates:

a) generation of the element, with the value of the name of the PRMD, encoded as a Printable String, if the AMHS Management Domain operates as an PRMD; or
b) omission in the *global-domain-identifier* if the AMHS Management Domain operates as an ADMD.

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

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

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

3.1.2.3.4.2.3.23. The elements *country-name*, *administration-domain-name* and *private-domain-identifier* shall together identify the AMHS Management Domain for which the bilateral-information is intended if, and only if, the element *bilateral-information* as specified in 3.1.2.3.4.2.3.24 is present.

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

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

a) identify the AMHS Management Domain operating the AFTN/AMHS Gateway; and
b) be composed as specified in Table 3.1.2-6 / Part 2/2.

3.1.2.3.4.2.3.26. 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.

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

3.1.2.3.4.2.3.28. 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 AMHS Management Domain is a matter of policy internal to the AMHS Management Domain.

3.1.2.3.4.3. Conversion of AFTN Service Messages Acknowledging SS Messages

3.1.2.3.4.3.1. Initial processing of AFTN Service Message

3.1.2.3.4.3.1.1. 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 received message shall be processed in one of the following manners depending on whether or not the subject AFTN message previously passed through the Message Transfer and Control Unit:

a) processing as specified in 3.1.2.3.4.3.1.2, if the subject AFTN message, as identified in the text of acknowledgement message, previously passed through the Message Transfer and Control Unit; or
b) unsuccessful termination of the procedure, if the subject AFTN message did not previously pass through the Message Transfer and Control Unit, resulting in:
   1) logging of the error situation and reporting to a control position; and
   2) discarding of the acknowledgement message.

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

a) processing as follows, if the subject IPM was received from the AMHS without *receipt-notification-request*:
   1) conversion into an IPM conveyed with a Message Transfer Envelope as specified in 3.1.2.3.4.2; and
   2) logging of the error situation and reporting to a control position; or
b) processing as specified in 3.1.2.3.4.3.1.3, if the subject IPM was received from the AMHS with *receipt-notification-request.*

3.1.2.3.4.3.1.3. 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 3.1.2.3.4.3.1.4.

3.1.2.3.4.3.1.4. When the provisions of 3.1.2.3.4.3.1.3 apply, the generation of the RN and of the Message Transfer Envelope shall be performed in compliance with the following:

a) the specification of how the components of the AFTN Service Message are used, as included in 3.1.2.3.4.3.2;
b) the specification of how the RN is generated, as included in 3.1.2.3.4.3.3; and

c) the provisions of 3.1.2.3.4.2.3 concerning the generation of the Message Transfer Envelope, with the exception of the differences specified in 3.1.2.3.4.3.4.

3.1.2.3.4.3.2. Use of AFTN Service Message components

3.1.2.3.4.3.2.1. Each component of an AFTN Service Message acknowledging a SS message shall be processed for the generation of a RN as specified in the column "action" of Table 3.1.2-7.

3.1.2.3.4.3.2.2. These components which are classified as "T" or "T1" in the column "action" of Table 3.1.2-7 shall be translated into the AMHS parameter specified in the column "AMHS parameter" of Table 3.1.2-7 and according to the specification in the clause referred to in the column "mapping".

Table 3.1.2-7 Use of AFTN Service Message Components

AFTN Message Part	Component	Action	AMHS parameter	Mapping
Heading	Start-of-Heading Character	-	-	–
	Transmission Identification	D	-	-
Address	Alignment Function	-	-	-
	Priority Indicator	T	priority (see Table 3.1.2-6/Part 1/1.1.6)	see 3.1.2.3.4.2.1.3
	Addressee Indicator	T	recipient-name (see Table 3.1.2-6/Part 1/1.2.1)	see 3.1.2.3.4.2.1.4.2
	Alignment Function	-	-	–
Origin	Filing Time	T	receipt-time (see Table 3.1.2-8/Part 2/7.1)	see 3.1.2.3.4.3.2.4
	Originator Indicator	T	ipn-originator (see Table 3.1.2-8/Part 2/2) originator-name (see Table 3.1.2-6/Part 1/1.1.2)	see 3.1.2.3.4.3.2.3 see 3.1.2.3.4.2.1.4.1
	Priority Alarm	D	-	-
	Optional Heading Information	D	-	-
	Alignment Function	-	-	-
	Start-of-Text Character	-		-
Text		D	-	see 3.1.2.3.4.3.1.1
Ending	Alignment Function	-	-	-
	Page-feed sequence	-	-	-
	End-of-Text Character	-	-	-

Legend: (see 3.1.1.1.4.3.)
D = discarded
T = translated
- = not applicable

3.1.2.3.4.3.2.3. 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.

3.1.2.3.4.3.2.4. 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, as the result of the following:

a) generation by the Message Transfer and Control Unit of the YY figures identifying the year (characters 1 and 2 of the string) in the *receipt-time* element;
b) generation by the Message Transfer and Control Unit of the MM figures identifying the month (characters 3 and 4 of the string) in the *receipt-time* element;
c) mapping of the value of the first two figures of the date-time group into the value of the DD figures identifying the day (characters 5 and 6 of the string) in the *receipt-time* element;

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

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

3.1.2.3.4.3.3. Generation of RN

3.1.2.3.4.3.3.1. 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 as specified in the column "action" of Table 3.1.2-8.

3.1.2.3.4.3.3.2. These elements are classified as "G" or "T" in the column "action" of Table 3.1.2-8 shall be either generated or translated according to the specification in the clause referred to in the column "mapping" of Table 3.1.2-8.

Note.- Table 3.1.2-8 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). The columns "Base" and "ISP" under "Origination" are extracted from ISO/IEC ISP 12062-2, and the column "Basic ATS Message Service" specifies 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 3.1.2-8 RN Generation

PART 1 : AMH21/A.1.1 SUPPORTED INFORMATION OBJECTS						
Ref	**Element**	**Origination**			**Action**	**Mapping / Notes**
		Base	**ISP**	**Basic ATS Mess. Service**		
1	Interpersonal Message (IPM)	m	m	M	-	out of the scope of this section
2	Interpersonal Notification (IPN)	m	m	M		see Part 2
PART 2 : AMH21/A.1.4 IPN FIELDS						
Ref	**Element**	**Origination**			**Action**	**Mapping / Notes**
		Base	**ISP**	**Basic ATS Mess. Service**		
1	subject-ipm	m	m	M	G	see 3.1.2.3.4.3.3.3
2	ipn-originator	o	m	M	T	see 3.1.2.3.4.3.2.3 and Part 3/2
3	ipm-preferred-recipient	m	m	M	G2	see 3.1.2.3.4.3.3.4
4	conversion-eits	o	o	O	G2	see 3.1.2.3.4.3.3.5
5	notification-extensions	o	i	I	X	-
6	non-receipt-fields	m	m	M	X	-
7	receipt-fields	o	o	O	T	see Part 2/7.1-7.4
7.1	receipt-time	m	m	M	T	see 3.1.2.3.4.3.2.4
7.2	acknowledgment-mode	o	o	O	G	see 3.1.2.3.4.3.3.6
7.3	suppl-receipt-info	o	o	O	X	-
7.4	rn-extensions	o	i	I	X	-

8	other-notification-type-fields	o	i	I	X	-

PART 3 : AMH21/A.1.5 COMMON DATA TYPES						
Ref	**Element**	**Origination**			**Action**	**Mapping / Notes**
		Base	**ISP**	**Basic ATS Mess. Service**		
2	ORDescriptor					
2.1	formal-name	m	m1	M	T	see 3.1.2.3.4.3.3.7
2.2	free-form-name	o	o	O	X	
2.3	telephone-number	o	o	O	X	

Legend (see 3.1.1.1.4.3) :

m = mandatory support
m1 = minimal O/R name mandatory support
o = optional support
i = out of scope
G = generated
G2 = conditionally generated
T = translated
X = excluded (not used)

3.1.2.3.4.3.3.3. The element *subject-ipm* shall take the value of the *this-IPM* heading field of the subject IPM.

3.1.2.3.4.3.3.4. The element *ipm-preferred-recipient* shall:

a) be present if, and only if:
   1) it would be different from the *ipn-originator* specified in 3.1.2.3.4.3.2.3; and
   2) it would not be the result of a DL-expansion;
b) if present, identify the recipient of the subject IPM which caused the receipt of the acknowledgement message by the Message Transfer and Control Unit (as a result of the receipt by its addressee of the subject AFTN message); and
c) if present, be the *O/R descriptor* of the recipient of the subject IPM.

3.1.2.3.4.3.3.5. The element *conversion-eits* shall:

a) be present if, and only if, this encoded-information-types is different of the *originally-encoded-information-types* included in the subject IPM; and
b) if present, take the value of the encoded-information-types of the subject IPM received by the Message Transfer and Control Unit.

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

3.1.2.3.4.3.3.7. The element *formal-name* in an *ORDescriptor* shall take the form of an O/R address and be converted from the originator indicator of the acknowledgement message as specified in 3.1.2.3.4.2.1.4.1.

3.1.2.3.4.3.4. Differences in the generation of Message Transfer Envelope

3.1.2.3.4.3.4.1. 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 3.1.2.3.4.2.3 shall be processed according to the specification in the clause referred to in the column "mapping" of Table 3.1.2-9.

3.1.2.3.4.3.4.2. An element subject to the provisions of 3.1.2.3.4.3.4.1 shall be processed as specified in the column "action" of Table 3.1.2-9, and in accordance with the specification referred to in the column "mapping" of Table 3.1.2-9.

Note.- Table 3.1.2-9 is structured as an extract of Table 3.1.2-6. The references used in the part titles and in the column "Ref" are those of Table 3.1.2-6.

Table 3.1.2-9 MessageTransfer Envelope generation for conveyance with a RN (Differences with Table 3.1.2-6)

PART 1 : AMH11/A.1.4.2 MESSAGETRANSFER						
Ref	**Element**	**Base**	**ISP**	**Basic ATS Mess. Service**	**Action**	**Mapping / Notes**
1	MessageTransferEnvelope	m	m	M	T	see Part 1/1.1 and 1.2
1.1	(per message fields)					
1.1.3	original-encoded-information-types	m	m-	M-	X	-
1.1.6	priority	m	m	M	T	see 3.1.2.3.4.3.4.3
1.1.7	per-message-indicators	m	m	M	G	see Part 2/4
1.2	per-recipient-fields	m	m	M	T	see Part 1/1.2.1 and 1.2.3
1.2.1	recipient-name	m	m	M	T	see 3.1.2.3.4.3.4.4
1.2.3	per-recipient-indicators	m	m	M	G	see 3.1.2.3.4.3.4.5
2	content	m	m	M	T	see 3.1.2.3.4.3.3
PART 2 : AMH11/A.1.5 COMMON DATA TYPES						
Ref	**Element**	**Base**	**ISP**	**Basic ATS Mess. Service**	**Action**	**Mapping / Notes**
4	PerMessageIndicators					
4.2	implicit-conversion-prohibited	m	m	M	G	see 3.1.2.3.4.3.4.6

Legend (see 3.1.1.1.4.3) :

m = mandatory support
m- = minimal mandatory support
G = generated
T = translated
X = excluded (not used)

3.1.2.3.4.3.4.3. The element *priority* shall take the same value as that of the subject IPM.

3.1.2.3.4.3.4.4. The element *recipient-name* shall:

a) identify the originator of the subject IPM; and
b) take the form of an MF-Address.

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

a) "responsible" for the *responsibility* element;
b) "non-delivery-report" for the *originating-MTA-report-request* element; and
c) "no-report" for the *originator-report-request* element.

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

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

3.1.2.3.4.4.1. Initial Processing of the AFTN Service Message

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

a) processing as specified in 3.1.2.3.4.4.1.2, if the subject AFTN message, as identified in the unknown address AFTN service message text, previously passed through the Message Transfer and Control Unit; or
b) unsuccessful termination of the procedure, if the subject AFTN message did not previously pass through the Message Transfer and Control Unit, resulting in:
    1) logging of the error situation and reporting to a control position; and
    2) discarding of the unknown address AFTN service message.

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

a) processing as specified in 3.1.2.3.4.4.1.3, if at least one valid addressee indicator which caused the generation of the unknown address AFTN service message can be found; or
b) unsuccessful termination of the procedure, if no such valid addressee indicator can be found, resulting in:
    1) logging of the error situation and reporting to a control position; and
    2) discarding of the unknown address AFTN service message.

3.1.2.3.4.4.1.3. For each valid addressee indicator determined as causing the generation of the unknown address AFTN service message, as the result of 3.1.2.3.4.4.1.2, the received message shall be processed in one of the following manners, depending on whether or not the conversion of this unknown addressee indicator into a recipient MF-Address in the same way as specified for an originator indicator in 3.1.2.3.4.2.1.4.1 can be succesfully performed by the Message Transfer and Control Unit:

a) processing as specified in 3.1.2.3.4.4.1.4, for each unknown addressee indicator which can be succesfully translated into an MF-Address; or
b) unsuccessful termination of the procedure, for each unknown addressee indicator which cannot be succesfully translated, resulting in:
   1) logging of the error situation and reporting to a control position; and
   2) discarding of the unknown address AFTN service message for the considered unknown addressee indicator(s).

3.1.2.3.4.4.1.4. For each unknown recipient MF-Address determined as the result of 3.1.2.3.4.4.1.3, the received message shall be processed in one of the following manners, depending on the abstract-values of the *originator-report-request* and of the *originating-MTA-report-request* elements in the *per-recipient-indicators* in the corresponding *per-recipient-fields* of the subject AMHS message:

a) processing as specified in 3.1.2.3.4.4.1.5, if, for a given recipient:
   1) the abstract-value of the *originator-report-request* differs from "report"; and
   2) the abstract-value of the *originating-MTA-report-request* differs from "report" and from "audited-report"; or
b) unsuccessful termination of the procedure for the given recipient in any other case, resulting in:
   1) logging of the error situation and reporting to a control position; and
   2) discarding of the unknown address AFTN service message for the considered unknown recipient MF-Address.

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 AMHS message.

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

a) processing as specified in 3.1.2.3.4.4.1.7, if, for a given recipient, no non-delivery report has been generated yet in relation with the same subject AMHS message and with the same message recipient; or
b) unsuccessful termination of the procedure for the given recipient if a non-delivery report has already been generated in relation with the same subject AMHS message and with the same message recipient, resulting in:
   1) logging of the error situation and reporting to a control position; and
   2) discarding of the unknown address AFTN service message for the considered unknown recipient MF-Address.

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 split in several AFTN messages when converted from the AMHS to the AFTN, as the result of 3.1.2.3.5.2.1.4.

3.1.2.3.4.4.1.6. A non-delivery report related to the unknown recipient MF-Addresses which have not been discarded as the result of 3.1.2.3.4.4.1.4 and 3.1.2.3.4.4.1.5 shall be generated in compliance with:

a) the specification of 3.1.2.3.5.6 using the elements of the subject AMHS message; and
b) the exception with respect to 3.1.2.3.5.6, that the *actual-recipient-name* element(s) in each *per-recipient-fields* element of the report take the value of the unknown recipient MF-Address(es) as determined in 3.1.2.3.4.4.1.5.

3.1.2.3.5. AMHS to AFTN Conversion

Note.- This section specifies the actions to be performed by an AFTN/AMHS Gateway upon reception of information objects from the AMHS for conveyance over the AFTN, after the accomplishment of the AMHS-related procedures by the ATN Component as specified in 3.1.2.3.2.2.

3.1.2.3.5.1. Control Function

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

a) processing as specified in 3.1.2.3.5.1.2 if the abstract-value of the element is either "interpersonal-messaging-1984", or "interpersonal-messaging-1988"; or
b) if the abstract-value of the element is neither "interpersonal-messaging-1984", nor "interpersonal-messaging-1988":
    1) rejection of the message for all the message recipients for which the *responsibility* element of the *per-recipient-indicators* had the abstract-value "responsible"; and
    2) generation of a non-delivery report as specified in 3.1.2.3.5.6 with the following elements taking the following abstract-values:
        i) "unable-to-transfer" for the non-delivery-reason-code; and
        ii) "content-type-not-supported" for the non-delivery-diagnostic-code.

Note 1.- The message recipients towards which the Message Transfer and Control Unit conveys the message are those identified by a recipient-name *element in the* per-recipient-fields *element of the Message Transfer Envelope, and for which the* responsibility *element in the* per-recipient-indicators *element has the abstract-value "responsible". In the whole section 3.1.2.3.5 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.

3.1.2.3.5.1.2. 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 one of three mutually exclusive manners, depending on the nature of the content:

a) processing for conversion into an AFTN message as specified in 3.1.2.3.5.2, if the content is an IPM;
b) processing for conversion into an AFTN service message as specified in 3.1.2.3.5.3, if the content is an IPN which is a Receipt Notification (RN); or
c) unsuccessful termination of the procedure, if the content is an IPN but not a RN, resulting in:
    1) logging of the error situation and reporting to a control position; and
    2) discarding of the message.

3.1.2.3.5.1.3. 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 3.1.2.3.5.4.

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

a) processing for conveyance test as specified in 3.1.2.3.5.5 if the abstract-value of the element is either "interpersonal-messaging-1984", or "interpersonal-messaging-1988"; or
b) if the abstract-value of the element is neither "interpersonal-messaging-1984", nor "interpersonal-messaging-1988":
    1) rejection of the probe for all the probe recipients for which the *responsibility* element of the *per-recipient-indicators* had the abstract-value "responsible"; and
    2) generation of a non-delivery report as specified in 3.1.2.3.5.6 with the following elements taking the following abstract-values:
        i) "unable-to-transfer" for the *non-delivery-reason-code*; and
        ii) "content-type-not-supported" for the *non-delivery-diagnostic-code*.

3.1.2.3.5.1.5. Upon reception by the Message Transfer and Control Unit of an MHS information object other than those referred to in clauses 3.1.2.3.5.1.1 to 3.1.2.3.5.1.4 above, the processing by the Message Transfer and Control Unit shall unsuccesfully terminate, resulting in:

a) logging of the error situation and reporting to a control position; and
b) discarding of the information object.

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

3.1.2.3.5.1.6. Upon completion by the Message Transfer and Control Unit of the processing specified in clauses 3.1.2.3.5.1.1 to 3.1.2.3.5.1.4 above, the resulting AFTN message(s) or AFTN service message(s), if any, shall be passed to the AFTN component, for conveyance over the AFTN.

3.1.2.3.5.1.7. If the generation of a report is required in relation with the result of the processing specified in clauses 3.1.2.3.5.1.1 or 3.1.2.3.5.1.4 above, either due to message rejection or probe test failure by the Message Transfer and Control Unit, or due to a delivery-report request in the subject AMHS message or probe, an appropriate AMHS report shall be generated as specified in 3.1.2.3.5.6.

3.1.2.3.5.2. 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 3.1.2.3.5.2.1;
b) the specification of how the AFTN message is generated and how the AFTN message components are mapped from AMHS parameters, as included in 3.1.2.3.5.2.2;
c) the specification of how the elements of the received IPM are handled, as included in 3.1.2.3.5.2.3; and
d) the specification of how the Message Transfer Envelope elements are handled, as included in 3.1.2.3.5.2.4.

3.1.2.3.5.2.1. Initial processing of AMHS Messages

3.1.2.3.5.2.1.1. Upon reception by the Message Transfer and Control Unit of an IPM conveyed with a Message Transfer Envelope, the received message shall be processed in one of the following manners:

a) processing as specified in 3.1.2.3.5.2.1.2 if the abstract-value of the *implicit-conversion-prohibited* in the *per-message-indicators* element in the Message Transfer Envelope differs from "prohibited"; or

b) if the abstract-value of the element is "prohibited":
   1) rejection of the message for all the message recipients; and
   2) generation of a non-delivery report as specified in 3.1.2.3.5.6 with the following elements taking the following abstract-values in all the *per-recipient-fields* of the report:
      i) "conversion-not-performed" for the *non-delivery-reason-code*;
      ii) "implicit-conversion-prohibited" for the *non-delivery-diagnostic-code*; and
      iii) "unable to convert to AFTN" for the *supplementary-information*.

3.1.2.3.5.2.1.2. A message which was not rejected as the result of 3.1.2.3.5.2.1.1 shall be processed in one of the following manners, depending on the abstract-value of the current encoded-information-types, determined as either the abstract-value of the latest *converted-encoded-information-types*, if existing, in the *trace-information* element, or as the abstract-value of the *original-encoded-information-types* element if the previous does not exist:

a) processing as specified in 3.1.2.3.5.2.1.3 if the abstract-value of the current encoded-information-types is "ia5-text" or extended "ia5-text"; or
b) if the abstract-value differs from built-in "ia5-text" and from extended "ia5-text":
   1) rejection of the message for all the message recipients; and
   2) generation of a non-delivery report as specified in 3.1.2.3.5.6 with the following elements taking the following abstract-values in all the *per-recipient-fields* of the report:
      i) "unable-to-transfer" for the *non-delivery-reason-code*; and
      ii) "encoded-information-types-unsupported" for the *non-delivery-diagnostic-code*.

3.1.2.3.5.2.1.3. A message which was not rejected as the result of 3.1.2.3.5.2.1.2 shall be processed in one of the following manners:

a) processing as specified in 3.1.2.3.5.2.1.4 if there is one single body part in the IPM body; or
b) if there are multiple body parts in the IPM body:
   1) rejection of the message for all the message recipients; and
   2) generation of a non-delivery report as specified in 3.1.2.3.5.6 with the following elements taking the following abstract-values in all the *per-recipient-fields* of the report:
      i) "unable-to-transfer" for the *non-delivery-reason-code*;
      ii) "content-syntax-error" for the *non-delivery-diagnostic-code*; and
      iii) "unable to convert to AFTN due to multiple body parts" for the *supplementary-information*.

3.1.2.3.5.2.1.4. A message which was not rejected as the result of 3.1.2.3.5.2.1.3 shall be processed in one of the following manners:

a) processing as specified in 3.1.2.3.5.2.1.5 if the body part type is one of the following:
   1) a basic body part type "ia5-text";
   2) a standard extended body part type "ia5-text-body-part";
   3) a standard extended body part type "general-text-body-part" of which the repertoire set description is Basic (ISO 646);
   4) a standard extended body part type "general-text-body-part" of which the repertoire set description is Basic-1 (ISO 8859-1), if and only if the local policy of the AMHS Management Domain is to support the conversion of this repertoire set into IA5IRV characters according to locally defined conversion rules;
   5) a basic body part type "message" with the body part types of the innermost IPM being one of the body part types 1) to 4) above; or
   6) a standard extended body part type "message-body-part" with the body part types of the innermost IPM being one of the body part types 1) to 4) above; or

b) if the body part type is different from the body part types 1) to 6) under a) above, or if the local policy of the AMHS Management Domain is not to support the conversion of the ISO 8859-1 repertoire set:
   1) rejection of the message for all the message recipients; and
   2) generation of a non-delivery report as specified in 3.1.2.3.5.6 with the following elements taking the following abstract-values in all the *per-recipient-fields* of the report:
      i) "unable-to-transfer" for the *non-delivery-reason-code*;
      ii) "content-syntax-error" for the *non-delivery-diagnostic-code*; and
      iii) "unable to convert to AFTN due to unsupported body part type" for the *supplementary-information.*

Note.- The locally defined conversion rules mentioned in bullet 4), item a) may be for example CCITT Recommendation X.408.

3.1.2.3.5.2.1.5. A message not rejected as the result of 3.1.2.3.5.2.1.4 shall then be processed in one of the following manners:

a) processing as specified in 3.1.2.3.5.2.1.6 if the text structure in the body part in the body part complies with the requirements of 3.1.2.2.3.2; or
b) if the text structure does not comply with the requirements of 3.1.2.2.3.2:
   1) rejection of the message for all the message recipients; and
   2) generation of a non-delivery report as specified in 3.1.2.3.5.6 with the following elements taking the following abstract-values in all the *per-recipient-fields* of the report:
      i) "unable-to-transfer" for the *non-delivery-reason-code*;
      ii) "content-syntax-error" for the *non-delivery-diagnostic-code*; and
      iii) "unable to convert to AFTN due to ATS-Message-Header syntax error" for the *supplementary-information*.

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.

3.1.2.3.5.2.1.6. A message which was not rejected as the result of 3.1.2.3.5.2.1.5 shall be processed in one of five mutually exclusive manners:

a) processing as specified in 3.1.2.3.5.2.1.7 if the abstract-value of the *conversion-with-loss-prohibited* element in the *extensions* of the per message fields is"allowed";
b) if the abstract-value of the element *conversion-with-loss-prohibited* is "prohibited" and at least one line in the message exceeds 69 characters:
   1) rejection of the message for all the message recipients; and
   2) generation of a non-delivery report as specified in 3.1.2.3.5.6 with the following elements taking the following abstract-values in all the *per-recipient-fields* of the report:
      i) "conversion-not-performed" for the *non-delivery-reason-code*; and
      ii) "line-too-long" for the *non-delivery-diagnostic-code*;
c) if the abstract-value of the element *conversion-with-loss-prohibited* is "prohibited" and at least one punctuation symbol in the text is not authorized in Annex 10, Volume II, 4.1.2:
   1) rejection of the message for all the message recipients; and
   2) generation of a non-delivery report as specified in 3.1.2.3.5.6 with the following elements taking the following abstract-values in all the *per-recipient-fields* of the report:
      i) "conversion-not-performed" for the *non-delivery-reason-code*; and
      ii) "punctuation-symbol-loss" for the *non-delivery-diagnostic-code*;

d) if the abstract-value of the element *conversion-with-loss-prohibited* is "prohibited" and at least one alphabetical character in the text is not authorized in Annex 10, Volume II, 4.1.2:
   1) rejection of the message for all the message recipients; and
   2) generation of a non-delivery report as specified in 3.1.2.3.5.6 with the following elements taking the following abstract-values in all the *per-recipient-fields* of the report:
      i) "conversion-not-performed" for the *non-delivery-reason-code*; and
      ii) "alphabetical-character-loss" for the *non-delivery-diagnostic-code*; or

e) if several of the conditions under b) to d) above are simultaneously met:
   1) rejection of the message for all the message recipients; and
   2) generation of a non-delivery report as specified in 3.1.2.3.5.6 with the following elements taking the following abstract-values in all the *per-recipient-fields* of the report:
      i) "conversion-not-performed" for the *non-delivery-reason-code*; and
      ii) "multiple-information-loss" for the *non-delivery-diagnostic-code*.

3.1.2.3.5.2.1.7. A message which was not rejected as the result of 3.1.2.3.5.2.1.6 shall be processed in one of three mutually exclusive manners:

a) if the length of the ATS-Message-Text element exceeds 1800 characters, and if, due to system resource limitation, the procedure proposed in Annex 10, Volume II, Attachment D cannot be properly achieved by the AFTN/AMHS Gateway:
   1) rejection of the message for all the message recipients; and
   2) generation of a non-delivery report as specified in 3.1.2.3.5.6 with the following elements taking the following abstract-values in all the *per-recipient-fields* of the report:
      i) "unable-to-transfer" for the *non-delivery-reason-code*;
      ii) "content-too-long" for the *non-delivery-diagnostic-code*; and
      iii) "unable to convert to AFTN due to message text length" for the *supplementary-information*.

b) if the length of the ATS-Message-Text element exceeds 1800 characters, and if the procedure proposed in Annex 10, Volume II, Attachment D is applied in the AFTN/AMHS Gateway:
   1) splitting of the message, internally to the Message Transfer and Control Unit, into several messages in accordance with the aforementioned Annex 10 procedure:
      i) each of the resulting messages having for conversion purposes the same Message Transfer Envelope, the same IPM Heading and the ATS-Message-Header as the message subject to the splitting; and
      ii) only the ATS-Message-Text element varying between the different resulting messages; and
   2) processing of each of these messages as specified in 3.1.2.3.5.2.1.5; or

c) processing as specified in 3.1.2.3.5.2.1.5 if the length of the ATS-Message-Text element does not exceed 1800 characters.

3.1.2.3.5.2.1.8. A message resulting from the situations in items b) and c) of 3.1.2.3.5.2.1.7 above shall be processed in one of three manners, depending on the number of message recipients towards which the Message Transfer and Control Unit is responsible for conveyance of the message, and on the AFTN/AMHS Gateway resources:

a) if this number exceeds 21 message recipients:
   1) 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:
      i) each of the resulting messages having for conversion purposes the same *per-message-fields* in the Message Transfer Envelope, and the same *content* as the message subject to the splitting; and

ii) only the *per-recipient-fields* elements in the Message Transfer Envelope varying between the different resulting messages; and

2) processing of each of these messages as specified in 3.1.2.3.5.2.2 to 3.1.2.3.5.2.4;

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:

1) rejection of the message for all the message recipients; and

2) generation of a non-delivery report as specified in 3.1.2.3.5.6 with the following elements taking the following abstract-values in all the *per-recipient-fields* of the report:

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

ii) "too-many-recipients" for the *non-delivery-diagnostic-code*; and

iii) "unable to convert to AFTN due to number of recipients" for the *supplementary-information*; or

c) processing as specified in 3.1.2.3.5.2.2 to 3.1.2.3.5.2.4, if this number does not exceed 21 message recipients.

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.- The combination of 3.1.2.3.5.2.1.7 and 3.1.2.3.5.2.1.8 above may result in a very high number of AFTN messages being generated from one single AMHS message. Items 3.1.2.3.5.2.1.7 a) and 3.1.2.3.5.2.1.8 b) may, as a local matter, be used under such circumstances.

3.1.2.3.5.2.2. Generation of AFTN Message

3.1.2.3.5.2.2.1. Each message resulting from the processing specified in 3.1.2.3.5.2.1 above shall be converted by the Message Transfer and Control Unit into an AFTN Message composed of elements as specified in Table 3.1.2-10.

3.1.2.3.5.2.2.2. Those components which are classified as "G" in the column "action" of Table 3.1.2-10 shall be generated in compliance with the provisions of Annex 10, Volume II referred to in the column "mapping".

3.1.2.3.5.2.2.3. Those components which are classified as "T" or "T1" in the column "action" of Table 3.1.2-10 shall be converted from the AMHS parameter specified in the column "converted from AMHS parameter" of Table 3.1.2-10 and according to the specification in the clause referred to in the column "mapping".

Table 3.1.2-10 AFTN Message Generation

AFTN Message Part	Component	Action	Converted from AMHS parameter	Mapping
Heading	Start-of-Heading Character	X	-	-
	Transmission Identification	X	-	see 3.1.2.3.5.2.2.4
Address	Alignment Function	G	-	see Annex 10, Vol. II, 4.4.16.2.1
	Priority Indicator	T	ATS-Message-Priority (see Table 3.1.2-11/ Part 6/1.2)	see 3.1.2.3.5.2.2.5
	Addressee Indicator(s)	T	recipient-name (see Table 3.1.2-12/Part 1/1.2.1)	see 3.1.2.3.5.2.2.6.2
	Alignment Function	G	-	see Annex 10, Vol. II, 4.4.16.2.1
Origin	Filing Time	T	ATS-Message-Filing-Time (see Table 3.1.2-11/Part 6/1.3)	see 3.1.2.3.5.2.2.7
	Originator Indicator	T	originator-name (see Table 3.1.2-12/Part 1/1.1.2)	see 3.1.2.3.5.2.2.6.1
	Priority Alarm	G	-	see Annex 10, Vol. II, 4.4.16.2.2
	Optional Heading Information	T1	ATS-Message-Optional-Heading-Info (see Table 3.1.2-11/Part 6/1.4)	see 3.1.2.3.5.2.2.8
	Alignment Function	G	-	see Annex 10, Vol. II, 4.4.16.2.2
	Start-of-Text Character	G	-	see Annex 10, Vol. II, 4.4.16.2.2
Text		T	ATS-Message-Text (see Table 3.1.2-11/Part 6/2)	see 3.1.2.3.5.2.2.9
Ending	Alignment Function	G	-	see Annex 10, Vol. II, 4.4.16.3.12
	Page-feed sequence	G	-	see Annex 10, Vol. II, 4.4.16.3.12
	End-of-Text Character	G	-	see Annex 10, Vol. II, 4.4.16.3.12

Legend: (see 3.1.1.1.4.3.)
X = excluded (not used)
T1 = conditionally translated
G = generated
T = translated

3.1.2.3.5.2.2.4. As specified in 3.1.2.3.2.5.3, the element transmission identification shall be:

a) generated by the AFTN Component rather than by the Message Transfer and Control Unit; and
b) returned to the Message Transfer and Control Unit as the result of the operation transferring the generated AFTN Message from the Message Transfer and Control Unit to the AFTN Component.

3.1.2.3.5.2.2.5. 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.

3.1.2.3.5.2.2.6. The value of an AF-Address included in the converted AFTN message shall be converted from an MF-Address as respectively specified in 3.1.2.3.5.2.2.6.1 and 3.1.2.3.5.2.2.6.2 depending whether it is an originator MF-Address or a recipient MF-Address.

3.1.2.3.5.2.2.6.1. The originator MF-Address included in an AMHS message shall be processed for translation into the originator indicator of the converted AFTN Message in one of three mutually exclusive manners, depending on the value of the *organization-name* attribute and on the contents of the User address look-up table, after preliminary conversion of the value of all AMHS address attributes from lower case IA5IRV characters, if any, to upper case IA5IRV characters:

a) allocation of the value of the first element of the *organizational-unit-names* attribute to the originator indicator of the converted AFTN Message, if this value is a syntactically valid AF-Address and if the *organization-name* attribute has the value "AFTN";
b) determination of an AF-Address matching exactly the MF-Address of the originator in the User address look-up table maintained in the Message Transfer and Control Unit, if the value of the *organization-name* attribute differs from "AFTN" and if such an exact match can be found; or
c) if none of the conditions in a) and b) can be met, then:
    1) rejection of the message for all the message recipients; and
    2) generation of a non-delivery report as specified in 3.1.2.3.5.6 with the following elements taking the following abstract-values in all the *per-recipient-fields* of the report:
        i) "unable-to-transfer" for the *non-delivery-reason-code*;
        ii) "invalid-arguments" for the *non-delivery-diagnostic-code*; and
        iii) "unable to convert to AFTN due to unrecognized originator O/R address" for the *supplementary-information*.

3.1.2.3.5.2.2.6.2. To build the address part of the converted AFTN Message as specified in Annex 10, Volume II, 4.4.16.2.1, each of the recipient MF-Addresses included in an AMHS message shall be processed for translation into an addressee indicator in one of three mutually exclusive manners:

a) allocation of the value of the first element of the *organizational-unit-names* attribute, converted from lower case IA5IRV characters, if any, to upper case IA5IRV characters, to an addressee indicator in the converted AFTN Message, if this value is a syntactically valid AF-Address and if the *organization-name* attribute has the value "AFTN";
b) determination of an AF-Address matching exactly the MF-Address of the recipient in the User address look-up table maintained in the Message Transfer and Control Unit, if the value of the *organization-name* attribute differs from "AFTN" and if such an exact match can be found; or
c) if none of the conditions in a) and b) can be met, then:
    1) rejection of the message for the considered message recipient; and
    2) generation of a non-delivery report as specified in 3.1.2.3.5.6 with the following elements taking the following abstract-values in all the *per-recipient-fields* of the report:
        i) "unable-to-transfer" for the *non-delivery-reason-code*; and
        ii) "unrecognised-OR-name" for the *non-delivery-diagnostic-code.*

Note 1.- Although the potential generation of a non-delivery report is mentioned for each recipient-name which cannot be properly translated into an AF-Address, a single report with different per-recipient-fields may be generated for all recipient-names which cannot be translated.

3.1.2.3.5.2.2.7. 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.

3.1.2.3.5.2.2.8. The Optional Heading Information of a converted AFTN message shall either:

a) take the value of the optional-heading-information in the ATS-Message-Optional-Heading-Info element, if this element is present; or
b) be omitted in the converted AFTN message, if the ATS-Message-Optional-Heading-Info element is absent from the AMHS message.

3.1.2.3.5.2.2.9. 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) conversion of each character which is not in the IA5IRV character set, into an IA5IRV character according to the locally defined conversion rules;
b) conversion of each IA5IRV character, if it is in lower case, into the equivalent upper case character;
c) replacement by question-marks ("?") of all characters or character sequences in the text, if any, of which the use is not authorized in Annex 10, Volume II, 4.1.2;
d) folding of any line longer than 69 characters; and
e) allocation of the result of items a) to d) above to the Text part of the converted AFTN message.

Note 1.- The locally defined conversion rules mentioned in item a) may be for example CCITT Recommendation X.408, if support of the ISO 8859-1 character set is a local policy of the AMHS Management Domain.

Note 2.- A lower case IA5IRV character is one whose position is between 6/1 and 6/15 or 7/0 and 7/10. The corresponding upper case IA5IRV characters have positions extending from 4/1 to 4/15 and 5/0 to 5/10.

3.1.2.3.5.2.3. Use of IPM elements

3.1.2.3.5.2.3.1. 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 as specified in the column "action" of Table 3.1.2-11.

3.1.2.3.5.2.3.2. The elements composing the IPM shall be used according to the specification in the clause referred to in the column "mapping" of Table 3.1.2-11.

Note 1.- Table 3.1.2-11 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 as well as from Table 3.1.2-2 in 3.1.2.2.3.2. The columns "Base" and "ISP" under "Reception" are extracted from ISO/IEC ISP 12062-2 and the column "Basic ATS Message Service" specifies 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 3.1.2-11 Use of IPM Elements

PART 1 : AMH21/A.1.1	**SUPPORTED INFORMATION OBJECTS**					
Ref	**Element**	**Reception**			**Action**	**Mapping / Notes**
		Base	**ISP**	**Basic ATS Mess. Service**		
1	Interpersonal Message (IPM)	m	m	M	T	see Part 1/1.1 and 1.2
1.1	heading	m	m	M	T	see Part 2
1.2	body	m	m	M	T	see Part 3
2	Interpersonal Notification (IPN)	o	m	M	-	out of the scope of this section
PART 2 : AMH21/A.1.2	**IPM HEADING FIELDS**					
Ref	**Element**	**Reception**			**Action**	**Mapping / Notes**
		Base	**ISP**	**Basic ATS Mess. Service**		
1	this-IPM	m	m	M	D	-
2	originator	m	m	M	D	-
3	authorizing-users	m	m	M	D	-
4	primary-recipients	m	m	M	D	see 3.1.2.3.5.2.3.3 and Part 5/1
5	copy-recipients	m	m	M	D	see 3.1.2.3.5.2.3.3 and Part 5/1
6	blind-copy-recipients	m	m	M	D	see 3.1.2.3.5.2.3.3 and Part 5/1
7	replied-to-IPM	m	m	M	D	-

8	obsoleted-IPMs	m	m	M	D	-
9	related-IPMs	m	m	M	D	-
10	subject	m	m	M	D	-
11	expiry-time	m	m	M	D	-
12	reply-time	m	m	M	D	-
13	reply-recipients	m	m	M	D	-
14	importance	m	m	M	D	-
15	sensitivity	m	m	M	D	-
16	auto-forwarded	m	m	M	D	-
17	extensions	m	m	M	D	-
17.1	incomplete-copy	o	m	M	D	-
17.2	languages	m	m	M	D	-
17.3	auto-submitted	o	i	I	D	-

PART 3 : AMH21/A.1.3 IPM BODY

Ref	**Element**	**Reception**			**Action**	**Mapping / Notes**
		Base	**ISP**	**Basic ATS Mess. Service**		
1	ia5-text	o	m	M	T	see Part 3/1.1 and 1.2
1.1	parameters	m	m	M	D	-
1.1.1	repertoire	m	m	M	D	-
1.2	data	m	m	M	T	see Part 6
2	voice	i	i	I	X	see Note 2
3	g3-facsimile	o	o	O	X	see Note 2
4	g4-class-1	o	o	O	X	see Note 2

5	teletex	o	o	O	X	see Note 2
6	videotex	o	o	O	X	see Note 2
7	encrypted	i	i	I	X	see Note 2
8	message	o	m	M	T	see Part 3/8.1 and 8.2
8.1	parameters	m	m	M	D	-
8.1.1	delivery-time	o	m	M	D	-
8.1.2	delivery-envelope	o	m	M	D	-
8.2	data	m	m	M	T	see 3.1.2.3.5.2.3.4 and Part 6
9	mixed-mode	o	o	O	X	see Note 2
10	bilaterally-defined	o	o	O	X	see Note 2
11	nationally-defined	o	o	O	X	see Note 2
12	externally-defined	o	m	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**			**Action**	**Mapping / Notes**
		Base	**ISP**	**Basic ATS Mess. Service**		
1	ia5-text-body-part	o	m	M	T	see Part 3/1
2	g3-facsimile-body-part	o	o	O	X	see Note 2
3	g4-class1-body-part	o	o	O	X	see Note 2
4	teletex-body-part	o	o	O	X	see Note 2
5	videotex-body-part	o	o	O	X	see Note 2
6	encrypted-body-part	i	i	I	X	see Note 2
7	message-body-part	o	m	M	T	see Part 3/8
8	mixed-mode-body-part	o	o	O	X	see Note 2

9	bilaterally-defined-body-part	o	o	O	X	see Note 2
10	nationally-defined-body-part	o	o	O	X	see Note 2
11	general-text-body-part	o	m	M	T/X	see 3.1.2.3.5.2.1.2, 3.1.2.3.5.2.3.5 and Part 6
12	file-transfer-body-part	o	i	I	X	see Note 2
13	voice-body-part	o	i	I	X	see Note 2
14	oda-body-part	o	o	O	X	see Note 2

PART 5 : AMH21/A.1.5 COMMON DATA TYPES

Ref	Element	Reception			Action	Mapping / Notes
		Base	ISP	Basic ATS Mess. Service		
1	RecipientSpecifier					
1.1	recipient	m	m	M	D	-
1.2	notification-requests	m	m	M	D	see Part 5/1.2.1-1.2.3
1.2.1	rn	o	o	O	D	see 3.1.2.3.5.2.3.3
1.2.2	nrn	m	m	M	D	-
1.2.3	ipm-return	o	o	O	D	-
1.3	reply-requested	m	m	M	D	-
1.4	recipient-extensions	o	i	I	D	-

PART 6 : IPM SUPPORT OF THE BASIC ATS MESSAGE SERVICE

Ref	Element	Reception			Action	Mapping / Notes
		Base	ISP	Basic ATS Mess. Service		
1	ATS-Message-Header	-	-	m	T	see Part 6/1.1-1.6
1.1	start-of-heading	-	-	m	-	-

1.2	ATS-Message-Priority	-	-	m	T	see Part 6/1.2.1-1.2.3
1.2.1	priority-prompt	-	-	m	-	-
1.2.2	priority-indicator	-	-	m	T	see 3.1.2.3.5.2.2.5 and 3.1.2.3.5.2.3.3
1.2.3	priority-separator	-	-	m	-	-
1.3	ATS-Message-Filing-Time	-	-	m	T	see Part 6/1.3.1-1.3.3
1.3.1	filing-time-prompt	-	-	m	-	-
1.3.2	filing-time	-	-	m	T	see 3.1.2.3.5.2.2.7
1.3.3	filing-time-separator	-	-	m	-	-
1.4	ATS-Message-Optional-Heading-Info	-	-	m	T1	see Part 6/1.4.1-1.4.3
1.4.1	OHI-prompt	-	-	m	-	-
1.4.2	optional-heading-information	-	-	m	T	see 3.1.2.3.5.2.2.8
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 3.1.2.3.5.2.2.9

Legend (see 3.1.1.1.4.3) :

m = mandatory support
o = optional support
i = out of scope
- = not applicable
T1 = conditionally translated
D = discarded
T = translated
X = excluded

Note 2.- This body part type is excluded as the result of 3.1.2.3.5.2.1.2.

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 specified in Part 4 and as the result of 3.1.2.3.5.2.1.2.

3.1.2.3.5.2.3.3. If the *priority-indicator* of a received AMHS message has the value "SS" and if the *notification-requests* element of either a *primary-recipient*, or a *copy-recipient*, or a *blind-copy-recipient* element has an abstract-value different from "rn" and if the *responsibility* element of the corresponding *per-recipient-fields* of the Message Transfer Envelope has the value "responsible", then an error situation shall be logged and reported to a control position.

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

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

3.1.2.3.5.2.3.4. 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.- 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".

3.1.2.3.5.2.3.5. The components of a general-text body part shall be used as follows for the conversion of the IPM body into the text of the AFTN Message:

a) the parameters component identify the character set used for the message, as specified in ISO/IEC 10021-7, B.2; and
b) the data component of a general-text body part are used for the generation of the converted AFTN message as specified in Part 6 of Table 3.1.2-11.

3.1.2.3.5.2.4. Use of Message Transfer Envelope parameters

3.1.2.3.5.2.4.1. 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 as specified in the column "action" of Table 3.1.2-12.

3.1.2.3.5.2.4.2. The elements composing the Message Transfer Envelope shall be handled according to the specification in the clause referred to in the column "mapping" of Table 3.1.2-12.

Note 1.- Table 3.1.2-12 is structured as a PRL derived from the ISPICS Proforma included in ISO/IEC ISP 10611-3. The columns "Base" and "ISP" are extracted from ISO/IEC ISP 10611-3 and the column "Basic ATS Message Service" specifies the static capability of an AU in relation with the MT-EoS, i.e. the ability to convey, handle and act in relation with the element. The references to the ISP Profile are indicated in the part titles as AMH11/ref where appropriate.

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.- 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 3.1.2-12 Use of the MessageTransfer Envelope

PART 1 : AMH11/A.1.4.2 MESSAGETRANSFER						
Ref	**Element**	**Base**	**ISP**	**Basic ATS Mess. Service**	**Action**	**Mapping / Notes**
1	MessageTransferEnvelope	m	m	M	T	see Part 1/1.1 and 1.2
1.1	(per message fields)					
1.1.1	message-identifier	m	m	M	D	-
1.1.2	originator-name	m	m	M	T	see 3.1.2.3.5.2.2.6.1
1.1.3	original-encoded-information-types	m	m-	M-	D/X	see 3.1.2.3.5.2.1.2
1.1.4	content-type	m	m-	M-	D/X	see 3.1.2.3.5.1.1
1.1.5	content-identifier	m	m	M	D	-
1.1.6	priority	m	m	M	D	-
1.1.7	per-message-indicators	m	m	M	D	see Part 2/4
1.1.8	deferred-delivery-time	o	m-	M-	D	see 3.1.2.3.5.2.4.4
1.1.9	per-domain-bilateral-information	o	m-	M-	D	see 3.1.2.3.5.2.4.5 and Part 2/5
1.1.10	trace-information	m	m	M	D	see Part 2/6
1.1.11	extensions	m	m	M	D/X	see 3.1.2.3.5.2.4.6 and Part 3/1
1.1.11.1	recipient-reassignment-prohibited	o	m	M	D	see 3.1.2.3.5.2.4.3
1.1.11.2	dl-expansion-prohibited	o	m	M	D	see 3.1.2.3.5.2.4.7
1.1.11.3	conversion-with-loss-prohibited	o	m	M	D/X	see 3.1.2.3.5.2.1.6
1.1.11.4	latest-delivery-time	o	m-	M-	D/X	see 3.1.2.3.5.2.4.8
1.1.11.5	originator-return-address	o	m-	M-	D	-

1.1.11.6	originator-certificate	o	m-	M-	X	see 3.1.2.3.5.2.4.9
1.1.11.7	content-confidentiality-algorithm-identifier	o	m-	M-	X	see 3.1.2.3.5.2.4.9
1.1.11.8	message-origin-authentication-check	o	m-	M-	X	see 3.1.2.3.5.2.4.9
1.1.11.9	message-security-label	o	m-	M-	X	see 3.1.2.3.5.2.4.9
1.1.11.10	content-correlator	m	m	M	D	-
1.1.11.11	dl-expansion-history	m	m-	M-	D	-
1.1.11.12	internal-trace-information	m	m	M	D	-
1.2	per-recipient-fields	m	m	M	T	see Part 1/1.2.1-1.2.5
1.2.1	recipient-name	m	m	M	T	see 3.1.2.3.5.2.2.6.2
1.2.2	originally-specified-recipient-number	m	m	M	D	-
1.2.3	per-recipient-indicators	m	m	M	D	-
1.2.4	explicit-conversion	o	m-	M-	D	-
1.2.5	extensions	m	m	M	D/X	see 3.1.2.3.5.2.4.6 and Part 3/1
1.2.5.1	originator-requested-alternate-recipient	o	m-	M-	D	see 3.1.2.3.5.2.4.3
1.2.5.2	requested-delivery-method	o	m-	M-	D	see 3.1.2.3.5.2.4.10
1.2.5.3	physical-forwarding-prohibited	o	m-	M-	X	see 3.1.2.3.5.2.4.11
1.2.5.4	physical-forwarding-address-request	o	m-	M-	X	see 3.1.2.3.5.2.4.11
1.2.5.5	physical-delivery-modes	o	m-	M-	X	see 3.1.2.3.5.2.4.11
1.2.5.6	registered-mail-type	o	m-	M-	X	see 3.1.2.3.5.2.4.11
1.2.5.7	recipient-number-for-advice	o	m-	M-	X	see 3.1.2.3.5.2.4.11
1.2.5.8	physical-rendition-attributes	o	m-	M-	X	see 3.1.2.3.5.2.4.11
1.2.5.9	physical-delivery-report-request	o	m-	M-	X	see 3.1.2.3.5.2.4.11
1.2.5.10	message-token	o	m-	M-	X	see 3.1.2.3.5.2.4.9

1.2.5.11	content-integrity-check	o	m-	M-	X	see 3.1.2.3.5.2.4.9
1.2.5.12	proof-of-delivery-request	o	m-	M-	X	see 3.1.2.3.5.2.4.9
1.2.5.13	redirection-history	m	m-	M-	D	-
2	content	m	m	M	T	see 3.1.2.3.5.2.3

PART 2 : AMH11/A.1.5 COMMON DATA TYPES

Ref	Element	Base	ISP	Basic ATS Mess. Service	Action	Mapping / Notes
4	PerMessageIndicators					
4.1	disclosure-of-other-recipients	m	m	M	D	-
4.2	implicit-conversion-prohibited	m	m	M	D/X	see 3.1.2.3.5.2.1.1
4.3	alternate-recipient-allowed	m	m	M	D	see 3.1.2.3.5.2.4.3
4.4	content-return-request	o	m-	M-	D	-
4.5	reserved	o	m-	M-	D	-
4.6	bit-5	o	m-	M-	D	-
4.7	bit-6	o	m-	M-	D	-
4.8	service-message	o	m-	M-	D	-
5	PerDomainBilateralInformation					
5.1	country-name	m	m-	M-	D	see 3.1.2.3.4.2.4.6
5.2	administration-domain-name	m	m-	M-	D	see 3.1.2.3.4.2.4.6
5.3	private-domain-identifier	o	m-	M-	D	see 3.1.2.3.4.2.4.6
5.4	bilateral-information	m	m-	M-	D	see 3.1.2.3.4.2.4.6
6	TraceInformation					

6.1	TraceInformationElement	m	m	M	D	-
6.1.1	global-domain-identifier	m	m	M	D	-
6.1.2	domain-supplied-information	m	m	M	D	-
6.1.2.1	arrival-time	m	m	M	D	-
6.1.2.2	routing-action	m	m	M	D	-
6.1.2.2.1	relayed	m	m	M	D	-
6.1.2.2.2	rerouted	o	c1	C1	D	-
6.1.2.3	attempted-domain	o	c1	C1	D	-
6.1.2.4	(additional actions)				D	-
6.1.2.4.1	deferred-time	m	c2	C2	D	-
6.1.2.4.2	converted-encoded-information-types	o	m-	M-	D	see 3.1.2.3.5.2.1.2
6.1.2.4.3	other-actions	o	m-	M-	D	-
6.1.2.4.3.1	redirected	o	m-	M-	D	-
6.1.2.4.3.2	dl-operation	o	m-	M-	D	-

PART 3 : AMH11/A.1.6 EXTENSION DATA TYPES

Ref	Element	Base	ISP	Basic ATS Mess. Service	Action	Mapping / Notes
1	ExtensionField					
1.1	type	m	m	M	D/X	see Part 3/1.1.1 and 1.1.2
1.1.1	standard-extension	m	m	M	D/X	see 3.1.2.3.5.2.4.6
1.1.2	private-extension	o	m-	M-	D/X	see 3.1.2.3.5.2.4.6

1.2	criticality	m	m	M	D/X	see 3.1.2.3.5.2.4.6
1.3	value	m	m	M	D	-

Legend (see 3.1.1.1.4.3) :
m = mandatory support
m- = minimal mandatory support
o = optional support
c1 = if rerouting is supported then m else m-
c2 = if deferred delivery is supported then m else m-
D = discarded
T = translated
X = excluded

3.1.2.3.5.2.4.3. The elements *alternate-recipient-allowed* and *originator-requested-alternate-recipient* shall be discarded by the Message Transfer and Control Unit, since the optional Redirection Functional Group, if implemented in an AFTN/AMHS Gateway, is supported by the ATN Component and not by the Message Transfer and Control Unit.

3.1.2.3.5.2.4.4. The element *deferred-delivery-time* shall be discarded by the Message Transfer and Control Unit, since this functionality, if implemented in an AFTN/AMHS Gateway, is supported by the ATN Component and not by the Message Transfer and Control Unit.

3.1.2.3.5.2.4.5. For mapping purposes the whole *per-domain-bilateral-information* element shall be discarded.

Note.- If the elements country-name, administration-domain-name *and* private-domain-identifier *in an element of the* per-domain-bilateral-information *together identify the AMHS Management Domain operating the AFTN/AMHS Gateway, the use made of the* bilateral-information *element is a local matter.*

3.1.2.3.5.2.4.6. If any extension-field is present in the *extensions* of the Message Transfer Envelope and not semantically understood by the Message Transfer and Control Unit, then the element shall either:

a) cause the following actions to be performed if its criticality is set to "CRITICAL FOR TRANSFER" or to "CRITICAL FOR DELIVERY":
   1) message rejection of the message for either:
      i) all the message recipients if the extension is part of the *per-message-fields*; or
      ii) the considered message recipient if the extension is part of the *per-recipient-fields*; and
   2) generation of a non-delivery report as specified in 3.1.2.3.5.6 with the following elements taking the following abstract-values in the appropriate *per-recipient-fields* of the report:
      i) "unable-to-transfer" for the *non-delivery-reason-code*; and
      ii) "unsupported-critical-function" for the *non-delivery-diagnostic-code*; or
b) be simply discarded if there is no criticality given.

3.1.2.3.5.2.4.7. The element *dl-expansion-prohibited* shall be discarded by the Message Transfer and Control Unit, since the DL-expansion capability of an AFTN/AMHS Gateway is supported by the ATN Component and not by the Message Transfer and Control Unit.

3.1.2.3.5.2.4.8. If the *latest-delivery-time* element is present, and if, when the AMHS message is handled by the Message Transfer and Control Unit, the current time exceeds the value of the *latest-delivery-time*, then the following actions shall be performed:

a) message rejection for all the message recipients; and
b) generation of a non-delivery report as specified in 3.1.2.3.5.6 with the following elements taking the following abstract-values in the appropriate *per-recipient-fields* of the report:
    1) "transfer-failure" for the *non-delivery-reason-code*; and
    2) "maximum-time-expired" for the *non-delivery-diagnostic-code*.

3.1.2.3.5.2.4.9. 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, the following actions shall be performed:

a) message rejection of the message for either:
    1) all the message recipients if the extension is part of the *per-message-fields*; or
    2) the considered message recipient if the extension is part of the *per-recipient-fields*; and
b) generation of a non-delivery report as specified in 3.1.2.3.5.6 with the following elements taking the following abstract-values in the appropriate *per-recipient-fields* of the report:
    1) "unable-to-transfer" for the *non-delivery-reason-code*; and
    2) "unsupported-critical-function" for the *non-delivery-diagnostic-code.*

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

Note.- The Message Transfer and Control Unit handles the message irrespective of the value of this attribute, since it indicates only a preferred delivery method (see Technical Corrigendum 5 to ISO/IEC 10021-4).

3.1.2.3.5.2.4.11. The Message Transfer and Control Unit does not implement Physical Delivery Elements of Service. Thus, if any physical delivery-related extension-field set to "CRITICAL FOR DELIVERY" is present in the *extensions* of the Message Transfer Envelope, the following actions shall be performed:

a) message rejection of the message for either:
    1) all the message recipients if the extension is part of the *per-message-fields*; or
    2) the considered message recipient if the extension is part of the *per-recipient-fields*; and
b) generation of a non-delivery report as specified in 3.1.2.3.5.6 with the following elements taking the following abstract-values in the appropriate *per-recipient-fields* of the report:
    1) "physical-rendition-not-performed" for the *non-delivery-reason-code*; and
    2) "unsupported-critical-function" for the *non-delivery-diagnostic-code.*

3.1.2.3.5.3. 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 3.1.2.3.5.3.1;
b) the specification of how the AFTN service message is generated and how the AFTN service message components are mapped from AMHS parameters, as included in 3.1.2.3.5.3.2;
c) the specification of how the elements of the received RN are handled, as included in 3.1.2.3.5.3.3; and
d) the specification of how the Message Transfer Envelope elements are handled, as included in 3.1.2.3.5.3.4.

3.1.2.3.5.3.1. Initial processing of AMHS Receipt Notifications

3.1.2.3.5.3.1.1. 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 received RN shall be processed in one of the following manners:

a) processing as specified in 3.1.2.3.5.3.1.2, if the subject IPM has been previously generated by the Message Transfer and Control Unit; or
b) unsuccessful termination of the procedure, if the subject IPM has not been previously generated by the Message Transfer and Control Unit, resulting in:
   1) logging of the error situation and reporting to a control position;
   2) rejection of the RN; and
   3) generation of a non-delivery report as specified in 3.1.2.3.5.6 with the following elements taking the following abstract-values:
      i) "unable-to-transfer" for the *non-delivery-reason-code*;
      ii) "invalid-arguments" for the *non-delivery-diagnostic-code*; and
      iii) "unable to convert RN to AFTN Ack service message due to misrouted RN" for the *supplementary-information*.

3.1.2.3.5.3.1.2. For an AMHS RN passed from the ATN Component to the Message Transfer and Control Unit and not rejected as the result of 3.1.2.3.5.3.1.1, the received RN shall be processed in one of the following manners:

a) processing as specified in 3.1.2.3.5.3.1.3, if the value of the priority indicator of the subject AFTN message was "SS"; or
b) unsuccessful termination of the procedure, if the value of the priority indicator was different from "SS", resulting in:
   1) logging of the error situation and reporting to a control position; and
   2) discarding of the RN.

3.1.2.3.5.3.1.3. An AMHS RN passed from the ATN Component to the Message Transfer and Control Unit and not rejected as the result of 3.1.2.3.5.3.1.2 shall be processed as specified in 3.1.2.3.5.3.2.

3.1.2.3.5.3.2. Generation of the AFTN acknowledgement message

3.1.2.3.5.3.2.1. An AMHS RN received by the Message Transfer and Control Unit and not rejected as the result of 3.1.2.3.5.3.1 shall be converted into an AFTN acknowledgement message in compliance with:

a) the specification of 3.1.2.3.5.2.2 with the exception of the components listed in Table 3.1.2-13; and
b) the classification of the components included in Table 3.1.2-13, as specified in the column "action" of Table 3.1.2-13.

3.1.2.3.5.3.2.2. These components which are classified as "G" shall be generated in compliance with the clause referred to in the column "mapping" of Table 3.1.2-13.

3.1.2.3.5.3.2.3. These components which are classified as "T" shall be converted from the AMHS parameter specified in the column "converted from AMHS parameter" of Table 3.1.2-13 and according to the specification in the clause referred to in the column "mapping".

Table 3.1.2-13 Generation of AFTN Service Message acknowledging a SS Message

AFTN Message Part	Component	Action	converted from AMHS parameter	Mapping
Address	Priority Indicator	G	-	see 3.1.2.3.5.3.2.4
Origin	Filing Time	T	receipt-time (see Table 3.1.2-14/Part 1/7.1)	see 3.1.2.3.5.3.2.5
	Optional Heading Information	X	-	-
Text		T	subject-IPM (see Table 3.1.2-14/Part 1/1) recipient-name (see Table 3.1.2-16/Part 1/1.2.1)	see 3.1.2.3.5.3.2.6

Legend: (see 3.1.1.1.4.3.)
G = generated
T = translated
X = excluded (not used)

3.1.2.3.5.3.2.4. 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.

3.1.2.3.5.3.2.5. In an AFTN acknowledgement message, generated as the result of the conversion of an AMHS RN message, the filing time component shall:

a) be a date-time group as specified in Annex 10, Volume II, 4.4.16.2.2.1; and
b) take the value of the six characters between the fifth and tenth position from the *receipt-time* element of the RN.

3.1.2.3.5.3.2.6. 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, Volume II, 4.4.16.6 using the origin of the subject AFTN message.

3.1.2.3.5.3.3. Use of RN fields

3.1.2.3.5.3.3.1. Each of the elements composing the RN to be converted into an AFTN acknowledgement message in an AFTN/AMHS Gateway shall be processed as specified in the column "action" of Table 3.1.2-14.

3.1.2.3.5.3.3.2. The elements composing the RN shall be handled according to the specification in the clause referred to in the column "mapping" of Table 3.1.2-14.

Note.- Table 3.1.2-14 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 (AMH21). The columns "Base" and "ISP" under "Reception" are extracted from ISO/IEC ISP 12062-2, and the column "Basic ATS Message Service" specifies 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 3.1.2-14 Use of RN fields

PART 1: AMH21/A.1.4 IPN FIELDS						
Ref	**Element**	**Reception**			**Action**	**Mapping / Notes**
		Base	**ISP**	**Basic ATS Mess. Service**		
1	subject-ipm	m	m	M	D	see 3.1.2.3.5.3.1.1
2	ipn-originator	m	m	M	D	-
3	ipm-preferred-recipient	m	m	M	D	-
4	conversion-eits	m	m	M	D	
5	notification-extensions	o	i	I	-	
6	non-receipt-fields	o	m	M	-	out of the scope of this section
7	receipt-fields	o	m	M	T	see Part 1/7.1-7.4
7.1	receipt-time	m	m	M	T	see 3.1.2.3.5.3.2.5
7.2	acknowledgment-mode	m	m	M	D	-
7.3	suppl-receipt-info	o	o	O	D	-
7.4	rn-extensions	o	i	I	-	-
8	other-notification-type-fields	o	i	I	-	-

Legend (see 3.1.1.1.4.3) :
m = mandatory support
o = optional support
i = out of scope
- = not applicable
D = discarded
T = translated
- = out of scope

3.1.2.3.5.3.4. Use of Message Transfer Envelope parameters conveyed with a RN

3.1.2.3.5.3.4.1. The elements composing the Message Transfer Envelope conveyed with a RN to be converted into an AFTN acknowledgement message shall be used in compliance with:

a) the specification of 3.1.2.3.5.2.4 with the exception of those elements included in Table 3.1.2-15; and
b) the specification included in the clause referred to in the column "Mapping" of Table 3.1.2-15.

Note.- Table 3.1.2-15 is structured as an extraction of Table 3.1.2-12.

Table 3.1.2-15 Use of the MessageTransfer Envelope conveyed with a RN (differences from Table 3.1.2-12)

PART 1 : AMH11/A.1.4.2 MESSAGETRANSFER						
Ref	**Element**	**Base**	**ISP**	**Basic ATS Mess. Service**	**Action**	**Mapping / Notes**
1	MessageTransferEnvelope	m	m	M	T	see Part 1/1.1 and 1.2
1.1	(per message fields)					
1.1.3	original-encoded-information-types	m	m-	M-	D	see 3.1.2.3.5.3.4.2
1.1.7	per-message-indicators	m	m	M	D	see Part 2/4
1.1.10	trace-information	m	m	M	D	see Part 2/6
1.2	per-recipient-fields	m	m	M	D	see Part 1/1.2.1
1.2.1	recipient-name	m	m	M	D	see 3.1.2.3.5.3.4.3
2	content	m	m	M	T	see 3.1.2.3.5.3.3
PART 2 : AMH11/A.1.5 COMMON DATA TYPES						
Ref	**Element**	**Base**	**ISP**	**Basic ATS Mess. Service**	**Action**	**Mapping / Notes**
4	PerMessageIndicators					
4.2	implicit-conversion-prohibited	m	m	M	D	see 3.1.2.3.5.3.4.2
6	TraceInformation					
6.1	TraceInformationElement	m	m	M	D	-
6.1.2	domain-supplied-information	m	m	M	D	-
6.1.2.4	(additional actions)				D	-
6.1.2.4.2	converted-encoded-information-types	o	m-	M-	D	see 3.1.2.3.5.3.4.2

Legend (see 3.1.1.1.4.3) :

m =	mandatory support
m- =	minimal mandatory support
o =	optional support
D =	discarded
T =	translated

3.1.2.3.5.3.4.2. 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.

3.1.2.3.5.3.4.3. 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.

3.1.2.3.5.4. 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 3.1.2.3.5.4.1;
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 3.1.2.3.5.4.2; and
c) the specification of how the Report Transfer Envelope elements are handled, as included in 3.1.2.3.5.4.3.

3.1.2.3.5.4.1. Initial processing of AMHS Non-Delivery Reports

3.1.2.3.5.4.1.1. 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 received non-delivery report shall be processed in one of the following manners:

a) processing as specified in 3.1.2.3.5.4.1.2, if the subject AMHS message has been previously generated by the Message Transfer and Control Unit; or
b) unsuccessful termination of the procedure, if the subject AMHS message has not been previously generated by the Message Transfer and Control Unit, resulting in:
    1) logging of the error situation and reporting to a control position; and
    2) discarding of the non-delivery report.

3.1.2.3.5.4.1.2. If the subject AMHS message had been generated by the Message Transfer and Control Unit, the report shall be processed by the Message Transfer and Control Unit in one of the following manners:

a) conversion of the report into an AFTN service message as specified in 3.1.2.3.5.4.2, if the *non-delivery-diagnostic-code* has the abstract-value "unrecognised-OR-name"; or
b) discarding of the report, if the *non-delivery-diagnostic-code* has any other abstract-value "unrecognised-OR-name".

3.1.2.3.5.4.1.3. A non-delivery report received by the Message Transfer and Control Unit which was not discarded as the result of 3.1.2.3.5.4.1.2 shall be processed by the Message Transfer and Control Unit in one of three mutually exclusive manners:

a) processing as specified in 3.1.2.3.5.4.2 if there is no *originally-intended-recipient-name* element with a value different of the *actual-recipient-name* in any of the *per-recipient-fields* elements of the report;
b) discarding of the *per-recipient-fields* element if at least one *originally-intended-recipient-name* element in one of the *per-recipient-fields* elements has a value different from the value of the *actual-recipient-name*, and if at least one *per-recipient-fields* element in the report does not meet the same condition; or
c) discarding of the entire report if all *per-recipient-fields* elements of the report include an *originally-intended-recipient-name* element which has a value different from the value of the *actual-recipient-name*.

3.1.2.3.5.4.2. Generation of unknown address AFTN service message

3.1.2.3.5.4.2.1. An AMHS Non-Delivery Report received by the Message Transfer and Control Unit and not discarded as the result of 3.1.2.3.5.4.1 shall be converted into an AFTN service message to the originator of the subject AFTN message, indicating that an unknown addressee indicator was specified in the subject AFTN message (unknown address AFTN service message) in compliance with:

a) the specification of Annex 10, Volume II, 4.4.11.13.3; and
b) the classification of the components included in Table 3.1.2-16, as specified in the column "action" of Table 3.1.2-16 in accordance with the definition in 3.1.1.1.4.3.4.

3.1.2.3.5.4.2.2. 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" of Table 3.1.2-16.

3.1.2.3.5.4.2.3. These components which are classified as "T" shall be converted from the AMHS parameter specified in the column "converted from AMHS parameter" of Table 3.1.2-16 and according to the specification in the clause referred to in the column "mapping".

Table 3.1.2-16 Generation of unknown address AFTN service message

AFTN Message Part	Component	Action	converted from AMHS parameter	Mapping
Heading	Start-of-Heading Character	G	-	see Annex 10, Vol. II, 4.4.16.1.1
	Transmission Identification	G	-	see Annex 10, Vol. II, 4.4.16.1.1
Address	Alignment Function	G	-	see Annex 10, Vol. II, 4.4.16.2.1
	Priority Indicator	G	-	see 3.1.2.3.5.4.2.4
	Addressee Indicator(s)	G	-	see 3.1.2.3.5.4.2.5
	Alignment Function	G	-	see Annex 10, Vol. II, 4.4.16.2.1
Origin	Filing Time	G	-	see 3.1.2.3.5.4.2.6
	Originator Indicator	G	-	see 3.1.2.3.5.4.2.7
	Priority Alarm	G	-	see Annex 10, Vol. II, 4.4.16.2.2
	Optional Heading Information	X	-	-
	Alignment Function	G	-	see Annex 10, Vol. II, 4.4.16.2.2
	Start-of-Text Character	G	-	see Annex 10, Vol. II, 4.4.16.2.2
Text		T	actual-recipient-name (see Table 3.1.2-17/Part 1/2.2.1)	see 3.1.2.3.5.4.2.8
Ending	Alignment Function	G	-	see Annex 10, Vol. II, 4.4.16.3.12
	Page-feed sequence	G	-	see Annex 10, Vol. II, 4.4.16.3.12
	End-of-Text Character	G	-	see Annex 10, Vol. II, 4.4.16.3.12

Legend: (see 3.1.1.1.4.3.)
G = generated
T = translated
X = excluded (not used)

3.1.2.3.5.4.2.4. The priority indicator component shall take the value of the priority indicator of the subject AFTN message.

3.1.2.3.5.4.2.5. The addressee indicator(s) component shall contain a single AF-Address which is the originator indicator of the subject AFTN message.

3.1.2.3.5.4.2.6. The filing time component, expressed as a date-time group in compliance with Annex 10, Volume 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.

3.1.2.3.5.4.2.7. The originator indicator shall be the AFTN Address of the AFTN Component of the AFTN/AMHS Gateway, as specified in 3.1.2.3.2.1.16.

3.1.2.3.5.4.2.8. The value of the message text component shall be structured as follows:

a) a first line composed as specified in Annex 10, Volume II, 4.4.11.13.3, items 1) to 4), using the origin of the subject AFTN message;
b) a second line composed as specified in Annex 10, Volume II, 4.4.11.13.3, items 5) and 6), using the line-following-the-heading of the subject AFTN message; and
c) the third and following lines as appropriate composed as specified in Annex 10, Volume II, 4.4.11.13.3, items 7) to 9), using the AF-Address(es) translated as specified in 3.1.2.3.5.4.2.9 from the *actual-recipient-name* elements of the *per-recipient-fields* of the Non-Delivery Report which were not discarded as the result of 3.1.2.3.5.4.1.3.

3.1.2.3.5.4.2.9. Each *actual-recipient-name* element used to generate an unknown address AFTN service message as specified in item c) of 3.1.2.3.5.4.2.8 above shall be processed for translation into an AF-Address in one of three mutually exclusive manners, after preliminary conversion of the value of all AMHS address attributes from lower case IA5IRV characters, if any, to upper case IA5IRV characters:

a) allocation of the value of the first element of the *organizational-unit-names* attribute to the AF-Address, if this value is a syntactically valid AF-Address and if the *organization-name* attribute has the value "AFTN";
b) determination of an AF-Address matching exactly the MF-Address of the recipient in the User address look-up table maintained in the Message Transfer and Control Unit, if the value of the *organization-name* attribute differs from "AFTN" and if such an exact match can be found; or
c) if none of the conditions in a) and b) can be met, then:
    1) discarding of the MF-Address; and
    2) logging of the error situation and reporting to a control position.

3.1.2.3.5.4.3. Use of Report Transfer Envelope and Content parameters

3.1.2.3.5.4.3.1. 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 as specified in the column "action" of Table 3.1.2-17.

3.1.2.3.5.4.3.2. These elements shall be handled according to the specification in the clause referred to in the column "mapping" of Table 3.1.2-17.

Note.- Table 3.1.2-17 is structured as a PRL derived from the ISPICS Proforma included in ISO/IEC ISP 10611-3. The columns "Base" and "ISP" are extracted from ISO/IEC ISP 10611-3, and the column "Basic ATS Message Service" specifies the static capability of an AU for the MT-EoS, i.e. the ability to convey, handle and act in relation with the element. The references to the ISP Profile are indicated in the part titles as AMH11/ref where appropriate.

Table 3.1.2-17 Use of Report Transfer Envelope and Content parameters

PART 1 : AMH11/A.1.4.3 REPORTTRANSFER						
Ref	**Element**	**Base**	**ISP**	**Basic ATS Mess. Service**	**Action**	**Mapping / Notes**
1	ReportTransferEnvelope	m	m	M	D	-
2	ReportTransferContent	m	m	M	T	see Part 1/2.1 and 2.2
2.1	(per report fields)					
2.1.1	subject-identifier	m	m	M	D	see 3.1.2.3.5.4.2.4
2.1.2	subject-intermediate-trace-information	o	m	M	D	-
2.1.3	original-encoded-information-types	m	m	M	D	-
2.1.4	content-type	m	m	M	D	-
2.1.5	content-identifier	m	m	M	D	-
2.1.6	returned-content	o	m-	M-	D	-
2.1.7	additional-information	o	m-	M-	D	-
2.1.8	extensions	m	m	M	D	-
2.2	per-recipient-fields	m	m	M		
2.2.1	actual-recipient-name	m	m	M	T	see 3.1.2.3.5.4.2.8
2.2.2	originally-specified-recipient-number	m	m	M	D	-
2.2.3	per-recipient-indicators	m	m	M	D	-
2.2.4	last-trace-information	m	m	M	D	-
2.2.5	originally-intended-recipient-name	m	m	M	X	see 3.1.2.3.5.4.1.3
2.2.6	supplementary-information	o	m-	M-	D	-
2.2.7	extensions	m	m	M	D	-

Legend (see 3.1.1.1.4.3) :

m =	mandatory support
m- =	minimal mandatory support
o =	optional support
D =	discarded
T =	translated
X =	excluded

3.1.2.3.5.5. Action upon reception of AMHS Probe

3.1.2.3.5.5.1. 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 received probe shall be processed in one of the following manners, depending on the abstract-value of the current encoded-information-types, determined as either the abstract-value of the latest *converted-encoded-information-types*, if existing, in the *trace-information* element, or as the abstract-value of the *original-encoded-information-types* element in the Probe Transfer Envelope if the previous does not exist:

a) processing as specified in 3.1.2.3.5.5.2 if the abstract-value of the current encoded-information-types is "ia5-text" or extended "ia5-text"; or
b) if the abstract-value differs from built-in "ia5-text" and from extended "ia5-text":
    1) rejection of the probe for all the probe recipients; and
    2) generation of a non-delivery report as specified in 3.1.2.3.5.6 with the following elements taking the following abstract-values in all the *per-recipient-fields* of the report:
        i) "unable-to-transfer" for the *non-delivery-reason-code*; and
        ii) "encoded-information-types-unsupported" for the *non-delivery-diagnostic-code*.

3.1.2.3.5.5.2. A probe which was not rejected as the result of 3.1.2.3.5.5.1 shall be processed in one of the following manners:

a) processing as specified in 3.1.2.3.5.5.3 if the abstract-value of the *implicit-conversion-prohibited* in the *per-message-indicators* element in the Probe Transfer Envelope differs from "prohibited"; or
b) if the abstract-value of the element is "prohibited":
    1) rejection of the message for all the message recipients; and
    2) generation of a non-delivery report as specified in 3.1.2.3.5.6 with the following elements taking the following abstract-values in all the *per-recipient-fields* of the report:
        i) "conversion-not-performed" for the *non-delivery-reason-code*;
        ii) "implicit-conversion-prohibited" for the *non-delivery-diagnostic-code*; and
        iii) "unable to convert to AFTN" for the *supplementary-information*.

3.1.2.3.5.5.3. A probe which was not rejected as the result of 3.1.2.3.5.5.2 shall be processed in one of three mutually exclusive manners:

a) if, due to system resource limitation, the value of the element *content-length* in the Probe Transfer Envelope exceeds the conversion capability of the Message Transfer and Control Unit, then:
    1) rejection of the message for all the message recipients; and
    2) generation of a non-delivery report as specified in 3.1.2.3.5.6 with the following elements taking the following abstract-values in all the *per-recipient-fields* of the report:
        i) "unable-to-transfer" for the *non-delivery-reason-code*; and
        ii) "content-too-long" for the *non-delivery-diagnostic-code*; or

b) processing as specified in 3.1.2.3.5.5.4 for further conveyance test if the *content-length* does not exceed the conversion capability of the Message Transfer and Control Unit.

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 AMHS Management Domain operating the AFTN/AMHS Gateway.

3.1.2.3.5.5.4. A probe which was not rejected as the result of 3.1.2.3.5.5.3 shall be processed in one of three mutually exclusive manners, depending on the number of probe recipients towards which the Message Transfer and Control Unit is responsible for conveyance test, and on the AFTN/AMHS Gateway resources:

a) if this number exceeds 21 probe recipients:
   1) attempt to split the probe, internally to the Message Transfer and Control Unit, into several probes, each of them with no more than 21 probe recipients:
      i) each of the resulting probes having for conveyance test purposes the same *per-probe-fields* in the Probe Transfer Envelope; and
      ii) only the *per-recipient-fields* elements in the Probe Transfer Envelope varying between the different resulting probes; and
   2) processing of each of these probes as specified in 3.1.2.3.5.5.5;
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:
   1) rejection of the probe for all the probe recipients; and
   2) generation of a non-delivery report as specified in 3.1.2.3.5.6 with the following elements taking the following abstract-values in all the *per-recipient-fields* of the report:
      i) "unable-to-transfer" for the *non-delivery-reason-code*;
      ii) "too-many-recipients" for the *non-delivery-diagnostic-code*; and
      iii) "unable to convert to AFTN due to number of recipients" for the *supplementary-information*; or
c) processing as specified in 3.1.2.3.5.5.5, if this number does not exceed 21 probe recipients.

3.1.2.3.5.5.5. A probe which was not rejected as the result of 3.1.2.3.5.5.4 shall be processed in one of the following manners, depending on the ability of the Message Transfer and Control Unit to translate the *originator-name* element of the Probe Transfer Envelope into an AF-Address,:

a) processing as specified in 3.1.2.3.5.5.6 if either of the following conditions is met:
   1) if, after conversion from lower case IA5IRV characters, if any, to upper case IA5IRV characters, the *organization-name* attribute has the value "AFTN" and if the value of the first element of the *organizational-unit-names* is a syntactically valid AF-Address; or
   2) if, after conversion from lower case IA5IRV characters, if any, to upper case IA5IRV characters, the value of the *organization-name* attribute differs from "AFTN" and if an AF-Address matching exactly the MF-Address of the originator can be found in the User address look-up table maintained in the Message Transfer and Control Unit; or
b) if none of the conditions 1) or 2) in a) above can be met, then:
   1) rejection of the probe for all the probe recipients; and
   2) generation of a non-delivery report as specified in 3.1.2.3.5.6 with the following elements taking the following abstract-values in all the *per-recipient-fields* of the report:
      i) "unable-to-transfer" for the *non-delivery-reason-code*;
      ii) "invalid-arguments" for the *non-delivery-diagnostic-code*; and
      iii) "unable to convert to AFTN due to unrecognized originator O/R address" for the *supplementary-information*.

3.1.2.3.5.5.6. For each probe recipient, a probe which was not rejected as the result of 3.1.2.3.5.5.5 shall be processed in one of the following manners, depending on the ability of the Message Transfer and Control Unit to translate the considered *recipient-name* element of the Probe Transfer Envelope into an AF-Address:

a) processing as specified in 3.1.2.3.5.5.7 if either of the following conditions is met:
   1) if, after conversion from lower case IA5IRV characters, if any, to upper case IA5IRV characters, the *organization-name* attribute has the value "AFTN" and if the value of the first element of the *organizational-unit-names* is a syntactically valid AF-Address; or
   2) if, after conversion from lower case IA5IRV characters, if any, to upper case IA5IRV characters, the value of the *organization-name* attribute differs from "AFTN" and if an AF-Address matching exactly the MF-Address of the recipient can be found in the User address look-up table maintained in the Message Transfer and Control Unit; or

b) if none of the conditions 1) or 2) in a) above can be met, then:
   1) rejection of the probe for the considered recipient; and
   2) generation of a non-delivery report as specified in 3.1.2.3.5.6 with the following elements taking the following abstract-values in the corresponding *per-recipient-fields* of the report:
      i) "unable-to-transfer" for the *non-delivery-reason-code*; and
      ii) "unrecognised-OR-name" for the *non-delivery-diagnostic-code*.

3.1.2.3.5.5.7. For the probe recipients which were not rejected as the result of 3.1.2.3.5.5.6, a delivery-report shall be generated as specified in 3.1.2.3.5.6,, if requested, to indicate the successful result of the probe conveyance test.

3.1.2.3.5.6. Generation of AMHS Reports

3.1.2.3.5.6.1. General

3.1.2.3.5.6.1.1. 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 3.1.2.3.5.1.1, 3.1.2.3.5.1.4, 3.1.2.3.5.2 and 3.1.2.3.5.5, either for all the recipients or for certain recipients.

3.1.2.3.5.6.1.2. **Recommendation**.- *When the generation of a non-delivery report is required in relation with the rejection of the subject AMHS message for more than one recipient of the subject AMHS message, a single non-delivery report should be generated to report on the rejection for multiple recipients, using several per-recipient-fields elements in the Report Transfer Content.*

3.1.2.3.5.6.1.3. For each AMHS message which was converted by the Message Transfer and Control Unit as the result of the procedures specified in 3.1.2.3.5.2.2 to 3.1.2.3.5.2.4 and then succesfully passed to the AFTN Component as specified in 3.1.2.3.5.1.6, 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".

3.1.2.3.5.6.1.4. **Recommendation**.- *When the generation of a delivery report is required as specified in 3.1.2.3.5.6.1.3 for more than one recipient of the subject AMHS message, a single delivery report should be generated to report on the conveyance towards multiple recipients, using several per-recipient-fields elements in the Report Transfer Content.*

3.1.2.3.5.6.1.5. When the generation of a delivery report is required in relation with the result of a probe conveyance test as specified in 3.1.2.3.5.5, the clauses 3.1.2.3.5.6.1.3 to 3.1.2.3.5.6.1.4 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.

3.1.2.3.5.6.1.6. A report resulting from the clauses above shall be generated as specified in 3.1.2.3.5.6.2.

3.1.2.3.5.6.2. Generation of Report Transfer Envelope and Content

3.1.2.3.5.6.2.1. Each report resulting from the specification of 3.1.2.3.5.6.1 shall be generated by the Message Transfer and Control Unit, in the form of an AMHS Report Transfer Envelope and Report Transfer Content, composed of elements as specified in the column "action" of Table 3.1.2-18.

3.1.2.3.5.6.2.2. These elements which are classified as "G" or "G2" shall be either generated or conditionally generated according to the specification in the clause referred to in the column "generation action" of Table 3.1.2-18.

Note.- Table 3.1.2-18 is structured as a PRL derived from the ISPICS Proforma included in ISO/IEC ISP 10611-3. The columns "Base" and "ISP" are extracted from ISO/IEC ISP 10611-3, and the column "Basic ATS Message Service" specifies the static capability of an AU in relation with the MT-EoS, i.e. the ability to convey, handle and act in relation with the element. The references to the ISP Profile are indicated in the part titles as AMH11/ref where appropriate.

Table 3.1.2-18 Generation of AMHS Report

PART 1 : AMH11/A.1.4.3 REPORTTRANSFER						
Ref	**Element**	**Base**	**ISP**	**Basic ATS Mess. Service**	**Action**	**Generation action**
1	ReportTransferEnvelope	m	m	M	G	see Part 1/1.1-1.4
1.1	report-identifier	m	m	M	G	see 3.1.2.3.5.6.2.3 and Part 2/1
1.2	report-destination-name	m	m	M	G	see 3.1.2.3.5.6.2.6
1.3	trace-information	m	m	M	G	see 3.1.2.3.5.6.2.7
1.4	extensions	m	m	M		see 3.1.2.3.5.6.2.8
1.4.1	message-security-label	o	m-	M-	X	-
1.4.2	originator-and-DL-expansion-history	m	m	M	G2	see 3.1.2.3.5.6.2.9
1.4.3	reporting-DL-name	o	m-	M-	X	-
1.4.4	reporting-MTA-certificate	o	m-	M-	X	-
1.4.5	report-origin-authentication-check	o	m-	M-	X	-
1.4.6	internal-trace-information	m	m	M	G	see 3.1.2.3.5.6.2.10
2	ReportTransferContent	m	m	M	G	see Part1/2.1 and 2.2
2.1	(per report fields)					
2.1.1	subject-identifier	m	m	M	G	see 3.1.2.3.5.6.2.11
2.1.2	subject-intermediate-trace-information	o	m	M	G	see 3.1.2.3.5.6.2.12
2.1.3	original-encoded-information-types	m	m	M	G	see 3.1.2.3.5.6.2.13
2.1.4	content-type	m	m	M	G	see 3.1.2.3.5.6.2.14
2.1.5	content-identifier	m	m	M	G2	see 3.1.2.3.5.6.2.15
2.1.6	returned-content	o	m-	M-	G2	see 3.1.2.3.5.6.2.16

2.1.7	additional-information	o	m-	M-	X	-
2.1.8	extensions	m	m	M		see 3.1.2.3.5.6.2.8
2.1.8.1	content-correlator	m	m	M	G2	see 3.1.2.3.5.6.2.17
2.2	per-recipient-fields	m	m	M		see Part1/2.2.1-2.2.7
2.2.1	actual-recipient-name	m	m	M	G	see 3.1.2.3.5.6.2.18
2.2.2	originally-specified-recipient-number	m	m	M	G	see 3.1.2.3.5.6.2.19
2.2.3	per-recipient-indicators	m	m	M	G	see 3.1.2.3.5.6.2.20
2.2.4	last-trace-information	m	m	M	G	see Part 2/7
2.2.5	originally-intended-recipient-name	m	m	M	G2	see 3.1.2.3.5.6.2.26
2.2.6	supplementary-information	o	m-	M-	G2	see 3.1.2.3.5.6.2.27
2.2.7	extensions	m	m	M		see 3.1.2.3.5.6.2.8
2.2.7.1	redirection-history	m	m	M	G2	see 3.1.2.3.5.6.2.28
2.2.7.2	physical-forwarding-address	o	m-	M-	X	-
2.2.7.3	recipient-certificate	o	m-	M-	X	-
2.2.7.4	proof-of-delivery	o	m-	M-	X	-

PART 2 : AMH11/A.1.5 COMMON DATA TYPES

Ref	**Element**	**Base**		**Basic ATS Mess. Service**	**Action**	**Notes/References**
1	MTSIdentifier					
1.1	global-domain-identifier	m	m	M	G	see 3.1.2.3.5.6.2.4 and Part 2/2
1.2	local-identifier	m	m	M	G	see 3.1.2.3.5.6.2.5
2	GlobalDomainIdentifier					
2.1	country-name	m	m	M		see 3.1.2.3.5.6.2.29

2.2	administration-domain-name	m	m	M		see 3.1.2.3.5.6.2.30
2.3	private-domain-identifier	m	m	M		see 3.1.2.3.5.6.2.31
6	TraceInformation					
6.1	TraceInformationElement	m	m	M	G	see Part 2/6.1.1 and 6.1.2
6.1.1	global-domain-identifier	m	m	M	G	see 3.1.2.3.5.6.2.32 and Part 2/2
6.1.2	domain-supplied-information	m	m	M	G	see Part 2/6.1.2.1-6.1.2.4
6.1.2.1	arrival-time	m	m	M	G	see 3.1.2.3.5.6.2.33
6.1.2.2	routing-action	m	m	M	G	see Part 2/6.1.2.2.1 and 6.1.2.2.2
6.1.2.2.1	relayed	m	m	M	G	see 3.1.2.3.5.6.2.34
6.1.2.2.2	rerouted	o	c1	C1	X	-
6.1.2.3	attempted-domain	o	c1	C1	X	-
6.1.2.4	(additional actions)					
6.1.2.4.1	deferred-time	m	c2	C2	X	-
6.1.2.4.2	converted-encoded-information-types	o	m-	M-	X	-
6.1.2.4.3	other-actions	o	m-	M-	X	-
6.1.2.4.3.1	redirected	o	m-	M-	X	-
6.1.2.4.3.2	dl-operation	o	m-	M-	X	-
7	LastTraceInformation					
7.1	arrival-time	m	m	M	G	see 3.1.2.3.5.6.2.21
7.2	converted-encoded-information-types	m	m	M	G2	see 3.1.2.3.5.6.2.22
7.3	report-type	m	m	M	G	see Part 2/7.3.1and 7.3.2
7.3.1	delivery	m	m	M	G2	see Part 2/7.3.1.1 and 7.3.1.2

7.3.1.1	message-delivery-time	m	m	M	G	see 3.1.2.3.5.6.2.23
7.3.1.2	type-of-MTS-user	m	m	M	G	see 3.1.2.3.5.6.2.24
7.3.2	non-delivery	m	m	M	G2	see Part 2/7.3.2.1 and 7.3.2.2
7.3.2.1	non-delivery-reason-code	m	m	M	G	see 3.1.2.3.5.6.2.25
7.3.2.2	non-delivery-diagnostic-code	m	m	M	G	see 3.1.2.3.5.6.2.25
PART 3 : AMH11/A.1.6 EXTENSION DATA TYPES						
Ref	**Element**	**Base**		**Basic ATS Mess. Service**	**Action**	**Notes/References**
1	ExtensionField					
1.1	type	m	m	M	G	see Part 3/1.1.1 and 1.1.2
1.1.1	standard-extension	m	m	M	G	see 3.1.2.3.5.6.2.8
1.1.2	private-extension	o	m-	M-	X	-
1.2	criticality	m	m	M	G	see 3.1.2.3.5.6.2.8
1.3	value	m	m	M	G	see 3.1.2.3.5.6.2.8
5	InternalTraceInformation					
5.1	global-domain-identifier	m	m	M	G	see 3.1.2.3.5.6.2.32
5.2	mta-name	m	m	M	G	see 3.1.2.3.5.6.2.35
5.3	mta-supplied-information	m	m	M	G	see Part 3/5.3.1-5.3.4
5.3.1	arrival-time	m	m	M	G	see 3.1.2.3.5.6.2.33
5.3.2	routing-action	m	m	M	G	see Part 3/5.3.2.1-5.3.2.2
5.3.2.1	relayed	m	m	M	G	see 3.1.2.3.5.6.2.34
5.3.2.2	rerouted	o	c1	C1	X	-

5.3.3	attempted	o	c1	C1	X	-
5.3.4	(additional actions)					
5.3.4.1	deferred-time	m	c2	C2	X	-
5.3.4.2	converted-encoded-information-types	o	m-	M-	X	-
5.3.4.3	other-actions	o	m-	M-	X	-
5.3.4.3.1	redirected	o	m-	M-	X	-
5.3.4.3.2	dl-operation	o	m-	M-	X	-

Legend (see 3.1.1.1.4.3) :

m = mandatory support
m- = minimal mandatory support
o = optional support
i = out of scope
- = not applicable
c1 = if rerouting is supported then m else m-
c2 = if deferred delivery is supported then m else m-
G = generated
G2 = conditionally generated
X = excluded (not used)

3.1.2.3.5.6.2.3. The element *report-identifier* in the Report Transfer Envelope shall:

a) be generated locally so as to ensure that it distinguishes the report from all other messages, probes or reports generated in the AMHS, as specified in ISO/IEC 10021-4, 12.2.1.3.1.1; and
b) be composed as specified in Table 3.1.2-18/Part 2/1.

3.1.2.3.5.6.2.4. The element *global-domain-identifier* in the *report-identifier*, or in the *trace-information*, or in the *internal-trace-information* shall:

a) identify the AMHS Management Domain operating the AFTN/AMHS Gateway; and
b) be composed as specified in Table 3.1.2-18/Part 2/2.

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

3.1.2.3.5.6.2.6. The *report-destination-name* element in the Report Transfer Envelope shall be one of the following:

a) the last OR-name in the *DL-expansion-history* element, if present, of the subject AMHS message as specified in Table 3.1.2-12/Part 1/1.1.11.11; or
b) the *originator-name* of the subject AMHS message, as specified in Table 3.1.2-12/Part 1/1.1.2, if there is no *DL-expansion-history* element in the subject AMHS message.

3.1.2.3.5.6.2.7. The first *trace-information-element* in the *trace-information* of the Report Transfer Envelope shall be generated as specified in Table 3.1.2-18/Part 2/6.

3.1.2.3.5.6.2.8. Only extensions of type "standard-extension" as defined in the base standards shall be used, as further specified in the classification of Table 3.1.2-18.

3.1.2.3.5.6.2.9. If a *DL-expansion-history* element as specified in Table 3.1.2-12/Part 1/1.1.11.11 was present in the subject AMHS message, the *originator-and-DL-expansion-history* element shall be generated as the sequence of the *originator-name* of the subject AMHS message, as specified in Table 3.1.2-12/Part 1/1.1.2, and of the aforementioned *DL-expansion-history* element of the subject AMHS message.

3.1.2.3.5.6.2.10. The first *internal-trace-information-element* in the *internal-trace-information* of the Report Transfer Envelope shall be generated as specified in Table 3.1.2-18/Part 3/5.

3.1.2.3.5.6.2.11. The *subject-identifier* element in the Report Transfer Content shall take the value of the *message-identifier* element of the subject AMHS message as specified in Table 3.1.2-12/Part 1/1.1.1.

3.1.2.3.5.6.2.12. The *subject-intermediate-trace-information* element in the Report Transfer Content shall take the value which the *trace-information* element of the subject AMHS message as specified in Table 3.1.2-12/Part 1/1.1.10 had when the subject AMHS message entered the AMHS Management Domain operating the Message Transfer and Control Unit, if and only if the *originating-MTA-report* and *originating-MTA-non-delivery-report* bit components in the *per-recipient-indicators* of all the subject AMHS message recipients in the subject Message Transfer Envelope are set to "1".

3.1.2.3.5.6.2.13. The *original-encoded-information-types* element in the Report Transfer Content shall take the value of the *original-encoded-information-types* element of the subject AMHS message as specified in Table 3.1.2-12/Part 1/1.1.3.

3.1.2.3.5.6.2.14. The *content-type* element in the Report Transfer Content shall take the value of the *content-type* element of the subject AMHS message as specified in Table 3.1.2-12/Part 1/1.1.4.

3.1.2.3.5.6.2.15. The *content-identifier* element in the Report Transfer Content shall either:

a) take the value of the *content-identifier* element of the subject AMHS message as specified in Table 3.1.2-12/Part 1/1.1.5, if present; or
b) be omitted in the report if there is no such element in the subject AMHS message.

3.1.2.3.5.6.2.16. The *content-identifier* element in the Report Transfer Content shall optionally take the value of the *content* of the subject AMHS message, if and only if the *content-return-request* bit components in the *per-message-indicators* of the subject AMHS message in the subject Message Transfer Envelope is set to "1".

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.

3.1.2.3.5.6.2.17. The *content-correlator* element in the Report Transfer Content shall either:

a) take the value of the *content-correlator* element of the subject AMHS message as specified in Table 3.1.2-12/Part 1/1.1.11.10, if present; or
b) be omitted in the report if there is no such element in the subject AMHS message.

3.1.2.3.5.6.2.18. The *actual-recipient-name* element in a *per-recipient-fields* element of the Report Transfer Content shall take the value of the corresponding *recipient-name* element in the *per-recipient-fields* of the subject AMHS message as specified in Table 3.1.2-12/Part 1/1.2.1.

3.1.2.3.5.6.2.19. The *originally-specified-recipient-number* element in a *per-recipient-fields* element of the Report Transfer Content shall take the value of the corresponding *originally-specified-recipient-number* element in the *per-recipient-fields* of the subject AMHS message as specified in Table 3.1.2-12/Part 1/1.2.2.

3.1.2.3.5.6.2.20. 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 AMHS message as specified in Table 3.1.2-12/Part 1/1.2.3.

3.1.2.3.5.6.2.21. The *arrival-time* element in the *last-trace-information* of a *per-recipient-fields* element shall take the value of the time at which the subject AMHS message entered the AMHS Management Domain operating the AFTN/AMHS Gateway, as found in the last *trace-information-element* of the subject AMHS message, as specified in Table 3.1.2-12/Part 2/6.1.2.1.

3.1.2.3.5.6.2.22. The *converted-encoded-information-types* element in the *last-trace-information* of a *per-recipient-fields* element shall either:

a) take the last value of the *converted-encoded-information-types* element in the *trace-information* of the subject AMHS message, as specified in Table 3.1.2-12/Part 2/6.1.2.4.2, if this element exists; or
b) be omitted in the report, if no such element is present in the *trace-information* of the subject AMHS message.

3.1.2.3.5.6.2.23. The *message-delivery-time* element in the *last-trace-information* of a *per-recipient-fields* element shall be the time at which the subject AMHS message has been successfully passed to the AFTN Component by the Message Transfer and Control Unit.

3.1.2.3.5.6.2.24. The *type-of-MTS-user* element in the *last-trace-information* of a *per-recipient-fields* element shall take the abstract-value "other".

3.1.2.3.5.6.2.25. 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 clause which caused the generation of the non-delivery-report.

3.1.2.3.5.6.2.26. The *originally-intended-recipient-name* element in a *per-recipient-fields* element shall either:

a) take the value of the first O/R name found in the *redirection-history* element of the subject AMHS message, if present, as specified in Table 3.1.2-12/Part 1/1.2.5.13; or
b) be omitted in the report if there is no *redirection-history* element in the subject AMHS message.

3.1.2.3.5.6.2.27. The *supplementary-information* element in a *per-recipient-fields* element shall take one of the following values:

a) the value "This report only indicates successful (potential) conversion to AFTN, not delivery to a recipient" if the report is a delivery-report; or
b) the value, if any, specified in the clause which caused the generation of the report if it is a non-delivery-report.

3.1.2.3.5.6.2.28. The *redirection-history* element in a *per-recipient-fields* element shall either:

a) take the value of the *redirection-history* element of the subject AMHS message, if present, as specified in Table 3.1.2-12/Part 1/1.2.5.13; or
b) be omitted in the report if there is no *redirection-history* element in the subject AMHS message.

3.1.2.3.5.6.2.29. The element *country-name* in the *global-domain-identifier* element of the *MTS-identifier* and of the first *trace-information-element* shall:

a) be part of the identification of the AMHS Management Domain operating the AFTN/AMHS Gateway by taking one of the following values:
   1) the two-character alphabetical country-indicator as specified in ISO 3166 for the country, or for one of the countries, where the AMHS Management Domain has been registered, if the AMHS Management Domain has been subject to national or multi-national registration; or
   2) a two-character alphabetical indicator dedicated to an international organization, if the AMHS Management Domain has been subject to international registration as defined in CCITT Recommendation X.666; and
b) be encoded as a Printable String.

3.1.2.3.5.6.2.30; The element *administration-domain-name* in the *global-domain-identifier* element of the *MTS-identifier* and of the first *trace-information-element* shall:

a) be part of the identification of the AMHS Management Domain operating the AFTN/AMHS Gateway by taking one of the following values, depending on its status:
   1) the name of the ADMD under which the AMHS Management Domain has been registered, either nationally or internationally, if the AMHS Management Domain operates as an ADMD;
   2) the name of the ADMD to which the AMHS Management Domain is connected, if the AMHS Management Domain operates as a PRMD; or
   3) the value single-space if the AMHS Management Domain operates as a PRMD and is unique with regard to the *country-name* identifying the area where it is registered, either nationally or internationally; and
b) be encoded as a Printable String.

3.1.2.3.5.6.2.31. The element *private-domain-identifier* in the *global-domain-identifier* element of the *MTS-identifier* and of the first *trace-information-element* shall be handled in one of the following manners, depending on the status under which the AMHS Management Domain operates:

a) generation of the element, with the value of the name of the PRMD, encoded as a Printable String, if the AMHS Management Domain operates as an PRMD; or
b) omission in the *global-domain-identifier* if the AMHS Management Domain operates as an ADMD.

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

a) identify the AMHS Management Domain operating the AFTN/AMHS Gateway; and
b) be composed as specified in Table 3.1.2-18 / Part 2/2.

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

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

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

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

3.1.3. ATN PASS-THROUGH SERVICE

3.1.3.1. SYSTEM LEVEL PROVISIONS

The ATN Pass-Through Service shall provide a logical point-to-point message environment for the exchange of IA-5 encoded AFTN messages over the ATN and with the AFTN via the AFTN/ATN Type A gateway.

Note 1.- This service does not provide classical store and forward messages services such as found in the AFTN and the ATS Message Service, nor is it visible to users at AFTN stations.

Note 2.- As a matter of organisations' policy, the implementation of the ATS Message Service may be deferred. 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.

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

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

3.1.3.1.3. The AFTN/ATN Type A Gateway

The set of computing and communication resources used to exchange AFTN messages across the ATN, including the implementation of the ATS Message Protocol Stack Type A, shall be called the AFTN/ATN Type A Gateway.

Note 1.- An authority 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 performed in the AFTN Component.

3.1.3.1.4. AFTN/ATN Type A Gateway users

The AFTN/ATN Type A Gateway users shall consist of:

a) AFTN stations exchanging AFTN messages that require the use of the ATN for communication; or
b) AFTN stations exchanging AFTN messages to an ATN end-system which understands AFTN messages.

3.1.3.1.5 AFTN/ATN Type A Gateway model

3.1.3.1.5.1. AFTN/ATN Type A Gateway information model

The AFTN/ATN Type A Gateway information elements shall consist only of AFTN messages.

3.1.3.1.5.2. Security model

3.1.3.1.5.2.1. **Recommendation.-** *Security should be obtained by procedural means rather than by technical features inherent in the AFTN/ATN Type A Gateway System.*

Note.- The security at each AFTN/ATN Type A Gateway System is deemed a local issue to be addressed by the authority in charge of the system.

3.1.3.1.5.3. Management model

3.1.3.1.5.3.1. All error conditions shall be recorded in an electronic log and optionally reported to a local system console.

3.1.3.1.5.3.2. **Recommendation**.- *Management functions for the AFTN/ATN Type A Gateway System should be limited to the defined logging provisions. No provision is made for retrieval of this information, which is deemed a local issue to be addressed by the authority in charge of the system.*

3.1.3.1.6. AFTN/ATN Type A Gateway System configurations

3.1.3.1.6.1. The minimal set of systems implemented and operated by an authority for the ATN Pass-Through Service shall be: one AFTN/ATN Type A Gateway system.

3.1.3.1.6.2. The minimal set of communications circuits implemented by an authority operating an AFTN/ATN Type A Gateway shall be:

a) when integrated with an AFTN centre, access to one ATN subnetwork;
b) when not integrated with an AFTN centre, one AFTN circuit utilizing a code and byte independent procedures and access to one ATN subnetwork; or
c) when not integrated with an AFTN centre, one AFTN circuit utilizing any Annex 10, Volume I controlled or Volume II uncontrolled circuit procedure and access to one ATN subnetwork.

Note. - The effect of 3.1.3.1.6.2 a) and b) is the elimination of the requirement for the AFTN/ATN Type A Gateway to implement the manual teletypewriter procedures, such as service message procedures, channel-check and transmission identification procedures, and code conversion procedures contained in Annex 10, Volume II.

3.1.3.1.7. AFTN/ATN Type A Gateway System naming principles

Naming for each AFTN/ATN Type A Gateway system shall consist of an AP-title set and an AE-qualifier set, according to Annex 10, Volume III, Sub-Volume 4.

3.1.3.1.8. AFTN/ATN Type A Gateway System addressing principles

Note.- There are two address forms used in the AFTN/ATN Type A Gateway System:

a) an AFTN address; and
b) an ATN address.

3.1.3.1.8.1. An AFTN address shall be an AFTN addressee indicator as specified in Annex 10, Volume II, 4.4.3.1.2 and 4.4.15.2.

3.1.3.1.8.2. An ATN address shall be an ATN end-system address comprised of:

a) a NULL Presentation Service Access Point Selector (P-SEL) according to Annex 10, Volume III, Sub-Volume 4;
b) a NULL Session Service Access Point Selector (S-SEL) according to Annex 10, Volume III, Sub-Volume 4;
c) a Transport Service Access Point Address (T-SEL and NSAP) according to Annex 10, Volume II Sub-Volume 5.

3.1.3.1.9. Routing principles

The internal routing of messages shall be provided by a combination of the routing procedures of AFTN messages and the routing procedures of the ATN Internet.

3.1.3.1.10. AFTN/ATN communication failure

3.1.3.1.10.1. If, for any reason, the AFTN/ATN Type A gateway is unable to pass messages to the ATN Internet after a locally specified time, then the gateway shall indicate to the AFTN Centre that it is unable to accept incoming AFTN messages, from the AFTN as specified in Annex 10, Volume II, 4.4.1.5.2.3.

Note 1.- Such a condition may be caused by the inability of the ATN Component to convey messages over the ATN due to, for example, the inability to establish an association, or the occurrence of an abort condition with the remote ATN end system.

Note 2.- The way in which the gateway determines that it is unable to pass messages to the ATN Internet is a local implementation matter.

3.1.3.1.10.2. If, for any reason, the AFTN/ATN Type A gateway is unable to pass messages to the AFTN after a locally specified time, then the gateway shall indicate that it is unable to accept incoming messages by terminating all associations with ATN End Systems.

3.1.3.2. ATN PASS-THROUGH SERVICE SPECIFICATION

3.1.3.2.1. 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.

3.1.3.2.2. The three logical components shall interact according to the architecture specified in Volume III Sub-Volume 4. The organization is shown in Figure 3.3-1.

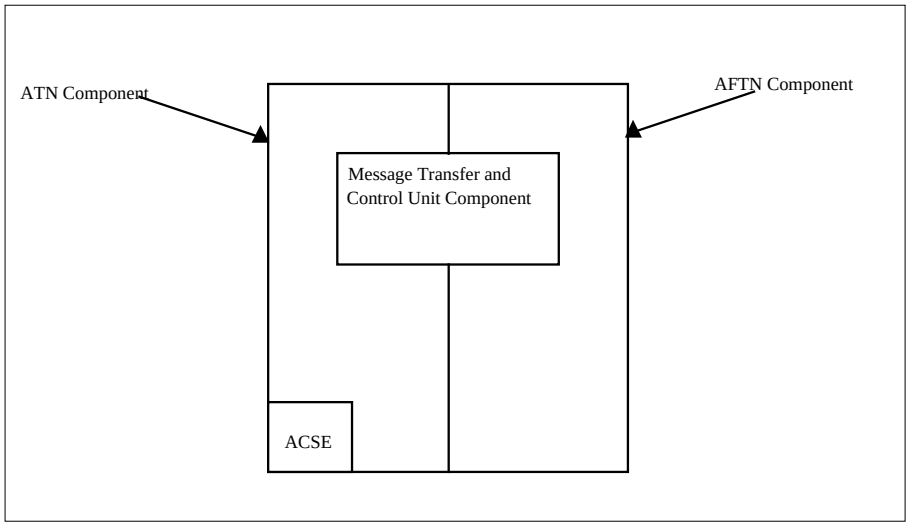

Figure 3.1.3-1 Structure of the AFTN/ATN Type A Gateway Application

3.1.3.2.3. The processing of messages in the Type A Gateway shall assume all messages received from users, are constructed in strict accordance with Annex 10, Volume II, 4.4.16.1.

Note.- Except as required during normal operations, it is not required that to otherwise check messages for proper format or for properly coded or missing fields.

3.1.3.2.4. The ATN Pass-Through Service shall be totally transparent to the users of the service, except when applying the procedures for address stripping.

3.1.3.3. AFTN/ATN TYPE A GATEWAY SPECIFICATION

3.1.3.3.1 . AFTN component

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

3.1.3.3.1.2. The AFTN component shall implement:

a) all the applicable requirements of Annex 10, Volume II, in a manner so as to be indistinguishable from an operational AFTN station by the AFTN Centre to which the gateway is connected; and
b) additional requirements which are not placed on AFTN stations by Annex 10, Volume II but which are necessary due to the AFTN Component requirements pertaining to an AFTN/ATN Type A Gateway.

3.1.3.3.1.3. The AFTN component shall incorporate an AFTN procedure handler that provides all of the AFTN functions prescribed for the interface to the AFTN.

3.1.3.3.1.4. The AFTN Component shall isolate all AFTN procedures from the Message Transfer and Control Unit Component.

Note. - The AFTN procedure handler includes the procedures for managing the order of AFTN messages based on the transmission priority specified. In using the AFTN procedure handler for managing priority eliminates the need for the Message Transfer and Control Unit to manage message priorities.

3.1.3.3.1.5. The AFTN Component shall pass all messages received from the AFTN, including service messages not associated with the AFTN interface as specified in 3.1.3.1.6.2c), to the Message Transfer and Control Unit for processing as specified in 3.1.3.3.3.

3.1.3.3.1.6. The AFTN Component of an AFTN/ATN Type A 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 to provide recovery from communication protocol errors.

3.1.3.3.1.7. The AFTN Component of an AFTN Type A Gateway shall perform long-term retention and log the address and origin parts of all messages sent and received from the AFTN, with the message receipt-time and the action taken thereon.

3.1.3.3.2. ATN component

3.1.3.3.2.1. The ATN Component shall implement the procedures required of an ATN End System as specified by the ATS Message protocol stack Type A.

3.1.3.3.2.2. The ATN Component service shall consist of a single service primitive between it and the Message Transfer and Control Unit, the GA-Data request and indication.

Table 3.1.3-1 ATN Component Service

GA-Data Service Primitive	Req	Ind
User Data	M	M(=)
Called Address	M	
Calling Address	U	M(=)
Priority (transmission)	U	U(=)

3.1.3.3.2.3. The ATS Message protocol stack Type A shall consist of protocols and procedures specified in Annex 10, Volume III, Sub-Volume 4; and consisting of:

a) the ATN Component Control Function, specified in 3.1.3.3.2.4;
b) the Dialogue Service Element as specified in Annex 10, Volume III, Sub-Volume 4, consisting of:
   1) the Application Control Service,
   2) the Presentation Efficiency enhancements, and
   3) the Session Efficiency enhancements
c) the ATN internet requirements as specified in Annex 10, Volume III, Sub-Volume 5.

3.1.3.3.2.4. ATN Control Function

3.1.3.3.2.4.1. The ATN Component control function (CF) shall map the GA-Data requests and indications to and from the Dialogue Service as specified in Annex 10, Volume III, Sub-Volume 4.

Note.- The CF is also responsible for mapping the Dialogue Service (DS) to the ACSE and Presentation Service as specified in Annex 10, Volume III, Sub-Volume 4.

3.1.3.3.2.4.2. Upon receipt of a GA-Data request, the CF shall determine if a dialogue exists with the destination ATN End-System by examining the Called Address parameter.

3.1.3.3.2.4.3. If a dialogue does not exist, the CF shall formulate a D-START-request primitive.

Note.- The CF also maps the D-Start-request to the A-Associate-request and issues that request to the communication service provider.

3.1.3.3.2.4.4. The parameters of the D-START-request shall be set according to Table 3.1.3-2.

Table 3.1.3-2 D-START-request Parameters

D-START-request Parameter	Type	Value
Calling Peer ID	OID	{iso (1) identified-organization (3) icao (27) atn-facility designator (2) <end-system-id> (x)
Called Peer ID	OID	{iso (1) identified-organization (3) icao (27) atn-facility designator (2) <end-system-id> (x)
DS-User Version	INT	1
Security Requirements	INT	<not used>
QOS	INT	AFTN transmission parameter value
User Information		<not used>

3.1.3.3.2.4.5. Upon receipt of an D-START-indication, the CF shall determine if the parameters are valid according to Table 3.1.3-2.

3.1.3.3.2.4.6. If the parameters are acceptable and sufficient resources available to support the association, the CF shall accept the association by sending a D-START-response.

3.1.3.3.2.4.7. The parameters in the D-START-response shall be set according to Table 3.1.3-3 with the Result parameter set to 0.

3.1.3.3.2.4.8. If the parameters are unacceptable or there are insufficient resources available to support the association, the CF shall reject the association by sending an D-START-response.

3.1.3.3.2.4.9. The parameters in the D-START-response shall be set according to Table 3.1.3-3 with the Result parameter set to 1 in the case of invalid parameters and set to 2 if there are insufficient resources.

Table 3.1.3-3 D-START-response Parameters

D-START-response Parameter	Type	Value
DS-User Version	INT	1
Security Requirements	INT	<not used>
QOS	INT	<not used>
User Information		<not used>
Result	INT	0 = accepted 1 = rejected-permanent 2 = rejected-transient

Note 1.- The use of a security policy (such as only accepting associations from particular remote ATN end systems) to limit acceptance of associations is a local matter.

Note 2.- An implementation needs to maintain sufficient information about the association end-point in order to be able to differentiate different sources and sinks of information. The specification and use of local association end-point identifiers is a local matter.

3.1.3.3.2.4.10. Upon the completion of the dialogue set-up, or in the case of using an existing dialogue, the CF shall formulate a D-Data request by taking the data in the User Data parameter in the GA-DATA-request and encoding it as the user data field in the D-DATA-request.

3.1.3.3.2.4.11. The data received in the User Data parameter of the GA-DATA-request is the complete AFTN message, which shall be passed transparently to the destination system.

Note. - The CF maps the D-DATA-request to a P-Data-request primitive and issues the primitive to the communication service provider.

3.1.3.3.2.4.12. Upon the receipt of a D-Data indication, the CF shall extract the user data and place it in the User Data parameter of the GA-Data indication.

3.1.3.3.2.4.13. If the CF does not have any data to send over a dialogue for a time period t_1, it shall release the dialogue by formulating an D-END-request.

Note. - The time period to wait before releasing a dialogue is a local matter to be determined by cost and expected data traffic.

3.1.3.3.2.4.14. The parameters of the D-END-request shall be set according to Table 3.1.3-4.

Table 3.1.3-4 D-END-request Parameters

D-END-request Parameter	Type	Value
User Information		<not used>
Result	INT	<not used>

3.1.3.3.2.4.15. Upon receiving an D-END-indication, the CF shall release the dialogue as soon as it no longer has any data to send (over that dialogue) by formulating a D-END-response.

3.1.3.3.2.4.16. The parameters of the D-END-response shall be set according to Table 3.1.3-5.

Table 3.1.3-5 D-END-response Parameters

D-END-response Parameter	Type	Value
User Information		<not used>
Result	INT	0 - affirmative 1 - negative

3.1.3.3.2.4.17. The parameters Reason and Result shall be set consistently where either both parameters are set to 0 or both parameters are set to 1.

3.1.3.3.2.4.18. For unrecoverable errors, the CF shall issue an D-U-Abort-request to terminate the dialogue.

3.1.3.3.2.5. Priority

3.1.3.3.2.5.1. For transmission of messages across the ATN, the AFTN transmission priorities, as found in Annex 10, Sub-Volume II, 4.4.1.2, shall map to ATN priorities in accordance with Table 3.1.3-6.

Table 3.1.3-6 AFTN/ATN Priority Mapping

AFTN Transmission Priority	ACSE Service Quality of Service Parameter
1	1
2	3
3	5

3.1.3.3.2.5.2. The ATN component shall process messages according to the priority of the message.

3.1.3.3.3. Message Transfer and Control Unit Component

Note.- The Message Transfer and Control Unit Component provides a bi-directional conversion facility between the AFTN component and the ATN component and consists of:

a) a set of general functions as specified in 3.1.3.3.3.1;
b) a set of AFT to ATN mapping functions as specified in 3.1.3.3.3.3;
c) a set of ATN to AFTN mapping functions as specified in 3.1.3.3.3.4;
d) a set of interface requirements between the Message Transfer and Control Unit Component and the ATN Component as specified in 3.1.3.3.3.5; and
e) a set of interface requirements between the Message Transfer and Control Unit Component and the AFTN Component as specified in 3.1.3.3.3.6.

3.1.3.3.3.1. General functions

The Message Transfer and Control Unit of an AFTN/ATN Type A Gateway shall log all messages and information related to the following events that have occurred at its interfaces with the ATN Component and with the AFTN Component, and in its internal procedures:

a) the messages transferred out (to the ATN Component);
b) the messages transferred in (from the ATN Component);
c) the AFTN messages conveyed out (to the AFTN Component);
d) the AFTN messages conveyed in (from the AFTN Component);
e) the AFTN service messages indicating unknown addressee indicator conveyed out (to the AFTN Component).

Note. - This requirement is not intended to fulfill the 30 day message requirements for an AFTN station.

3.1.3.3.3.2. Address conversion

The Message Transfer and Control Unit Component shall maintain an address conversion function which maps between AFTN addresses and ATN addresses.

3.1.3.3.3.2.1 The address conversion function shall, at a minimum, provide the following mappings:

a) a map from an entire AFTN address to an ATN address,
b) a map from sets of AFTN addresses based on a portion of the AFTN address to a single ATN address.

Note.- All AFTN address Indicators are treated as explicit addresses, including predetermined address indicators (PDAIS), thus a single AFTN address can only map to a single ATN address.

3.1.3.3.3.2.2. **Recommendation**- *The address conversion function should provide a default mapping of an AFTN Address Indicator to an alternate ATN address when the primary ATN address is not in service.*

3.1.3.3.3.3. AFTN to ATN mapping

3.1.3.3.3.3.1. Upon the reception by the Message Transfer and Control Unit of a message passed from the AFTN Component, it shall examine the AFTN Address Indicators to determine the onward routing requirements of the message over the ATN.

3.1.3.3.3.3.2. Prior to delivery of the message to the ATN Component, the Message Transfer and Control Unit Component shall apply the address stripping procedures defined in Annex 10, Volume II, 4.4.8 to omit from the address any AFTN Address Indicators not related to the selected ATN address and provide for message replication if more than one ATN address is required.

Note.- In applying the procedures of 3.1.3.3.3.3.2 the Message Transfer and Control Unit Component provides sufficient copies of the message to reach each ATN address obtained by applying the procedures of 3.1.3.3.3.2.1. In most cases, a set of AFTN addresses will map to a single ATN address (the address of the corresponding ATN Gateway) and the number of copies of AFTN messages needed to reach all destination systems will be small.

3.1.3.3.3.3.2.1. AFTN messages received from the AFTN Component that cannot be mapped to an appropriate ATN address shall be discarded.

3.1.3.3.3.3.2.2. The Message Transfer and Control Unit shall send an appropriate service message to the AFTN originator indicator advising of an invalid address indicator according to the following:

a) the abbreviation SVC,
b) the procedure signal ADS,
c) the alignment function,
d) the indication UNKNOWN,
e) the unknown address indicator(s),
f) the end-of-text signal.

3.1.3.3.3.4. ATN to AFTN mapping

3.1.3.3.3.4.1. Upon the reception by the Message Transfer and Control Unit of a message passed from the ATN Component, the message shall be extracted from the User Data parameter.

3.1.3.3.3.4.2. The extracted message shall be passed unmodified to the AFTN Component.

3.1.3.3.3.5. Interface between the ATN Component and the Message Control Unit Component

3.1.3.3.3.5.1. The interface between the ATN Component and the Message Control Unit Component shall be according to the ATN Component service as specified in 3.3.2.

3.1.3.3.3.5.2. To send a message across the ATN, the Message Control Unit Component shall pass an GA-Data-request to the ATN Component.

Note.- The requirement to pass an GA-DATA-request to the ATN component is not intended to constrain an implementation. The requirement is to exchange the required information to the ATN component in a manner consistent with the logical service.

3.1.3.3.3.5.3. The AFTN message, forwarded by the Message Transfer and Control Unit, shall comprise the User Data parameter.

3.1.3.3.3.5.4. The called address parameter shall be the ATN address of the destination system.

Note.- The form of the ATN address exchanged across the interface is a local implementation matter. The information passed across the interface consists of a logical representation of the end-system identification (AP-title) of the destination.

3.1.3.3.3.5.5. The calling address parameter is optional and shall be the local ATN address of the AFTN/ATN Type A Gateway, if provided.

3.1.3.3.3.5.6. The priority parameter shall be set according to the value in the AFTN transmission parameter as specified in Table 3-2.

3.1.3.3.3.5.7. To receive a message from the ATN, the ATN Component shall pass an GA-DATA-indication to the Message Transfer and Control Unit Component.

Note.- The requirement to pass an GA-DATA-indication to the Message Transfer and Control Unit Component is not intended to constrain an implementation. The requirement is to exchange the required information with the Message Transfer and Control Unit Component in a manner consistent with the logical service.

3.1.3.3.3.5.8. The AFTN message, as found in the P-DATA-indication, shall comprise the User Data parameter.

3.1.3.3.3.5.9. The called address parameter shall be the ATN address of the receiving ATN end system.

Note.- The form of the ATN address exchanged across the interface is a local implementation matter. The information passed across the interface consists of a logical representation of the end-system identification (AP-title) of the destination.

3.1.3.3.3.5.10. The calling address parameter shall be the ATN end system address of the AFTN/ATN Type A Gateway which initiated the GA-DATA-request.

3.1.3.3.3.5.11. The priority parameter, in the indication primitive, shall be set according to the value obtained from the ATN end system.

3.1.3.3.3.6. Interface between the AFTN Component and the Message Control Unit Component

3.1.3.3.3.6.1. All AFTN message or service message passed by the AFTN Component to the Message Transfer and Control Unit shall be transferred in the order received.

3.1.3.3.3.6.2. An AFTN message or service message passed by the Message Transfer and Control Unit to the AFTN Component shall be transferred in the order received.