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Interface Control Document

NAS-IC-82422412-01
REVISION E

En Route Automation Modernization (ERAM)/ User Systems via Air Traffic Management (ATM) Intermediate Point of Presence (IPOP)

July 5, 2014

Interface Control Document
Approval Signature Page
En Route Automation Modernization (ERAM)/User Systems via Air Traffic Management (ATM) Intermediate Point of Presence (IPOP)

Approval Signatures

Name	Organization	Signature	Date Signed
AJM-25	Air Traffic Systems En Route & Oceanic Second Level Engineering Group		7/28/2014
AJM-22	Air Traffic Systems Decision Support Programs		8/7/14

Revision Record			
REVISION LETTER	DESCRIPTION	DATE	ENTERED BY
-	NCP 31270	4/16/2007	ATO-E
A	NCP 32024	9/30/2008	ATO-E
B	Updated to the ERAM revision EAB software CCD-N34192 JE128-ERAM-1004	04/30/2012	AJE
C	CCD-N34349 JE111-ERAM-1003 ERAM Interface Control Document Revisions for ICAO 2012 changes CCD-N34542 JM251-ERAM-1001 ICD Changes for ERAM Release EAC10	07/26/2012 01/31/2013	AJM-25 AJM-25
D	CCD-N34955 ICD Changes for JM251-ERAM-1002 ERAM EAC120 & EAC130 ICD Changes	09/12/2013	AJM-25
E	CCD-N34898 M2132-ERAM-1001 Update interface documentation for the addition of SBS GIM-S to ERAM CCD-N35201 JM251-ERAM-1003 ERAM EAC140 & EAC150 IRD & ICD Changes	08/15/2013 07/05/2014	AJM-25 AJM-25

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1. SCOPE

This Interface Control Document (ICD) was prepared in accordance with Federal Aviation Administration (FAA)-Standard (STD)-067 and FAA-STD-025f and provides the design characteristics for an interface between the FAA En Route Automation Modernization (ERAM) system and the Air Traffic Management (ATM) Intermediate Point of Presence (IPOP).

1.1 Scope

This document defines the data exchanged between the ERAM system and the ATM IPOP.

From the ERAM perspective, ATM IPOP receives common data, and acts as a communication proxy to ATM client application(s).

Operationally, the ERAM system, using the ERAM En Route Communications Gateway (ECG) Router/Firewall (RFW), will exchange data with the ATM IPOP user systems, using the Host ATM Data Distribution System (HADDS). HADDS is a component of the En Route Data Distribution System (EDDS) subsystem. The ATM IPOP will receive data from, and distribute data to, registered ATM client applications. These client applications include but are not limited to Traffic Management Advisor (TMA), Traffic Flow Management System (TFMS), and the Departure Spacing Program (DSP). Refer to NAS-IC-40010001, For Interfaces between Host Interface Device (HID)/National Airspace System (NAS) Local Area Network (LAN) (HNL), Applications, Host Air Traffic Management (ATM) Data Distribution System (HADDS)/Store and Forward Application (SAFA) & Their Client Applications ICD, for other clients that receive multicast messages.

The ERAM system provides flight data processing, radar data processing and message processing at each Air Route Traffic Control Center (ARTCC). Textual data in the messages use a specific version of Extended Binary Coded Decimal Interchange Code (called EBCDIC) character set; message headers will include both EBCDIC and binary data.

Each message transmitted by the ERAM system will provide destination addressing to inform the ATM IPOP of what ATM client applications are to receive the corresponding message data. The ATM IPOP will support multicast and point-to-point message addressing. ERAM generated messages containing a destination multicast address will be distributed by the ATM IPOP to many active clients. ERAM generated messages containing a point-to-point destination address will be distributed by the ATM IPOP to the single specified client.

Transmissions from active clients to the ERAM system will always be point-to-point via the ATM IPOP with the destination address being that of ERAM.

The interface is based on the Transmission Control Protocol (TCP) and the underlying Internet Protocol (IP). In addition to TCP/IP, the ERAM/IPOP Protocol (EIP) is used between ERAM and the ATM IPOP in order to provide session management and data formatting services.

In the Test & Training (T&T) area, the T&T ERAM will send data to the T&T ATM IPOP via connections from the ARTCC Support RFW to a separate EDDS. This interface is also based on TCP/IP and EIP.

1.2 Subsystem Responsibility List

The interfacing subsystems, and the common names and the responsible FAA program office for each, are shown in Table 1-I.

Note: Only the subsystems that send and receive data requests to ERAM via the ATM IPOP Interface are listed in Table 1-I. There are other EDDS client subsystems who receive Common Message Set (CMS) data one way out of ERAM; therefore they are not governed by this ICD. Refer to NAS-IC-40010001, For Interfaces between Host Interface Device (HID)/National Airspace System (NAS) Local Area Network (LAN) (HNL), Applications, Host Air Traffic Management (ATM) Data Distribution System (HADDS)/Store and Forward Application (SAFA) & Their Client Applications ICD, for other clients that receive multicast messages.

Table 1-I. Organization System Responsibility

Subsystem	Common Name	Responsible FAA Program Office
TMA	Traffic Management Advisor	AJM-25
DSP	Departure Spacing Program	AJM-22
ERAM	En Route Automation Modernization	AJM-25
TFMS	Traffic Flow Management System	AJM-22
EDDS	En Route Data Distribution System	AJM-25

Note: The above also serves as the Subsystem Responsibility List for the current approved revision of the parent Interface Requirements Document (IRD).

ERAM IRD/ICD Document Mapping is shown in Table 1-II.

Table 1-II. ERAM IRD/ICD Document Mapping

Interface	Interface Requirements Document	Interface Control Document/Web Service Description Document
Surveillance Sources	NAS-IR-34138232 Surveillance Sources/En Route Communications Gateway (ECG)	NAS-IC-34138232-01 Common Digitizer-2 (CD-2) Surveillance Sources/En Route Communications Gateway (ECG)
		NAS-IC-34138232-02 Common Digitizer–Airport Surveillance Radar (CD–ASR) Surveillance Sources/En Route Communications Gateway (ECG)
Surveillance and Broadcast Services (SBS)	NAS-IR-82530001 Surveillance and Broadcast Services (SBS) Service Delivery Point (SDP) to ATC Automation and Service Monitoring User Subsystems	NAS-IC-82530001-01 Surveillance and Broadcast Services (SBS) Service Delivery Point (SDP) to ATC Automation and Service Monitoring User Subsystems
	NAS-IR-82530002 Surveillance and Broadcast Services (SBS) Service Delivery Point (SDP) Common Digitizer–2 (CD–2) to En Route ATC Automation and Service Monitoring User Subsystems	NAS-IC-82530002-01 Surveillance and Broadcast Services (SBS) Service Delivery Point (SDP) Common Digitizer–2 (CD–2) to En Route ATC Automation and Service Monitoring User Subsystems
En Route Communications Gateway (ECG)	NAS-IR-82328217 En Route Communications Gateway (ECG)/National Airspace System (NAS) Host Computer System (HCS) and Future NAS Automation System	NAS-IC-82328217-03 En Route Communications Gateway (ECG)/En Route Automation Modernization (ERAM)
	NAS-IR-82320001 En Route Communications Gateway (ECG)/Internet Protocol Local Area Network (IP LAN) User Systems	NAS-IC-82320001-01 En Route Communications Gateway (ECG)/Internet Protocol (IP) Local Area Network (LAN) User Systems
Serial Devices	NAS-IR-82328234 En Route Communications Gateway (ECG)/Serial Communication Devices	NAS-IC-82328234-01 En Route Communications Gateway (ECG)/Serial Communication Devices

Table 1-II. ERAM IRD/ICD Document Mapping

Interface	Interface Requirements Document	Interface Control Document/Web Service Description Document
Flight Data Input Output (FDIO)	NAS-MD-581 Flight Data Input/Output (FDIO) Program Software Interface Control Document (SICD)	NAS-IC-82018242-01 En Route Automation Modernization (ERAM)/Flight Data Input/Output (FDIO)
Air Traffic Management (ATM) Intermediate Point of Presence (IPOP)	NAS-IR-82422412 En Route Automation Modernization (ERAM)/User Systems via Air Traffic Management (ATM) Intermediate Point of Presence (IPOP)	NAS-IC-82422412-01 En Route Automation Modernization (ERAM)/User Systems via Air Traffic Management (ATM) Intermediate Point of Presence (IPOP)
Adjacent Air Route Traffic Control Center (ARTCC) with Host Computer System (HCS) and User Request Evaluation Tool (URET)	NAS-IR-82428222 En Route Automation Modernization (ERAM)/Adjacent Air Route Traffic Control Center (ARTCC) with Host Computer System (HCS) and User Request Evaluation Tool (URET)	NAS-IC-82428222-01 En Route Automation Modernization (ERAM)/Adjacent Air Route Traffic Control Center (ARTCC) with Host Computer System (HCS) and User Request Evaluation Tool (URET)
Departure Spacing Program (DSP)	NAS-IR-82422409 En Route Automation Modernization (ERAM)/ Departure Spacing Program (DSP)	NAS-IC-82422409-01 En Route Automation Modernization (ERAM)/ Departure Spacing Program (DSP)
National Airspace Data Interchange Network (NADIN) (Service–B Users)	NAS-IR-82424301 En Route Automation Modernization (ERAM)/National Airspace Data Interchange Network (NADIN) (Service–B Users)	NAS-IC-82424301-01 En Route Automation Modernization (ERAM)/ National Airspace Data Interchange Network (NADIN) (Service–B Users)

Table 1-II. ERAM IRD/ICD Document Mapping

Interface	Interface Requirements Document	Interface Control Document/Web Service Description Document
Weather Message Switching Center Replacement (WMSCR)	NAS-IR-82422507 En Route Automation Modernization (ERAM) with Weather Message Switching Center Replacement (WMSCR)	NAS-IC-82422507-01 En Route Automation Modernization (ERAM) with Weather Message Switching Center Replacement (WMSCR)
	NAS-IR-94022507 Weather Message Switching Center Replacement to National Airspace Data Interchange Network Packet Switched Network Users (WMSCR/NADIN/PSN USERS)	NAS-IC-94022507 Weather Message Switching Center Replacement to National Airspace Data Interchange Network (NADIN) Packet Switched Network User (WMSCR/NADIN/PSN User)
Weather and Radar Processor (WARP)	NAS-IR-25150002 Weather and Radar Processor (WARP) Display Products to ATC User Subsystems	NAS-IC-82422515 En Route Automation Modernization (ERAM)/Weather and Radar Processor (WARP) with Next Generation Radar (NEXRAD) Data
	NAS-IR-25158222 Weather and Radar Processor (WARP) Weather Information Network Server (WINS) to User Request Evaluation Tool (URET) Core Capability Limited Deployment (CCLD)	NAS-IC-82422519 En Route Automation Modernization (ERAM)/Weather and Radar Processor (WARP) Weather Information Network Server (WINS) Component
	NAS-IR-90029414 National Weather Service Telecommunications Gateway (NWSTG) to Federal Aviation Administration Bulk Weather Telecommunications Gateway (FBWTG)	
Standard Terminal Automation Replacement System (STARS)		NAS-IC-21058100 Standard Terminal Automation Replacement System (STARS) to Air Route Traffic Control Center (ARTCC) for Interfacility Data Transfer (IFDT)

Table 1-II. ERAM IRD/ICD Document Mapping

Interface	Interface Requirements Document	Interface Control Document/Web Service Description Document
North American (NAM)		NAS-IC-21009205 North American (NAM) Common Coordination, Volume 1: Area Control Center (ACC) to ACC
System-Wide Information Management (SWIM)	NAS-IR-43070001 System-Wide Information Management (SWIM) Service Registry/User	
	NAS-IR-82420001 En Route Automation Modernization (ERAM)/Web Services	NAS-WSDD-8242-001 En Route Automation Modernization (ERAM)/Flight Information Service (FIS)

2. APPLICABLE DOCUMENTS

2.1 Government Documents

The following documents form a part of this ICD to the extent specified herein. In the event of a conflict between the referenced documents and the contents of this ICD, this ICD is considered the superseding document.

FAA SPECIFICATIONS:

NAS-RD-2012 December 4, 2012	National Airspace System (NAS) Requirements Document
NAS-MD-311 March 1, 2007	National Airspace System En Route Configuration Management Document, Computer Program Functional Specifications, Message Entry and Checking, Model A5f1.6
NAS-IC-40010001 October 25, 2011	For Interfaces between Host Interface Device (HID)/National Airspace System (NAS) Local Area Network (LAN) (HNL), Applications, Host Air Traffic Management (ATM) Data Distribution System (HADDS)/Store and Forward Application (SAFA) & Their Client Applications Interface Control Document (ICD), Revision E
NAS-MD-312 March 1, 2007	National Airspace System En Route Configuration Management Document, Computer Program Functional Specifications, Route Conversion and Posting, Model A5f1.6
NAS-MD-315 March 1, 2007	National Airspace System En Route Configuration Management Document, Computer Program Functional Specification, Remote Outputs, Model A5f1.6
NAS-MD-326 March 1, 2007	National Airspace System En Route Configuration Management Document, Computer Program Functional Specification, Adaptation Collection Guideline, Model A5f1.6
NAS-IR-82422412 July 5, 2014	En Route Automation Modernization (ERAM)/Air Traffic Management (ATM) Intermediate Point of Presence (IPOP) Interface Requirements Document (IRD), Revision C
NAS-IC-82018242-01 July 5, 2014	En Route Automation Modernization (ERAM)/Flight Data Input/Output (FDIO) Interface Control Document (ICD), Revision C
FAA-ER-2979 December 23, 2013	En Route Automation Modernization (ERAM) System Specification Document, Revision F

FAA-G-2100H May 9, 2005	Electronic Equipment, General Requirements, Specification
NAS-IC-82320001-01 December 10, 2009	En Route Communications Gateway (ECG)/Internet Protocol (IP) Local Area Network (LAN) User Systems Interface Control Document (ICD), Revision F
ERAM_IFPA_SRS_210.15 September 17, 2013	En Route Automation Modernization (ERAM) Software Requirements Specification (SRS) Interface Proxies Set A (IFPA), EAC
NAS-IC-82530001-01 January 19, 2011	Surveillance and Broadcast Services (SBS) Service Delivery Point (SDP) to ATC Automation and Service Monitoring User Subsystems Interface Control Document (ICD)

FAA STANDARDS:

ENET-1370-001.1A July 12, 1996	Draft: FAA Enterprise Network Naming and Addressing Standards
FAA-STD-067 December 4, 2009	Standard Practice, Preparation of Specifications
FAA-STD-025f November 30, 2007	Preparation of Interface Documentation
National Airspace System (NAS) 1370-500.4 May 20, 2003	FAA Enterprise Network Internet Protocol Version 4 (Ipv4) NAS Intranet Address Assignments

OTHER FAA PUBLICATIONS:

FAA Order 6950.22A April 8, 2014	Maintenance of Electrical Power and Control Cables
March 31, 2004	ERAM System Protection Profile, Version 3.0.

2.2 Non-Government Documents

The following documents form a part of this ICD to the extent specified herein. In the event of a conflict between the referenced documents and the contents of this ICD, this ICD is considered the superseding document.

STANDARDS:

American National Standards Institute (ANSI)/Telecommunications Industry Association (TIA)/Electronic Industries Alliance (EIA)-568-B.1 April 1, 2001	Commercial Building Telecommunications Cabling Standard - Part 1: General Requirements ANSI/TIA/EIA-568-B.1-2001)
Institute of Electrical and Electronics Engineers (IEEE) Standard (STD) 802.2-1989	Local Area Networks: Logical Link Control
IEEE STD 802.3-2002	Part 3: Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications
Internet Engineering Task Force (IETF) Request for Comments (RFC) 791 September 1981	Internet Protocol (IP) as updated by RFC 1349
IETF RFC 792 September 1, 1981	Internet Control Message Protocol (ICMP), updated by RFC 950
IETF RFC 793 September 1981	Transmission Control Protocol (TCP), updated by RFC 3168
IETF RFC 826 November 1982	An Ethernet Address Resolution Protocol (ARP)
IETF RFC 950 August 1, 1985	Internet Subneting Standard Procedure
IETF RFC 1812 June 1995	Requirements for IP Version 4 Routers

OTHER PUBLICATIONS:

Doc 4444 PANS-ATM Fifteenth Edition 2007	Amendment 1 to the Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM, Doc 4444, Fifteenth Edition - 2007, 25 June 2008

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3. INTERFACE DESIGN CHARACTERISTICS

This section provides the general, functional, and physical design characteristics for the interfacing communication devices. The design characteristics are based on NAS-IR-82422412.

3.1 General Characteristics

The demarcation points of the ERAM to ATM Applications are as shown in Figure 3-1. In this document, a Point of Demarcation indicates the line of division of contractual responsibility between ERAM and the ATM IPOP. There are ten points of demarcation shown in Figure 3-1.

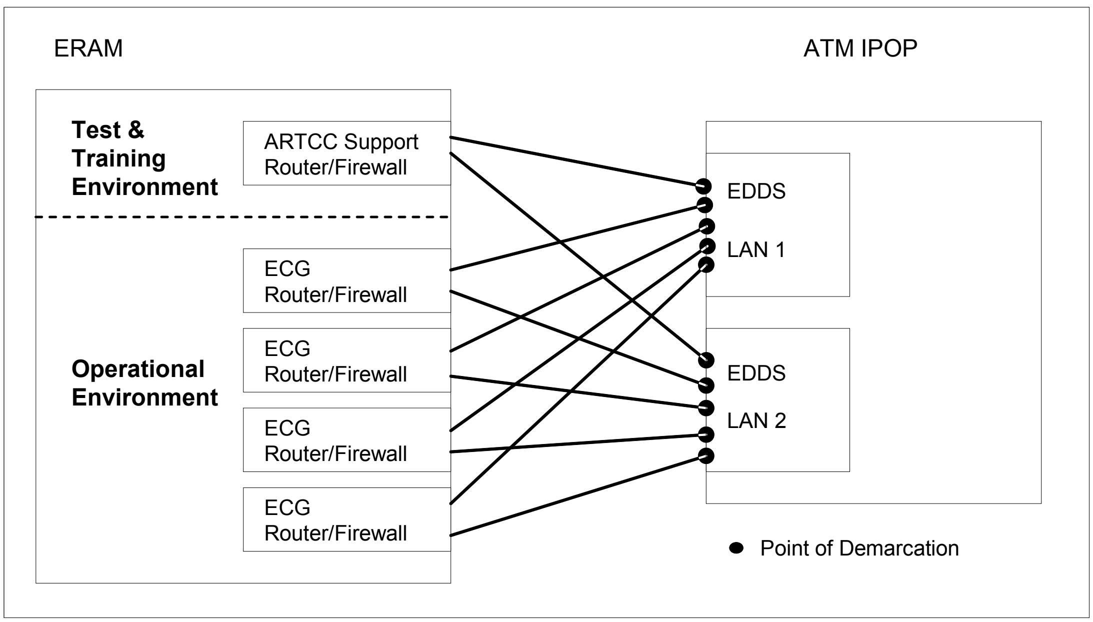

Figure 3-1. Points of Demarcation for ERAM to ATM Applications Connectivity

The CMS message pathway is implemented between ERAM and the ATM IPOP to support "guaranteed" data transmission. All CMS automatically generated messages are sent to the ATM IPOP. It is the responsibility of the applications to filter out the data not needed. Messages that are responses to specific requests are only sent to the requesting IPOP/Application. Controller entered TMA messages are only sent to TMA.

The "guaranteed" pathway provides for the reliable two-way exchange of data from ERAM to the ATM IPOP. An interface pair is mapped between the active channel ERAM and the ATM IPOP. Transmission Control Protocol (TCP) provides a reliable communication mechanism (through the use of sequence numbers and acknowledgements) supporting "guaranteed" data delivery between the ERAM and the ATM IPOP. EIP guarantees message delivery to the application through use of the MR response messages (see 0). At the application level, the Information Accept (IA) message or the Information

Reject (IR) message returned from ERAM are used to indicate acceptance of a delivered message, or rejection of a delivered message due to format or content problems.

3.1.1 Human-System Interface Design Characteristics

This ICD imposes no explicit Human-System Interface requirements.

3.2 Functional Design Characteristics

The functional interface is defined in the following paragraphs.

ERAM Operational Environment

Figure 3-2 depicts the relevant hardware architecture features for the ERAM/ATM IPOP interface. The ERAM operational environment provides two redundant channels – Active and Backup. Each channel can connect to ATM IPOP through two ERAM En Route Communications Gateway (ECG) RFWs. The ECG RFW provides the communication path to ATM IPOP.

Each channel has two ERAM flight data processors (FDP) which host redundant copies of Interface Proxies Set A (IFPA): Primary Address Space (PAS) and Secondary Address Space (SAS). IFPA is the ERAM application process that is responsible for the ATM IPOP interface.

IFPA PAS performs Standby Data Management (SDM) by sending necessary state data to IFPA SAS to allow IFPA SAS to transition to the primary state and become IFPA PAS in case IFPA PAS fails.

IFPA PAS on the channel in Active Mode sends system state data to IFPA PAS on the channel in Backup Mode through channel synchronization. When the channel in the Backup Mode is commanded by the M&C Operator to transition to the Active Mode, the state data are used to allow IFPA in the newly activated channel to take over the ATM IPOP interface. Only the channel in Active Mode actively interfaces with ATM IPOP.

IFPA will initialize/reconstitute ATM IPOP when a channel transitions from Backup Mode to Active Mode. IFPA will initialize/reconstitute ATM IPOP when the IFPA SAS is promoted to PAS or the IFPA PAS is being activated on a channel in Active Mode.

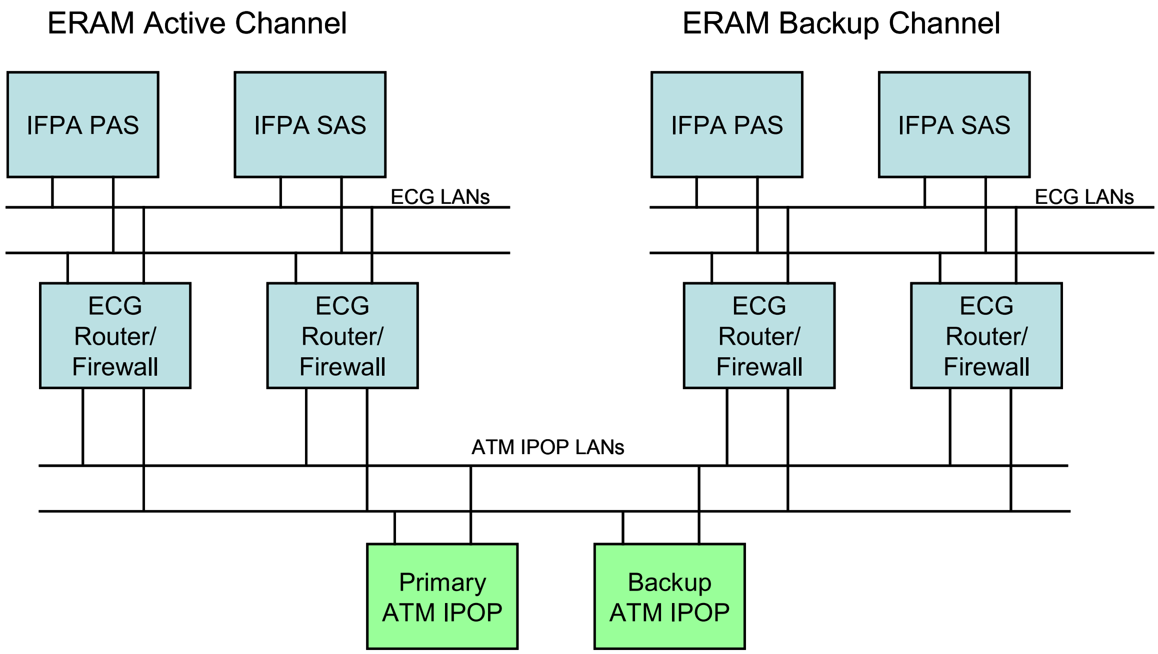

Figure 3-2. Simplified ERAM/ATM IPOP Hardware Architecture Diagram

IFPA/ATM IPOP Connection

ERAM interfaces with the two ATM IPOPs on the active channel. The Primary ATM IPOP is the first ATM IPOP that has successfully registered with IFPA. The Primary ATM IPOP is the one that ERAM uses for active communication with the ATM IPOP. The other ATM IPOP, if it has successfully registered with IFPA, is the Backup ATM IPOP. A Backup ATM IPOP that has successfully registered will become the Primary ATM IPOP if the Primary ATM IPOP fails.

Each ATM IPOP can connect to an IFPA processor (PAS or SAS) on the channel in Active Mode via two TCP connections and each ATM IPOP will try to establish connections with an IFPA processor through both TCP connections and register with IFPA through both TCP connections. For an IFPA processor, the Primary TCP Connection for an ATM IPOP is the first TCP connection through which the ATM IPOP has successfully registered with IFPA. The second TCP connection successfully registered with IFPA is considered the Backup TCP Connection. Normal connectivity with the ERAM active channel is depicted in Figure 3-3.

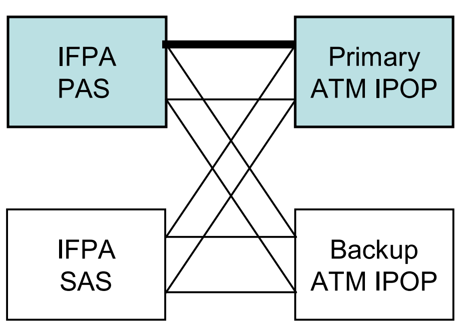

Figure 3-3. Normal Connectivity

As shown in Figure 3-3, there can be eight pathways between ERAM and the two ATM IPOPs. The one pathway indicated in thick line is the Primary TCP Connection between IFPA PAS and the Primary ATM IPOP.

The state of ATM IPOP can be enabled or disabled via an M&C command. When ATM IPOP is enabled, IFPA responds to any TCP connection request from each ATM IPOP. This applies to both PAS and SAS on the channel in Active Mode.

Upon successful registration of an ATM IPOP with IFPA through a TCP connection, at a fixed time interval IFPA sends a health check message <MC_HEALTH> to the ATM IPOP through that TCP connection to detect connection problems. This applies to all eight pathways.

When sending a health check message <MC_HEALTH> to an ATM IPOP through a TCP connection, IFPA indicates the operational status of IFPA in the health check message <MC_HEALTH>. The operational status is "Operational" if the ATM IPOP is the Primary ATM IPOP on the Primary TCP Connection and IFPA is the PAS on the channel in Active Mode. Otherwise the operational status is "Standby". In Figure 3-3, the <MC_HEALTH> messages sent to ATM IPOP through the pathway indicated in thick line have an operational status of "Operational" and the <MC_HEALTH> messages through all other seven pathways have an operational status of "Standby".

Upon successful registration of the Primary ATM IPOP through a Primary TCP Connection, IFPA posts a Read by sending a zero length <MC_XFR_OUT> message with the Read CC in the *status* field to the ATM IPOP through the Primary TCP Connection. This signals to the IPOP that IFPA is ready for input.

ERAM/IPOP Protocol (EIP)

EIP is defined for use over TCP/IP and is used for session management and user data formatting. EIP over TCP/IP is based on the Host Interface Device (HID) Protocol (HIDP), which is used between the HID and user systems on the HID/NAS LAN. A description of EIP over TCP/IP is in 0.

The interface between ERAM and the ATM IPOP for sending and receiving data will only use EIP and TCP/IP protocols. The interface will also be session-oriented. The process for establishing a session is described in 0.

Messages sent from ERAM to the ATM IPOP consist of the standard IP and TCP protocol headers followed by the EIP header for TCP/IP. User data follows the EIP header. Session control messages exchanged between ERAM and the ATM IPOP are similar to HIDP.

The EIP packet (header information plus data) resides within the data portion of the TCP packet structure. The EIP protocol "frame" format for EIP messages over TCP/IP, consisting of a header plus data, is shown in Figure 3-4. The EIP frame header is followed by the application user data for the packet. Definitions of fields within the EIP TCP/IP frame header are given in Table 3-I. These messages are designed to allow the ATM IPOP (application) to transfer data to and from ERAM, and to manage its session with ERAM.

EIP Frame Format for TCP/IP					
Offset	Length	Byte 0	Byte 1	Byte 2	Byte 3
		00 07	08 15	16 23	24 31
0	4	MsgLen		Spare	
4	4	DestAddr		SrcAddr	
8	4	MsgCode	Status	Flags	Spare
12	4	Timestamp			
16	Variable	Data			

Figure 3-4. Frame Format for EIP Messages Over TCP/IP

Table 3-I. EIP Over TCP/IP Frame Header Field Definition

Field Name	Definition
MsgLen	Length of the data portion of the message (not including the header). MsgLen is a 16 bit big endian integer.
DestAddr	Intended for physical or logical address of the message's destination. For ERAM, it only needs to contain any positive number.
SrcAddr	Intended for physical or logical address of the message's source or sender. For ERAM, it only needs to contain any positive number.
MsgCode	Unique hexadecimal code identifying the message type.
Status	Bit-oriented field signifying the status of the sender. This field's interpretation is message-dependent.
Flags	Bit-oriented field imparting additional information besides the message type (given in MsgCode). This field's interpretation is message dependent.
Timestamp	Timestamp indicates when the message was created. The timestamp is a big endian 32-bit integer containing the standard Unix timestamp (seconds since Jan 1, 1970).
Spare	Currently unused fields. These fields are always initialized to zero.
Data	User data. This field's content is message dependent. Variable number of data bytes (maximum of 4096 bytes).

User Message Description

ERAM and the ATM IPOP use the CMS Block Transmission Protocol (CBTP) for all data transmissions exchanged between each other. The CBTP is a higher level protocol between ERAM applications and ATM IPOP and utilizes EIP for message transport. The CBTP allows several messages to be encapsulated within one data communication transfer in either direction. To provide this, each CBTP outgoing data communication transfer begins with a single Block Transmission Header (BTH) followed by one or more Message Headers, with each Message Header followed by one or more Field Headers and Field Data pairs (or couples). Table 3-II shows the organization of a generated block transmission. For messages being sent from ERAM, one or more messages can be added to the CBTP up to a maximum size of 3982 bytes for each transmission. In Table 3-II, each transmission contains up to three kinds of elements. The BTH provides the size of the entire block transmission and sequencing information. The Message Header contains the size of the message and control information to identify the message type and message addressing. The Field Header contains the field size and format of the data to follow.

Although the CBTP allows for multiple messages contained within one CBTP transmission, an ATM IPOP generated CBTP transmission contains only one message when sent to ERAM. For messages being sent from an ATM IPOP, the maximum size of a CBTP is 1182 bytes. Track Information (TH) and Automated Radar Terminal System (ARTS) Flow Control Track/Full Data Block Information (HZ) messages sent from ERAM will be contained in separate Block Transmissions.

Table 3-II. CMS Block Transmission Protocol (CBTP) Layout

Block Transmission Header (BTH)
Message Header
Field Header & Data
Field Header & Data
. . .
Field Header & Data
. . .
Message Header
Field Header & Data
Field Header & Data
. . .
Field Header & Data
. . .

Block Transmission Header (BTH) Description

The Block Transmission Header (BTH), as shown in Table 3-III, is used to identify the size in bytes of an entire CBTP data transmission. All BTH fields contain binary coded values. The sender of the BTH loads the Sequence Number field with a modulo 65536 number. For messages from ERAM, a sequence number is stored in the BTH. This number is incremented each time a BTH containing one or more messages is generated. The value 0 is used for the first CBTP transmission. CBPT transmission “n” cannot occur before CBPT transmission “n-1”. After sending a CBTP transmission with a Sequence Number 65535, the next CBTP transmission contains the Sequence Number 0. The ATM IPOP saves the sequence number of the last CBTP transmission it receives.

Table 3-III. Block Transmission Header (BTH) Format

Field Name	**Size (bytes)**	**Notes**
CBTP Transmission Size	2	Size of CBTP transmission including the BTH (binary coded value, big endian integer)
Sequence Number	2	Transmission Sequence Number (binary coded value, big endian integer)

The ATM IPOP must release each individual CBTP transmission such that there is only ever one CBTP transmission outstanding. In the event a “guaranteed” pathway is interrupted, ERAM transmits any unsuccessful CBTP transmission first before any new “guaranteed” pathway is started. This can cause the ATM IPOP to receive the same CBTP transmission over the old and new “guaranteed” pathway.

Messages contained in a duplicate CBTP received (sequence number equals last sequence number saved) are discarded by the receiving ATM IPOP.

Message Header Description

Each CBTP Transmission that is transmitted or received between ERAM and the ATM IPOP contains one or more Message Headers, with each Message Header followed by one or more Data Fields. Table 3-IV defines the format of a Message Header (the Field Number for the Message Header is defined in Appendix C). Fields within the Message Header are coded as either EBCDIC displayable characters or binary values on a field by field basis.

Table 3-IV. Message Header Format

Field Name	Size (bytes)	Notes
Destination Address	8	Destination System Identifier (EBCDIC coded character string)
Source Address	8	Source System Identifier (EBCDIC coded character string)
Message Size	2	Size of message including Message Header (binary coded value , big endian integer)
Message Type (see Table 3-VIII, Table 3-IX)	2	ERAM/CMS Message Type (EBCDIC coded characters)

The format and notation of the Source and Destination addresses contained in a Message Header are coded as 8 byte EBCDIC coded character strings. The first four characters of an address contain the application address identifier and the last four characters contain the node address identifier. The destination address format supports the use of destination application multicast addressing for both the address identifier and node identifier. This allows the ATM IPOP to distinguish multicasting of a message to all applications all nodes or just all nodes for a particular application. The multicast designation for the application and node identifier is the 4 character string "****". The list of application identifiers is identified in Table 3-V.

The application address identifier is a 4-byte string identifying the type of application within the application address identifier. The application address identifiers will be defined in adaptation. Table 3-V provides a list of commonly used application identifier strings from which applications may select, in order to appropriately assign the first 4-bytes of the source and destination addresses contained in each CMS Message Header transmitted. Other systems not listed do not have specific messaging requirements with ERAM and receive only multicast messages. When constructing the first 4-bytes of the source address, an application will select the string that represents its applications type. When constructing the first 4-bytes of the destination address, an application will select the string that represents the application type to which the message is to be sent.

Table 3-V. Application Address Identifiers

Application	4 Character Identifier
ARTCC ERAM System	ERAM
Traffic Management Advisor (TMA)	CTAS
Host ATM Data Distribution System	HADS

Table 3-V. Application Address Identifiers

Application	4 Character Identifier
Traffic Flow Management System	ETMS
Departure Spacing Program	DSP
Application Multicast Address	**** (for all applications except ERAM)

The node address identifier is a 4-byte string that identifies the node instance within the last 4-bytes of the application address identifier. The first 3 bytes of this 4-byte string are assigned to a 3 byte unique Facility identifier. The last byte is assigned a value 0-9, or A-Z allowing for unique identification of a system when more than one type of the same application exists at the same facility. This allows expandability for up to 36 instances of the same application at the same facility. The assignment of the unique system identification character should start with 0 and increment 1-9 then A-Z in that order as multiple instances of the same application at the same facility are added. The following format can then be used to uniquely address any CMS application.

A A A A F F F I

where "A A A A" is the Application type selected from Table 3-V,

"F F F" is the Facility Identifier,

and "I" is a unique Identifier (ID) (0-9,A-Z) that identifies the instance of an application running at a particular facility.

When constructing the last 4-bytes of the source address, ERAM and the ATM IPOP sets the first 3-bytes to the current facility in which that application is running and sets the last byte to its unique ID (e.g., ERAMZKC0). When constructing the last 4-bytes of the destination address, ERAM and the ATM IPOP sets the first 3-bytes to the facility identifier where the destination system resides and the last byte to its unique ID (e.g., CTASZKC0).

Figure 3-5. Address Example (ZCK), shows examples of the three levels of address assignment that ERAM might use for the encoding of the Destination Address. Each example depicts a different level, which the IPOP would use to deliver a message to the intended ATM connected client(s). The three address assignment levels are:

- General Multicast (case 2 in Figure 3-5)
  ********Multicast message to all applications, all nodes
- Application Specific Multicast (case 1 in Figure 3-5)
  CTAS****Multicast message to all nodes running the specified application
- Direct Address Delivery (case 3 in Figure 3-5)
  CTASzzz0 Send message to specified node running specified application

Any Facility Identifier, zzz in the above example that is to be used in a CMS address will come from Table 3-VI or FAA Order 7350.7. Table 3-VI lists two identifiers for each Center. The ARTCC Location identifiers are used to describe the client IDs (external to ERAM/ATM IPOP). The ERAM Infrastructure identifiers are used to describe IDs within ERAM/ATM IPOP.

Messages generated and sent by the Reconstitution threads, as described in 3.2.1.1.1 and 3.2.1.1.2, are addressed to HADS****.

Table 3-VI. Center Facility Codes

ARTCC Location Identifier	Center Name	ERAM Infrastructure Identifier
ZAB	Albuquerque	ZCA
ZTL	Atlanta	ZCT
ZBW	Boston	ZCB
ZAU	Chicago	ZCG
ZOB	Cleveland	ZCC
ZDV	Denver	ZCD
ZFW	Fort Worth	ZCF
ZHU	Houston	ZCH
ZID	Indianapolis	ZCI
ZJX	Jacksonville	ZCJ
ZKC	Kansas City	ZCK
ZLA	Los Angeles	ZCL
ZME	Memphis	ZCM
ZMA	Miami	ZCR
ZMP	Minneapolis	ZCP
ZNY	New York	ZCN
ZOA	Oakland	ZCO
ZLC	Salt Lake City	ZCU
ZSE	Seattle	ZCS
ZDC	Washington	ZCW
ZCY	WJHTC	ZCY
ZCQ	WJHTC	ZCQ
ZCX	Air Traffic Control System Command Center	ZCX
ZWY	New York Oceanic	ZCZ
ZAK	Oakland Oceanic	ZCE
ZHN	Honolulu	ZCV

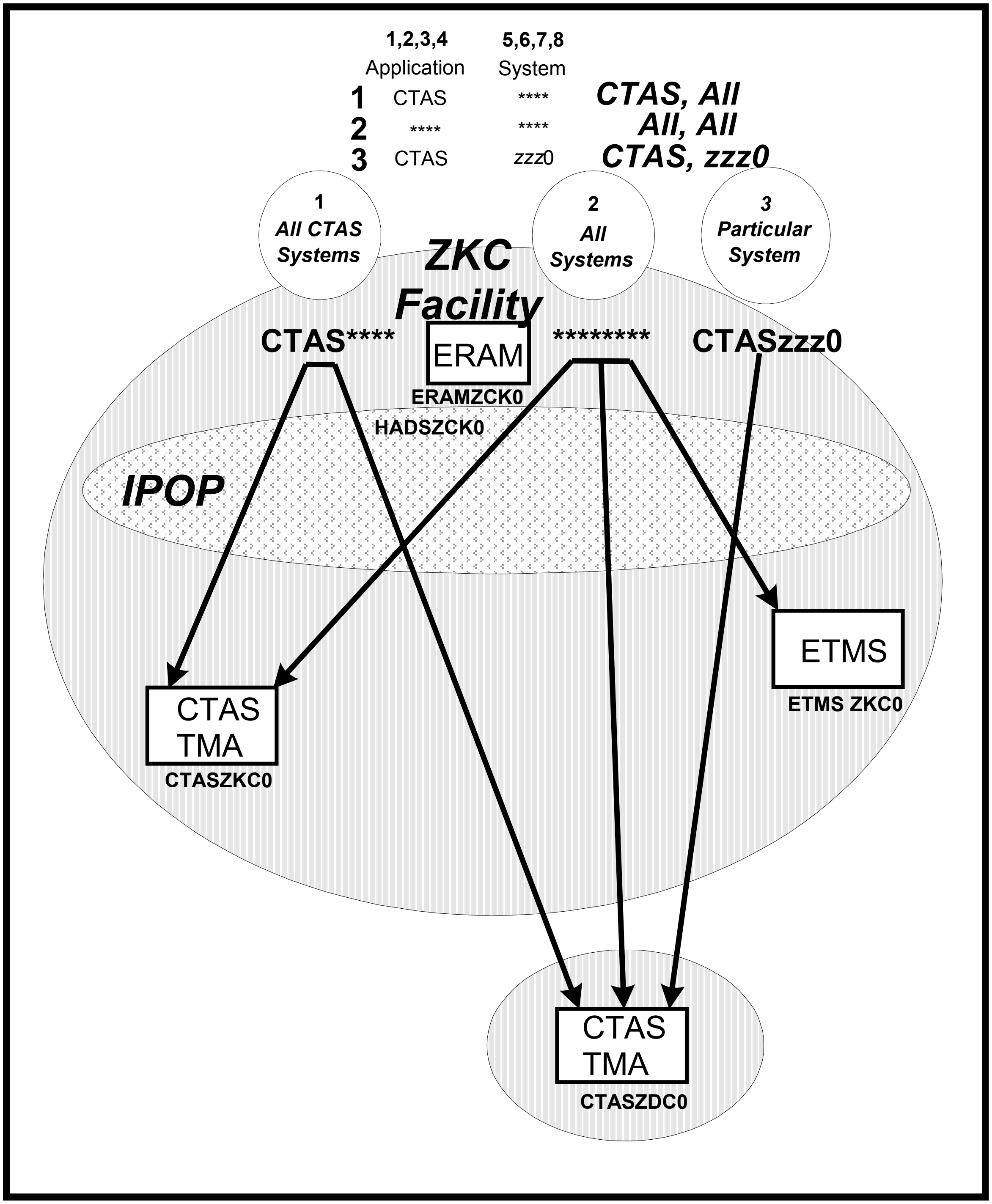

Figure 3-5. Address Example (ZCK)

Field Header Description

Each data field that exists, following the Message Header, contains a fixed length Field Header. The Field Header provides information on the field length, reference number and format. All field data is concatenated after the Field Header (the Field Header thus defines the starting point for the location of the data field). Table 3-VII defines the format of a Field Header. Fields within the Field Header are coded as alphanumeric or binary values as described in Table 3-VII. The field data that follows each Field Header is coded using the EBCDIC displayable character set or binary values. The field format always identifies the particular format used, even when only one format is defined.

Table 3-VII. Field Header Format

Field Name	Size (bytes)	Notes
Field Size	2	Number of bytes that follow the Field Header (*binary coded value*)
Field Reference Number	2	Field Reference numbers are defined in Appendix C.
Field Format	1	Format variation – definition of values are defined in Appendix C.

Message format, content and transmission eligibility details are defined in Appendix A and Appendix B. All textual data in the messages are in EBCDIC format, plus several non-standard characters as shown in Appendix D. All data is defined as a = alphanumeric, L = letter, d = digit or b = binary.

Table 3-VIII summarizes all the ERAM to ATM IPOP messages.

Table 3-VIII. ERAM to the ATM IPOP Message Summary

Message Name	Identifier
FLIGHT MESSAGES	
Flight Plan Information	FH
Flight Amendment Information	AH
Converted Route Information	HX
Cancellation Information	CL
Departure Information	DH
Aircraft Identification Amendment Information	IH
Hold Information	HH
Progress Report Information	PH
Flight Arrival Information	HV
Flight Plan Update Information	HU
Expected Departure Time Information	ET
Position Update Information	HP
Tentative Aircraft Identification Amendment Information	NI
Tentative Flight Plan Information	NP
Tentative Flight Plan Removal	NL
Tentative Flight Plan Amendment Information	NU
TRACK MESSAGES	
Track Information	TH

Table 3-VIII. ERAM to the ATM IPOP Message Summary

Message Name	Identifier
Drop Track Information	RH
Interim Altitude Information	LH
FDB Fourth Line Information	HF
Point Out Information	HT
Automated Radar Terminal System (ARTS) Flow Control Track/Full Data Block (TZ) Information	HZ
Handoff Status	OH
Inbound Point Out Information	PT
AIRSPACE UTILIZATION MESSAGES	
Sector Assignment Status Information	SH
Route Status Information	HR
Special Activities Airspace Information	SU
METERING DATA MESSAGES	
Manual Swap Information	HB
Resequence Information	HC
Metering List Display Suppress Information	HD
MISCELLANEOUS MESSAGES	
Altimeter Setting Information	HA
Beacon Code Reassignment Information	BA
Beacon Code Restricted Information	RE
Beacon Code Utilization Information	UB
Geographic Beacon Code Utilization	UG
General Information	GH
Traffic Count Adjustment	AK
Instrument Approach Count Adjustment	AC
Sign In/Sign Out Information	SY
Unsuccessful Information Transmission	UI
DISPLAY STATUS MESSAGES	
Interim Altitude Status Information	HE
Hold Status Information	HO
COMMUNICATIONS MESSAGES	
Interface Reply	IL
Interface Test	IT

Table 3-VIII. ERAM to the ATM IPOP Message Summary

Message Name	Identifier
Information Reject	IR
Information Accept	IA
ERAM Status Information	HS
Health Check	CK
Reconstitution Information	RN

Table 3-IX summarizes all the ATM IPOP to ERAM messages.

Table 3-IX. The ATM IPOP to ERAM Message Summary

Message Name	Identifier
Flight Plan Readout Request	IO
Meter Reference Point List	IM
Proposed Speed Advisory	PA
Airport Configuration Information Header	IX
Delete Aircraft	IE
General Information	GH
Flow Control Advisory Information	IF
Estimated Departure Clearance Time Information	ID
Interface Reply	IL
Interface Test	IT
Information Reject	IR
Client Status information	CI
Reconstitution Information	RN

3.2.1 Application Processes

An Application Process (AP) is defined as an identifiable set of cooperating capabilities within a system that executes one or more information processing tasks.

3.2.1.1 Identification of Each Application Process

This section summarizes four application processes: initialization and reconstitution requested by ERAM, initialization and reconstitution requested by the ATM IPOP, data exchange between ERAM and the ATM IPOP and track information distribution. Initialization and reconstitution both refer to the process of updating the database of an ATM IPOP. An Information Accept (IA) message is sent in response to each valid message received by ERAM. This IA message is left out of the following sections for simplicity.

3.2.1.1.1 Application 1 - Reconstitution Request Initiated by ERAM

During initialization, ERAM creates a Reconstitution information message with the Status code set to Host Requested Reconstitution (HRR) and sends it to the ATM IPOP to notify it that a reconstitution is to be performed. In response to the Status HRR message, the ATM IPOP creates a Reconstitution Information (RN) message with a Status of Application Requested Reconstitution (ARR) and sends it to ERAM.

3.2.1.1.1.1 Process

When ERAM receives the RN message with the status of ARR, it creates an RN message with a status of Host Ready to Send "HRS" reconstitution data and sends it to the ATM IPOP. After receipt of the RN message with the status of HRS from ERAM and when ready to receive data, the ATM IPOP creates an RN message with a status of Application Ready for Reconstitution Data "ARD" and sends it to ERAM.

When ERAM receives the RN message with the status of ARD, it begins sending reconstitution data to the ATM IPOP. The reconstitution data is sent in two sets:

- Set 1: Airspace Utilization data
- Set 2: Flight Plan and Other data.

Airspace Utilization data is sent first, then Flight Plan data (with any new Airspace Utilization data) and Other data is sent. Any new Airspace Utilization data, new Flight Plan data, and new Other data is sent as it is generated during the reconstitution download after the initial download of Airspace Utilization data. Any data affecting a new Flight Plan is sent only after the new Flight Plan data has been sent.

After the last Reconstitution data message has been sent, ERAM creates a Reconstitution Information message with a Status of Reconstitution Complete "HRC" and sends it to the ATM IPOP. All message exchanges between ERAM and the ATM IPOP for Initialization use the "Guaranteed" pathway defined in Section 3.1 and ERAM and the ATM IPOP addresses.

If ERAM responds with an Information Reject (IR) message, the ATM IPOP will reinitiate the reconstitution.

If a message order error occurs, ERAM sends an IR message to the ATM IPOP. After doing so, ERAM reestablishes the reconstitution by sending an "HRR" status field until the ATM IPOP responds with an "ARR" status field or until the adaptable number of retries is exhausted.

3.2.1.1.2 Application 2 - Reconstitution Request Initiated by the ATM IPOP

When an ATM IPOP determines that its database is no longer in sync with ERAM data, it creates a Reconstitution Information message with a Status of "ARR" and sends it to ERAM. An RN message with "ARR" status may be sent periodically until an IA message is returned from ERAM.

3.2.1.1.2.1 Process

Refer to Section 3.2.1.1.1.1.

3.2.1.1.3 Application 3 - Data Exchange Between ERAM and the ATM IPOP

When ERAM has non-track data for an ATM IPOP, it creates a CMS Message and sends it to the ATM IPOP via the "guaranteed" pathway defined in Section 3.1. If the CMS message is intended to reach multiple ATM client applications, a multicast address should be used for the destination address within the message header. As a corollary, if a CMS message is intended to reach a single destination (i.e., point-cast message), only the destination "application/node" is specified.

When an ATM IPOP has data for ERAM, it creates a CMS Message and sends it to ERAM. Messages requiring ERAM acknowledgement cause ERAM to generate an Information Accept (IA) message with the destination address set to the source address defined in the input message.

3.2.1.1.4 Application 4 - Track Information Distribution

When ERAM has Track information to send to an ATM IPOP, it creates one or more Track Information messages and sends them to the ATM IPOP with the destination address set to the "all applications all nodes" multicast address.

3.2.1.2 Category of Services of the Application Process

The Category of Service for all data transferred across the ERAM - ATM IPOP interface is essential, as defined in NAS-RD-2011. Availability for this interface is greater than or equal to 0.9998.

3.2.1.2.1 Application 1 - Reconstitution Request Initiated by ERAM

ERAM requires a network connection to the ERAM ECG RFW and the ability to initiate the establishment of that connection. The ATM IPOP requires a network connection to the ERAM ECG RFW and the ability to initiate the establishment of that connection.

3.2.1.2.2 Application 2 - Reconstitution Request Initiated by the ATM IPOP

ERAM requires a network connection to the ERAM ECG RFW and the ability to initiate the establishment of that connection. The ATM IPOP requires a network connection to the ERAM ECG RFW and the ability to initiate the establishment of that connection.

3.2.1.2.3 Application 3 - Data Exchange Between ERAM and the ATM IPOP

ERAM and the ATM IPOP require the network connection between them that was established during Initialization.

3.2.1.2.4 Application 4 - Track Information Distribution

ERAM and the ATM IPOP require the network connection between them that was established during Initialization.

3.2.1.2.5 Test and Training

T&T ERAM requires a network connection to the ARTCC Support RFW and the ability to initiate the establishment of that connection. The T&T ATM IPOP requires a network connection from the ARTCC Support RFW and the ability to initiate the establishment of that connection.

3.2.1.3 Information Units

Messages transferred over the interface between ERAM and the ATM IPOP are in the form of EIP messages, which contain CMS data.

3.2.1.3.1 Information Code/Structure

Message header information sent over the interface between ERAM and the ATM IPOP conform to the respective protocol for data exchange (EIP, CBTP).

3.2.1.3.2 Application 1 - Reconstitution Request Initiated by ERAM

There are three units of data transfer for this application. They are:

1. Reconstitution information (RN) Message
2. Information Accept (IA) Message
3. Initialization Messages consisting of:
   a. Set 1: Airspace Utilization Information Messages:
      1) ERAM Status Information (HS) Message
      2) Route Status Information (HR) Message
      3) Sector Assignment Status Information (SH) Message
      4) Special Activities Airspace Information (SU) Message
      5) Altimeter Information (HA) Message
      6) Sign In/Sign Out Information (SY) Message.
   b. Set 2: Flight Plan Information and Other Information Messages:
      1) Flight Plan Information (FH) Message
      2) Tentative Flight Plan Information (NP) Message.
      3) Expected Departure Time Information (ET) Message

4) Converted Route Information (HX) Message

5) Interim Altitude Status Information (HE) Message

6) FDB Fourth Line Information (HF) Message

7) Hold Status Information (HO) Message

8) Unsuccessful Information Transmission (UI) Message

The format and data content of these messages are defined in Appendix A and Appendix B.

3.2.1.3.3 Application 2 - Reconstitution Request Initiated by the ATM IPOP

There are three units of data transfer for this application. They are:

1. Reconstitution information (RN) Message

2. Information Accept (IA) Message

3. Reconstitution Messages consisting of:

   a. Set 1: Airspace Utilization Information Messages:

      1) ERAM Status Information (HS) Message

      2) Route Status Information (HR) Message

      3) Sector Assignment Status Information (SH) Message

      4) Special Activities Airspace Information (SU) Message

      5) Altimeter Information (HA) Message

      6) Sign In/Sign Out Information (SY) Message.

   b. Set 2: Flight Plan Information and Other Information Messages:

      1) Flight Plan Information (FH) Message

      2) Tentative Flight Plan Information (NP) Message.

      3) Expected Departure Time Information (ET) Message

      4) Converted Route Information (HX) Message

      5) Interim Altitude Status Information (HE) Message

      6) FDB Fourth Line Information (HF) Message

7) Hold Status Information (HO) Message

8) Unsuccessful Information Transmission (UI) Message

The format and data content of these messages are defined in Appendix A and Appendix B.

3.2.1.3.4 Application 3 - Data Exchange Between ERAM and the ATM IPOP

Table 3-VIII and Table 3-IX define the units of data transfer for this application. The format and data content of these messages are defined in Appendix A and Appendix B.

3.2.1.3.5 Application 4 - Track Information Distribution

There are two units of data transfer for this application:

1. Track Data (TH) Message

2. ARTS TZ Information (HZ) Message.

The format and data content of these messages are defined in Appendix A.

3.2.1.3.6 Information Unit Segmentation

The maximum size for a single IP message received or transmitted over Ethernet Local Area Network (LAN) connections conform to the IEEE 802.3 Ethernet standard of 1500 bytes. Messages in excess of this maximum are segmented by the IP protocol software at the source and reassembled by the IP protocol software at the destination.

3.2.1.3.7 Information Flow Direction

The information across the ERAM/ATM IPOP interface flows from ERAM to the ATM IPOP as shown in Table 3-VIII and from the ATM IPOP to ERAM as shown in Table 3-IX.

A successful information exchange for Application 1, Initialization by ERAM, or Application 2, Initialization by the ATM IPOP is a prerequisite for any information flow in Application 3, Data Exchange Between ERAM and the ATM IPOP and Application 4, Track Information Distribution. In the event of initialization or reconstitution, Track information distribution will not begin from ERAM to an ATM IPOP until the Reconstitution Information (RN) message with a status of HRC (ERAM has completed reconstitution) is sent from ERAM.

The following message will only be sent during initialization or reconstitution if there is applicable data available within ERAM:

FH – If there are no eligible Flight Plans in the system, no FH messages are sent.

NP – If there are no eligible Tentative Flight Plans in the system, no NP messages are sent.

If there are no eligible Flight Plans in the system or if there are eligible Flight Plans in the system but there is no applicable data assigned, the following messages will not be sent:

1. Expected Departure Time Information (ET) Message
2. Converted Route Information (HX) Message
3. Interim Altitude Status Information (HE) Message
4. FDB Fourth Line Information (HF) Message
5. Hold Status Information (HO) Message
6. Unsuccessful Information Transmission (UI) Message

3.2.1.3.8 Frequency of Transmission

The frequency of transmission across an ERAM - ATM IPOP interface is shown in Table 3-XII.

3.2.1.3.9 Responses

The ERAM, ATM IPOP, or ATM client application whose destination is defined in the Interface Test (IT) message responds to the source address with an Interface Reply (IL) message. ERAM responds, as required, to the source address for other messages it receives with an Information Accept (IA) message if the message was received without error, or an Information Reject (IR) message for a message received in error. ERAM generated responses are required on a message by message basis. Response messages are not responded to with an IA or IR. Response messages include the IA, IR, and IL messages. IPOP clients generate IRs on point cast messages. IPOP generates IRs on multi and point cast messages.

3.2.1.4 Quality of Service

Refer to sections 3.2.1.2 and 3.2.3.2.

3.2.1.5 AP Error Handling

Upon detection of loss of the Primary TCP Connection of the Primary ATM IPOP, if the Backup TCP Connection of the Primary ATM IPOP is available, IFPA will send a health check message <MC_HEALTH> with the operational status of "Operational" and a zero length <MC_XFR_OUT> message with the Read CC in the *status* field (posting a Read) to the Primary ATM IPOP through the Backup TCP Connection. A TCP Connection of an ATM IPOP is available if the ATM IPOP has successfully connected to and registered with IFPA through the TCP Connection. IFPA will resume data transmission through the Backup TCP Connection. The Backup TCP Connection will become the Primary TCP Connection. **Note**: that loss of a connection could be due to a path failure (i.e., cable, network switch, or RFW failures) or failure of the IPOP. This is depicted in Figure 3-6.

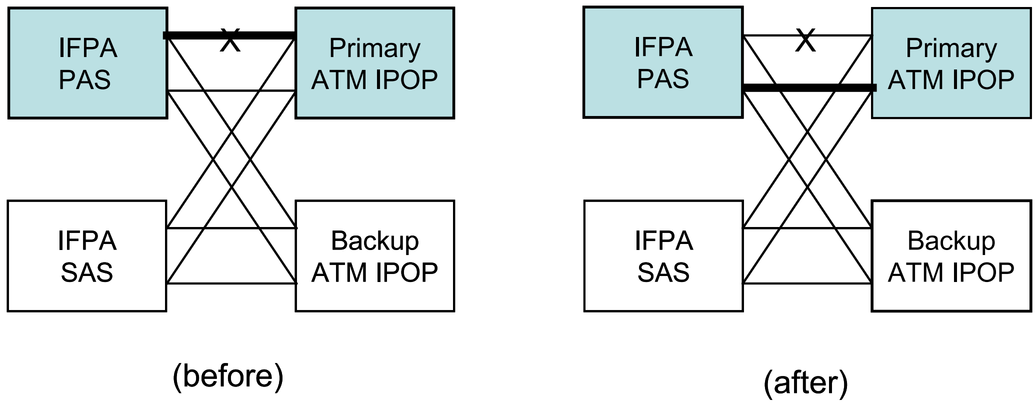

Figure 3-6. Resume Communications through Backup TCP Connection of Primary ATM IPOP

Upon detection of loss of the Primary TCP Connection of the Primary ATM IPOP, if the Backup TCP Connection of the Primary ATM IPOP is not available and the Backup ATM IPOP is available, IFPA will send a health check message <MC_HEALTH> with the operational status of "Operational" and a zero length <MC_XFR_OUT> message with the Read CC in the *status* field (posting a Read) to the Backup ATM IPOP through the Primary TCP Connection. The Backup ATM IPOP will become the Primary ATM IPOP and will be used for communication with the ATM IPOP. IFPA will then initiate reconstitution. This is shown in Figure 3-7.

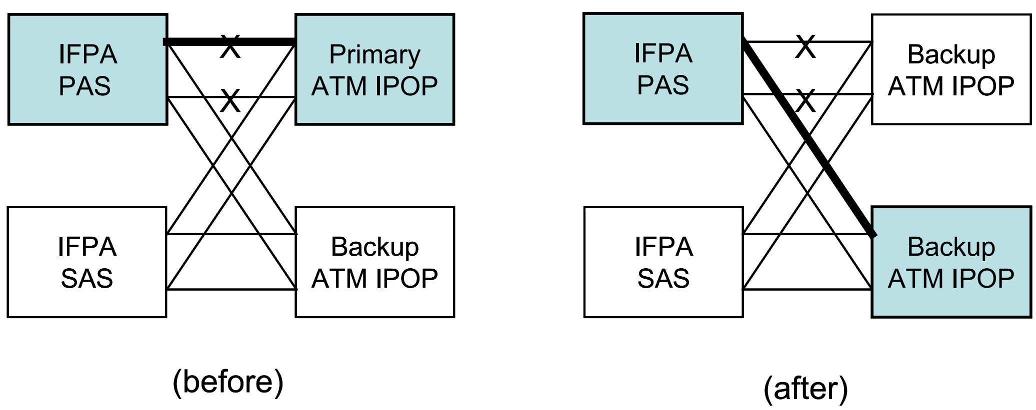

Figure 3-7. Resume Communications through Backup ATM IPOP

Upon detection of loss of the Primary TCP Connection of an ATM IPOP, if the Backup TCP Connection of the Primary ATM IPOP is not available and the backup ATM IPOP is not available, IFPA will declare that the entire ATM IPOP interface is down. The ATM IPOP and IFPA will try to re-establish connections.

Note: that loss of TCP connection other than the Primary TCP Connection of the Primary ATM IPOP does not affect communications with the ATM IPOP.

Upon detection of loss of a TCP connection, if the state of the ATM IPOP is enabled, IFPA will continue to respond to any TCP connection request on the same pathway.

When the IFPA PAS fails, the IFPA SAS is promoted to the primary state and becomes the IFPA PAS. After promotion, the new IFPA PAS will initialize/reconstitute ATM IPOP.

When the IFPA SAS fails and the IFPA SAS is successfully reactivated, the IFPA SAS will respond to any TCP connection request from each ATM IPOP on each pathway and re-establish connections with each ATM IPOP. ATM IPOP will register with ERAM through all pathways.

The M&C operator can command the channel in the Backup Mode to transition to the Active Mode. After channel switch is completed and the ATM IPOP Interface is enabled, the IFPA PAS and SAS will respond to any TCP connection request from each ATM IPOP on each pathway and re-establish connections with each ATM IPOP. ATM IPOP will register with ERAM through all pathways. After a connection is established and ATM IPOP successfully registers with IFPA, IFPA will initialize/reconstitute ATM IPOP.

The ERAM – ATM IPOP Error Handling is defined in Table 3-X.

Table 3-X. Error Handling

Error		Detected By	Action Taken
1. Primary Address Space (PAS)/Standby Address Space (SAS) Switch		ERAM	• ERAM initiates reconstitution of the ATM IPOP.
2. Standby Address Space (SAS) Activated			• The ATM IPOP periodically attempts to request connection • ERAM responds to connection request • The ATM IPOP registers with ERAM
3. Channel Switch (commanded)		ERAM	• The ATM IPOP periodically attempts to request connection • ERAM responds to connection request when it activates (channel change is induced via a Monitor and Control (M&C) workstation). • The ATM IPOP registers with ERAM • ERAM initiates reconstitution of the ATM IPOP
4. ERAM Failure			
	a. No connection to either ERAM PAS or SAS	ATM IPOP	• The ATM IPOP periodically attempts to request connection • ERAM responds to connection request when it recovers • The ATM IPOP registers with ERAM • ERAM initiates reconstitution of the ATM IPOP

Table 3-X. Error Handling

Error		Detected By	Action Taken
	b. Both ERAM PAS and SAS failure	ATM IPOP	• The ATM IPOP periodically attempts to request connection • ERAM responds to connection request when it recovers • The ATM IPOP registers with ERAM • ERAM initiates reconstitution of the ATM IPOP
5. ERAM Interface Failure			
	a. Receipt of a register request <MC_REG> from an ATM IPOP with the device name not adapted in ERAM	ERAM	• ERAM disconnects both connections to ATM IPOP
	b. A register request <MC_REG> not received through the same TCP connection from an ATM IPOP within a preset time internal of establishing the TCP connection	ERAM	• ERAM disconnects the affected connection to ATM IPOP
	c. Receipt of a registration request <MC_REG> through a TCP connection from an ATM IPOP that has already successfully registered through the same TCP connection	ERAM	• ERAM disconnects both connections to ATM IPOP • ERAM routes messages to alternate ATM IPOP
	d. Receipt of a response message response <MR_XFR_OUT> from an ATM IPOP with Device Failed or Device Down set in the Flag byte indicating an ATM IPOP device failure	ERAM	• ERAM disconnects both connections to ATM IPOP • ERAM routes messages to alternate ATM IPOP
	e. Receipt of an input message <MC_XFR_IN> from an ATM IPOP with Device Failed or Device Down set in the Flag byte indicating an ATM IPOP device failure	ERAM	• ERAM processes application data in <MC_XFR_IN> • ERAM disconnects both connections to ATM IPOP • ERAM routes messages to alternate ATM IPOP
	f. Health check <MC_HEALTH> not received in an adapted time interval through a TCP connection from a successfully registered ATM IPOP	ERAM	• ERAM disconnects affected connection to ATM IPOP • ERAM routes messages to alternate connection

Table 3-X. Error Handling

Error	Detected By	Action Taken
6. Failure of both ATM IPOPs/ATM IPOP Startup	ERAM	• The ATM IPOP requests connections and registers with ERAM when it recovers/starts up • The ATM IPOP requests reconstitution from ERAM • ERAM initiates reconstitution of the ATM IPOP upon request from the ATM IPOP.
7. Network failure	ERAM	• The ATM IPOP periodically attempts to request connection • ERAM responds to connection request when network recovers from failure • The ATM IPOP registers with ERAM • ERAM initiates reconstitution of the ATM IPOP
8. Lost/Late Message Sent by ERAM		
a. Lost/Late Message Sent by ERAM at TCP level	ERAM	• Message retransmission and guaranteed delivery handled by TCP protocol.
b. A response message <MR_XFR_OUT> not received within a preset time after transmitting an output message <MC_XFR_OUT> with the Write CC in the status field to ATM IPOP	ERAM	• ERAM disconnects affected connection to ATM IPOP • ERAM retransmits CBTP through alternate connection if alternate connection is connected • ERAM routes messages to alternate connection • If the alternate connection to the primary ATM IPOP is not connected, ERAM will mark both connections to the primary ATM IPOP as disconnected causing a switch to the backup ATM IPOP if available or marking the ATM IPOP interface as Down if the backup ATM IPOP is not available.
9. Lost/Late Message Sent by ATM IPOP or ATM client application		
a. Lost/Late Message Sent by ATM IPOP or ATM client at TCP level	ATM IPOP	• Message retransmission and guaranteed delivery handled by TCP protocol.
b. No response (IR or IA) from ERAM	Source of message	• Source of message resends after adaptable time.
10. Receipt of <MC_XFR_IN> without <MC_XFR_OUT> with Read CC in the status field from ATM IPOP	ERAM	• ERAM discards the data

Table 3-X. Error Handling

Error	Detected By	Action Taken
11. Unrecognizable Protocol Message Created by ERAM	ATM IPOP	• The ATM IPOP discards the data
12. Unrecognizable Protocol Message Created by ATM IPOP	ERAM	• ERAM discards the data
13. Incompatible/Unrecognizable Application Message Created by ERAM	ATM IPOP or message destination	• The ATM IPOP or message destination responds with an IR to ERAM (as further defined on a message by message basis).
14. Incompatible/Unrecognizable Application Message Sent by an ATM Message Source	ERAM	• ERAM reacts with an alert to a Specialist workstation and with an IR message to the message source.
15. ERAM issued IR for an ATM IPOP initiated RN	ATM IPOP	• The ATM IPOP will reinitiate the reconstitution.
16. RN Message Order Error	ERAM	• ERAM will reestablish the reconstitution by sending RN message with a status field of HRR.

3.2.1.6 Interface Summary Table

A summary of the messages to be exchanged across an ERAM/ATM IPOP interface is provided in Table 3-XI.

Table 3-XI. Interface Summary for ERAM to the ATM IPOP

<table>
<tr><th colspan="3">Application Process 1 (Reconstitution Request Initiated by ERAM)</th></tr>
<tr><th>Source</th><th>Message Name</th><th>Destination</th></tr>
<tr><td>ERAM</td><td>Reconstitution Information (RN)</td><td>ATM IPOP</td></tr>
<tr><td>ATM IPOP</td><td>Reconstitution Information (RN)</td><td>ERAM</td></tr>
<tr><td>ERAM</td><td>Reconstitution data messages</td><td>ATM IPOP</td></tr>
<tr><td colspan="3">Note: All messages are acknowledged by ERAM with either an IA or an IR message. All message exchanges between ERAM and the ATM IPOP for initialization use the “guaranteed” pathway defined in Section 3.1 and ERAM and the ATM IPOP addresses.</td></tr>
<tr><th colspan="3">Application Process 2 (Reconstitution Request Initiated by the ATM IPOP)</th></tr>
<tr><th>Source</th><th>Message Name</th><th>Destination</th></tr>
<tr><td>ATM IPOP</td><td>Reconstitution Information (RN)</td><td>ERAM</td></tr>
<tr><td>ERAM</td><td>Reconstitution Information (RN)</td><td>ATM IPOP</td></tr>
<tr><td>ERAM</td><td>Reconstitution data messages</td><td>ATM IPOP</td></tr>
<tr><td colspan="3">Note: All messages are acknowledged by ERAM with either an IA or an IR message. All message exchanges between ERAM and the ATM IPOP for initialization use the “guaranteed” pathway defined in Section 3.1 and ERAM and the ATM IPOP addresses.</td></tr>
</table>

Table 3-XI. Interface Summary for ERAM to the ATM IPOP

Application Process 3 (Data Exchange Between ERAM and the ATM IPOP)		
Source	**Message Name**	**Destination**
ERAM	ERAM messages listed in Table 3-XIII	ATM IPOP
ATM IPOP	ERAM messages listed in Table 3-XIV	ERAM
Note: Messages are acknowledged by ERAM, on a message by message basis, with either an IA or an IR message. ERAM response destination address should be set to the source address of the incoming message needing acknowledgement. Messages are exchanged using the "guaranteed" pathway defined in Section 3.1.		
Application Process 4 (Track Data Distribution)		
Source	**Message Name**	**Destination**
ERAM	Track Information (TH) Message	ATM IPOP
ERAM	ARTS TZ Information (HZ) Message	ATM IPOP

3.2.2 Protocol Implementation

The ERAM/ATM IPOP interface is implemented in accordance with Figure 3-8 with respect to the seven-layer Open Systems Interconnection (OSI) reference model.

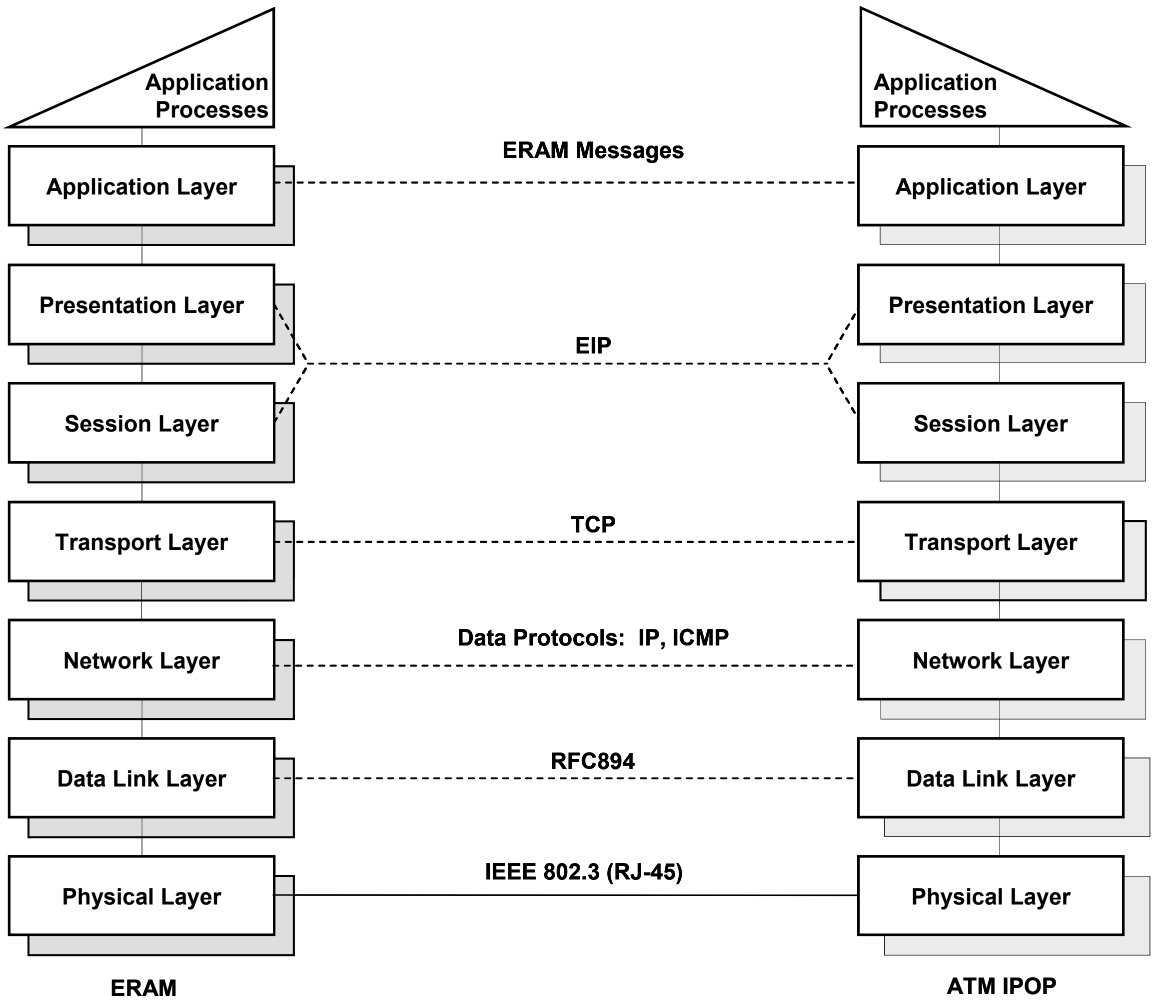

Figure 3-8. OSI Protocol Mapping

<u>Application Layer</u>

- <u>Application Process 1.</u> The Application Layer of the ERAM - ATM IPOP interface uses lower layer protocols (TCP) to create a "guaranteed" pathway between ERAM and the ATM IPOP and to pass messages between ERAM and the ATM IPOP.
- <u>Application Process 2.</u> The Application Layer of the ERAM -ATM IPOP interface uses the "guaranteed" pathway for the ATM IPOP to transmit a Reconstitution Information Message to ERAM and by ERAM to transmit the reconstitution data messages and the Reconstitution Information Message to the ATM IPOP.

- Application Process 3. The Application Layer of the ERAM - ATM IPOP interface uses the "guaranteed" pathway for ERAM to send messages to the ATM IPOPs and for the ATM IPOPs to send messages to ERAM.
- Application Process 4. The Application Layer of the ERAM – ATM IPOP interface uses the "guaranteed" pathway for ERAM to send messages to the ATM IPOPs.

Presentation Layer: ERAM implements the EIP protocol at the Presentation and Session Layers as specified in 0 over the IP-based interfaces between ERAM and the ATM IPOP.

Session Layer: ERAM implements the EIP protocol at the Presentation and Session Layers as specified in 0 over the IP-based interfaces between ERAM and the ATM IPOP.

Transport Layer: ERAM implements the TCP protocol at the Transport Layer as specified in RFC 793 and as amended in RFCs 919, 922, and 950 over the IP-based interfaces between ERAM and the ATM IPOP.

Network Layer: ERAM implements the IP protocol at the Network Layer as specified in RFC 791 over the interfaces between ERAM and the ATM IPOP.

ERAM implements the ICMP protocol at the Network Layer as specified in RFC 792.

ERAM implements the ARP routing protocol at the Network Layer as specified in RFC 826. In addition, ERAM implements IP version 4 routing as specified in RFC 1812.

Data Link Layer: The Data Link Layer is implemented as specified in RFC894.

Physical Layer: The Physical Layer is implemented as specified in IEEE 802.3.

3.2.2.1 Application Services

The Flight Data Processing (FDP) Application Programming (AP) interface proxy IFPA is the ERAM mechanism for message traffic exchanged between ERAM and the ATM IPOP.

3.2.2.2 Network Services

End-to-end communications, packet routing, addressing, and packet fragmentation and reassembly are provided by ERAM and the ATM IPOP systems.

3.2.2.3 Naming and Addressing

The ERAM system implements addressing (local and remote) for the ERAM to the ATM IPOP interface as specified in ENET 1370-001.1A and NAS 1370-500.4.

3.2.3 Security

The following sections address the high-level security characteristics for the interface between ERAM and the ATM IPOP. The ERAM security implementation adheres to the ERAM security characteristics defined in the ERAM System Segment Specification. These characteristics are in turn derived from the ERAM System Protection Profile. An RFW will be used between ERAM and the ATM IPOP that will be configured to allow only authorized traffic flow between the two applications.

3.2.3.1 Physical Security

All equipment and cabling at the point of demarcation for each interface are located within the FAA En Route facility, and subject to FAA physical security policies. Transmission of data between remote devices and the point of demarcation for each interface are via Government Furnished Equipment (GFE) transmission equipment which may include the use of switched and nonswitched network lines supplied by one or more private network service providers.

3.2.3.2 ERAM Security for External IP Interfaces

Both the ERAM ECG RFW and the ARTCC Support RFW selected for use with the ATM IPOP interface restrict access at the IP level by filtering messages based on the following parameters:

- Source IP address
- Destination IP address
- Protocol
- Port
- Rate limits.

Where protection is required in the interface between ERAM and the ATM IPOP, the ERAM system provides the following configurable levels of protection:

- Application port number filtering
- Configurable prohibition of attackable protocols.

Only legitimate ATM IPOP traffic by protocol type will be allowed to flow through the firewall.

During establishment of a connection, ATM IPOP will only connect to defined IP addresses, ERAM will only listen to defined IP addresses, and ERAM will only accept connections from defined IP addresses.

During a connection, ERAM will only accept legitimate messages as defined in Table 3-XII through Table 3-XVI.

3.2.4 Interface Design Characteristics Table

The ERAM - ATM IPOP interface is implemented in accordance with Table 3-XII through Table 3-XVI. All message fields are transferred in EBCDIC.

The Estimated Product Frequency of messages represented in Table 3-XII through Table 3-XVI are "Steady State Environment" Values and do not represent the frequency of messages that are sent as part of an ERAM Reconstitution. During an ERAM Reconstitution it would be expected that these message frequencies would be significantly larger.

Table 3-XII. Interface Design Characteristics, Application Process 1

Application Process 1 (Reconstitution Request Initiated by ERAM)					
Message Name	**Message Description**	**Definition**	**Minimum Product Size (bytes)**	**Maximum Product Size (bytes)**	**Estimated Product Frequency**
RN	Reconstitution Information Message	The Reconstitution Information message is sent by ERAM when the ERAM detects a need to reconstitute an ATM IPOP database, when ERAM is ready to begin sending reconstitution data, and when ERAM detects that reconstitution is complete (HRC).	51	51	5/day
IA	Information Accept Message Reconstitution data messages	The Information Accept (IA) message is used to acknowledge receipt of a valid input message from ATM IPOP.	52	52	2/day

Table 3-XIII. Interface Design Characteristics, Application Process 2

Application Process 2 (Reconstitution Request Initiated by the ATM IPOP)					
Message Name	**Message Description**	**Definition**	**Minimum Product Size (bytes)**	**Maximum Product Size (bytes)**	**Estimated Product Frequency**
RN	Reconstitution Information Message	The Reconstitution Information message is sent to ERAM from an ATM IPOP to either request a reconstitution of database from ERAM or signal that it is ready to receive reconstitution data.	51	51	12/month
IA	Information Accept Message Reconstitution data messages	The Information Accept (IA) message is used to acknowledge receipt of a valid input message from ATM IPOP.	52	52	6/month

Table 3-XIV. Interface Design Characteristics, Application Process 3, ERAM to ATM IPOP

Application Process 3 (Data Exchange Between ERAM and the ATM IPOP)					
Message Name	**Message Description**	**Definition**	**Minimum Product Size (bytes)**	**Maximum Product Size (bytes)**	**Estimated Product Frequency**
ERAM TO THE ATM IPOP					
FH	Flight Plan Information Message	The Flight Plan Information messages are used to transfer active and proposed flight plan data from ERAM to ATM IPOP.	121	3978	45/min
AH	Flight Amendment Information Message	The Flight Amendment Information (AH) message is used to update flight plan data previously transferred from ERAM to ATM IPOP.	106	3978	311/min
HX	Converted Route Information Message	The Converted Route Information message is sent to an ATM IPOP to provide fix and calculated time of arrival at each fix that describes an aircraft's ERAM converted route of flight.	81	3978	334/min
CL	Cancellation Information Message	The Cancellation Information messages provide an ATM IPOP with Cancellation data for a flight plan.	71	104	45/min
DH	Departure Information Message	The Departure Information message provides the ATM IPOP with certain Flight plan departure related data for all flight plans.	96	146	14/min
SH	Sector Assignment Status Information Message	Sector Assignment Status Information messages provide an ATM IPOP with current sector assignment data for all adapted sectors in the ARTCC.	56	3978	5/hour
SU	Special Activities Airspace Information Message	The Special Activities Airspace Information message (SU) is sent to ATM IPOP to provide status and schedules for the SAA(s).	56	1048	5/hour
IH	Aircraft Identification Amendment Information Message	The ATM Aircraft Identification Amend Information IH) message (is sent by ERAM to indicate a change to the flight identification field (Field 02) of a flight plan.	85	131	1/min

Table 3-XIV. Interface Design Characteristics, Application Process 3, ERAM to ATM IPOP

Application Process 3 (Data Exchange Between ERAM and the ATM IPOP)					
Message Name	**Message Description**	**Definition**	**Minimum Product Size (bytes)**	**Maximum Product Size (bytes)**	**Estimated Product Frequency**
ERAM TO THE ATM IPOP					
HH	Hold Information Message	The Hold Information message indicates a hold of a definite duration, an indefinite hold, or hold release for a specified flight.	71	96	3/min
RH	Drop Track Information Message	The Drop Track Information (RH) message provides data to ATM IPOP to indicate the discontinued tracking of tracks previously provided to ATM IPOP in the TH message.	65	70	110/min
LH	Interim Altitude Information Message	The Interim Altitude Information message provides an ATM IPOP with interim altitude data for a flight.	71	78	62/min
PH	Progress Report Information Message	The Progress Report Information message is sent from ERAM to an ATM IPOP to update the position of an active flight plan, or release it from a prior hold status.	81	96	1.2/hr
HV	Flight Arrival Information Message	Flight Arrival Information messages provides arrival data from ERAM for all arriving flights.	89	114	15/min
HU	Flight Plan Update Information Message	The Flight Plan Update Information message provides flight plan updates on active flight plans inbound from an adjacent ARTCC.	114	3978	12/min
ET	Expected Departure Information Time	The Expected Departure Time Information (ET) message provides Estimated Departure Clearance Time (EDCT) information (i.e., the assigned flight departure time on a proposed flight plan inbound to a controlled airport with a ground delay in effect) to an ATM IPOP.	63	79	8/min

Table 3-XIV. Interface Design Characteristics, Application Process 3, ERAM to ATM IPOP

Application Process 3 (Data Exchange Between ERAM and the ATM IPOP)					
Message Name	**Message Description**	**Definition**	**Minimum Product Size (bytes)**	**Maximum Product Size (bytes)**	**Estimated Product Frequency**
ERAM TO THE ATM IPOP					
HS	ERAM Status Information Message	The ERAM Status Information message is sent to an ATM IPOP when an ERAM status change occurs.	100	100	7/day
HP	Position Update Information Message	The Position Update Information (HP) message is used to update the coordination time on an active flight when the present position fix time is updated.	82	105	166/min
NI	Tentative Aircraft Identification Amendment Information	The Tentative Aircraft Identification Amendment Information (NI) message is sent to ATM IPOP to indicate a change to the flight identification field (Field 02) of a tentative flight plan.	87	97	1/hour
NP	Tentative Flight Plan Information Message	The system sends a Tentative Flight Plan Information (NP) message to the ATM IPOP when a tentative flight plan is created. The tentative Flight Plan Information is also transmitted during reconstitution of ATM IPOP.	80	167	* 30/hour
NL	Tentative Flight Plan Removal Message	The system sends a Tentative Flight Plan Removal (NL) message to the ATM IPOP when a tentative flight plan is deleted or changed to a non-tentative flight plan.	71	91	30/hour
NU	Tentative Flight Plan Amendment Information Message	The Tentative Flight Plan Amendment Information (NU) message is used to update the ATM IPOP with tentative flight plan data when a change is made to the tentative flight plan.	65	152	15/hour

Table 3-XIV. Interface Design Characteristics, Application Process 3, ERAM to ATM IPOP

Application Process 3 (Data Exchange Between ERAM and the ATM IPOP)					
Message Name	**Message Description**	**Definition**	**Minimum Product Size (bytes)**	**Maximum Product Size (bytes)**	**Estimated Product Frequency**
ERAM TO THE ATM IPOP					
HB	Manual Swap Information Message	The Manual Swap Information message allows the sequence of two aircraft arrivals in the Meter Reference Point (MRP) list to be swapped. TMA will resequence the arrival times of the two aircraft.	95	105	2/min
HC	Resequence Information Message	The Resequence Information message allows the sequence of aircraft arrivals in the metering list to be modified. TMA will resequence and, if determined necessary, reschedule the arrival times of all indicated aircraft into the indicated sequence. The Resequence Information message may be used to resequence up to five aircraft.	95	186	2/min
HD	Metering List Display Suppress Information Message	The Metering List Display Suppress Information message indicates the suppression or unsuppression of a MRP list entry.	80	253	1/min
HA	Altimeter Setting Information Message	The Altimeter Setting Information message is used to relay altimeter reference data for selected, adapted, reporting stations to an ATM IPOP. The altimeter data sent to ATM IPOP is used for altitude correction.	56	70	8/min
GH	General Information Message	The General Information message provides general information/free text remarks to ATM client applications. ERAM sends a GH message to a specific ATM client application or to all ATM client applications via ATM IPOP, as indicated by destination address routing.	49	89	15/min

Table 3-XIV. Interface Design Characteristics, Application Process 3, ERAM to ATM IPOP

Application Process 3 (Data Exchange Between ERAM and the ATM IPOP)					
Message Name	**Message Description**	**Definition**	**Minimum Product Size (bytes)**	**Maximum Product Size (bytes)**	**Estimated Product Frequency**
ERAM TO THE ATM IPOP					
AK	Traffic Count Adjustment	The Traffic Count Adjustment message may be used to adjust (increment or decrement) one of the following: ACDD (Air Carrier Domestic Departures), ATDD (Air Taxi Domestic Departures), GADD (General Aviation Domestic Departures), MIDD (Military Domestic Departures), ACDO (Air Carrier Domestic Overs), ATDO (Air Taxi Domestic Overs). GADO (General Aviation Domestic Overs), MIDO (Military Domestic Overs), ACOD (Air Carrier Oceanic Departures), ATOD (Air Taxi Oceanic Departures), GAOD (General Aviation Oceanic Departures), MIOD (Military Oceanic Departures), ACOO (Air Carrier Oceanic Overs), ATOO (Air Taxi Oceanic Overs), GAOO (General Aviation Oceanic Overs), MIOO (Military Oceanic Overs), VFRC (VFR Traffic Count).	75	194	1/shift
AC	Instrument Approach Count Adjustment	The instrument approach count message may be used to adjust (increment or decrement) one of the following instrument approach counts: AC (air carrier), AT (air taxi), GA (general aviation), MI (military).	76	140	1/shift
SY	Sign In/Sign Out Information	The Sign In/Sign Out (SY) Information message is sent each time a sign in or sign out occurs, or when a reconstitution request is received.	124	150	25/min

Table 3-XIV. Interface Design Characteristics, Application Process 3, ERAM to ATM IPOP

Application Process 3 (Data Exchange Between ERAM and the ATM IPOP)					
Message Name	**Message Description**	**Definition**	**Minimum Product Size (bytes)**	**Maximum Product Size (bytes)**	**Estimated Product Frequency**
ERAM TO THE ATM IPOP					
OH	Handoff Status	The Handoff Status (OH) message is sent to the ATM IPOP when a handoff is initiated, accepted, or retracted, or when failure of handoff is detected.	101	121	138/min
PT	Inbound Point Out Information Message	This message is sent upon receipt of an interfacility pointout message from another center.	95	100	3/min
IL	Interface Reply Message	ERAM sends an IL message via an ATM IPOP to an ATM system in response to a valid Interface Test (IT) message sent from the ATM system.	64	80	2/day
IR	Information Reject Message	ERAM sends an IR message via an ATM IPOP to notify originating ATM system of the rejection of a message received by ERAM that fails logic checking, which consists of syntactic and semantic validations performed on the message.	55	118	1/day
IA	Information Accept Message	ERAM, when required, sends an IA message to acknowledge receipt of a valid message. The destination address of an IA message should be set to the originating source address of the received message.	52	52	666/min
HR	Route Status Information Message	Route Status Information (HR) message are used to provide an ATM IPOP with the status of adapted arrival and departure routes (i.e., whether a given route is active or inactive).	57	3978	1/hour

Table 3-XIV. Interface Design Characteristics, Application Process 3, ERAM to ATM IPOP

Application Process 3 (Data Exchange Between ERAM and the ATM IPOP)					
Message Name	**Message Description**	**Definition**	**Minimum Product Size (bytes)**	**Maximum Product Size (bytes)**	**Estimated Product Frequency**
ERAM TO THE ATM IPOP					
IT	Interface Test Message	The IT message is used to test ERAM to ATM system interface. ERAM sends IT messages to the ATM system via an ATM IPOP. The ATM system responds with an Interface Reply (IL) message via the ATM IPOP.	56	72	2/day
HE	Interim Altitude Status Information Message	The Interim Altitude Status Information message provides interim altitude status information on all active aircraft to ATM IPOP during the initialization process.	73	78	5/day
HO	Hold Status Information Message	The Hold Status Information message provides hold information (holding fix, and estimated fix departure time for definite-duration holds) on all active aircraft to an ATM IPOP during the initialization process.	72	96	5/day
UI	Unsuccessful Information Transmission Message	The Unsuccessful Information Transmission (UI) message is sent by ERAM when transmission of flight data to a remote facility is unsuccessful either due to a transmission error or because transmission of the flight data to the remote facility is inhibited.	74	87	2/min
CK	Health Check Message	The Health Check (CK) message is sent by ERAM to notify the ATM IPOP that the communication line between ERAM and the ATM IPOP is operational.	43	43	10/min

Table 3-XIV. Interface Design Characteristics, Application Process 3, ERAM to ATM IPOP

Application Process 3 (Data Exchange Between ERAM and the ATM IPOP)					
Message Name	**Message Description**	**Definition**	**Minimum Product Size (bytes)**	**Maximum Product Size (bytes)**	**Estimated Product Frequency**
ERAM TO THE ATM IPOP					
BA	Beacon Code Reassignment Information Message	The Beacon Code Reassignment Information message is used to provide updated beacon code reassignment information when ERAM determines that an automatic beacon code reassignment occurred because the requested beacon code was already in use by another aircraft.	147	213	8/min
RE	Beacon Code Restricted Information Message	The Beacon Code Restricted Information message is used to provide updated beacon code reassignment information when ERAM determines that a beacon code reassignment occurred because the requested beacon code is adapted as restricted.	104	137	1/min
UB	Beacon Code Utilization Information Message	The Beacon Code Utilization Information message is used to provide the peak number of beacon codes used, the total number of adapted codes and the number of code reassignments since start-up or local midnight, for an adapted period of time. The peak number of beacon codes used and the total number of adapted codes will be broken down by the following categories: 1. Internal Primary and Secondary codes. 2. Internal Tertiary codes. 3. External Primary and Secondary codes. 4. External Tertiary codes.	108	108	25/day

Table 3-XIV. Interface Design Characteristics, Application Process 3, ERAM to ATM IPOP

Application Process 3 (Data Exchange Between ERAM and the ATM IPOP)					
Message Name	**Message Description**	**Definition**	**Minimum Product Size (bytes)**	**Maximum Product Size (bytes)**	**Estimated Product Frequency**
ERAM TO THE ATM IPOP					
UG	Geographic Beacon Code Utilization Message	The Geographic Beacon Code Utilization message is used to provide ATM IPOP with the total number of adapted beacon codes for each destination region as well as the peak number of beacon codes used for each destination region during the period.	87	1802	1/hour
HF	FDB Fourth Line Information	The FDB Fourth Line Information message provides an ATM IPOP with displayable, user-specified FDB fourth line data stored in ERAM, i.e., heading, speed or free form text, when this data is created, changed or deleted.	65	3978	11/min
HT	Point Out Information	The Point Out Information (HT) message is used to provide interfacility and intrafacility point out information when these actions occur, to an ATM IPOP.	80	109	18/min
***Note:** The NP rate is the rate at which tentative flight plans are created.					

Table 3-XV. Interface Design Characteristics, Application Process 3, ATM IPOP to ERAM

Application Process 3 (Data Exchange Between ERAM and the ATM IPOP)					
Message Name	**Message Description**	**Definition**	**Minimum Product Size (bytes)**	**Maximum Product Size (bytes)**	**Estimated Product Frequency**
THE ATM IPOP TO ERAM					
IO	Flight Plan Readout Request Message	The IO message is sent to ERAM from an ATM IPOP to request missing flight plan or converted route data. When an ATM client application receives a Track data (TH) message for which it has no flight plan in its database, it can request the missing flight data from the ATM IPOP. If the ATM IPOP to which the ATM client is registered cannot supply the corresponding flight plan, it generates an IO message to ERAM.	57	63	1/day
IM	Meter Reference Point List Message	The IM message is used to send metering information to ERAM for the Meter Reference Point List.	105	196	600/min
PA	Proposed Speed Advisory	The PA message is used to send proposed speed advisory information to ERAM.	58	113	50/min
IX	Airport Configuration Information Header Message	The Airport Configuration Information Header message is sent to ERAM from TMA via an ATM IPOP to provide information on changes in airport runway configuration or arrival rate.	64	71	1/min
IE	Delete Aircraft Message	The Delete Aircraft (IE) message is sent to ERAM when an aircraft is deleted from the MRP list.	64	84	7/min
GH	General Information Message	The General Information message is used to enter information desired for output at specified locations or positions.	56	467	6/day

Table 3-XV. Interface Design Characteristics, Application Process 3, ATM IPOP to ERAM

Application Process 3 (Data Exchange Between ERAM and the ATM IPOP)					
Message Name	**Message Description**	**Definition**	**Minimum Product Size (bytes)**	**Maximum Product Size (bytes)**	**Estimated Product Frequency**
THE ATM IPOP TO ERAM					
IF	Flow Control Advisory Information Message	The Flow Control Advisory Information (IF) message is sent to ERAM by the Central Flow Automation Facility (CFAF) via an ATM IPOP to implement a ground delay program. The IF message activates FAD flow processing for a destination airport and results in the assignment of EDCTs for proposed flights and PDTs for active flights to the destination airport.	58	79	1.3/hr
ID	Estimated Departure Clearance Time Information Message	The ID message will be sent to ERAM by the Central Flow Control Function (CFCF) via an ATM IPOP to assign an estimated departure clearance (EDCT) time to a proposed flight going to a destination airport requiring delays; the EDCT assigns a ground delay to a specific aircraft prior to departure.	63	72	8/min
IL	Interface Reply Message	The IL message will be sent to ERAM to acknowledge the receipt of a valid Interface Test (IT) message from ERAM.	65	81	2/day
IT	Interface Test Message	The IT message is used to test ERAM to ATM system interface. ERAM sends IT messages to the ATM system via an ATM IPOP. The ATM system responds with an Interface Reply (IL) message via the ATM IPOP.	55	71	2/day
IR	Information Reject Message	ERAM sends an IR message via an ATM IPOP to notify originating ATM system of the rejection of a message received by ERAM that fails logic checking.	55	177	1/day

Table 3-XV. Interface Design Characteristics, Application Process 3, ATM IPOP to ERAM

Application Process 3 (Data Exchange Between ERAM and the ATM IPOP)					
Message Name	**Message Description**	**Definition**	**Minimum Product Size (bytes)**	**Maximum Product Size (bytes)**	**Estimated Product Frequency**
THE ATM IPOP TO ERAM					
CI	Client Status Information Message	The CI message is generated by an ATM IPOP when a status change occurs to an ATM client application that is eligible to generate ERAM input messages (i.e., two-way ATM client applications).	63	63	2/day

Table 3-XVI. Interface Design Characteristics, Application Process 4

Application Process 4 (Track Data Distribution)					
Message Name	**Message Description**	**Definition**	**Minimum Product Size (bytes)**	**Maximum Product Size (bytes)**	**Estimated Product Frequency**
ERAM TO THE ATM IPOP					
TH	Track Information Message	The Track Information messages provide track data information, such as aircraft position, altitude, and speed, to an ATM IPOP.	127	3978	4045/min*
HZ	ARTS TZ Information Message	The ARTS TZ Information message provides the ATM IPOP with Flow Control Track/Full Data Block data for a flight.	79	143	68/min
* - TH message rate is for unbatched messages. Approximately 15 individual messages, where each message contains all optional fields, are normally batched into a single message.					

3.3 Physical Design Characteristics

The physical characteristics for the interface between ERAM and the ATM IPOP are described in the following subsections.

3.3.1 Electrical Power and Electronic Characteristics

Electrical connection characteristics for the Ethernet interfaces between ERAM and the ATM IPOP are as characterized in IEEE 802.3.

Power is characterized in FAA-G-2100H.

3.3.1.1 Connectors

ERAM provides cables with standard RJ-45 connectors for connection to the EDDS Routers. These connectors are secured by means of a tab on the connector which mates with the jack, thereby preventing improper attachment and preventing detachment during normal movement of the unit. T&T ERAM will provide jacks with a standard RJ-45 connector on the ARTCC Support RFW for connection to the EDDS3. Connector wiring is characterized in ANSI/TIA/EIA-568-B.1-2001.

3.3.1.2 Wiring/cabling

Cabling conforms to the IEEE Ethernet LAN standard 802.3. Category (CAT) 5e cabling is used, with the connector wiring as characterized in ANSI/TIA/EIA-568-B.1-2001. These systems connect to ERAM by means of metal-conductor cabling. Point-to-point cable length for 10BaseTX and 100BaseTX connections are less than or equal to 100 meters. All metal conductor cabling is characterized in FAA Order 6950.22, Maintenance of Electrical Power and Control Cables. All cables located in the plenum area are plenum rated.

3.3.1.3 Electrical Power/Grounding

Within the electrical interfaces, grounding is characterized in FAA-G-2100H.

3.3.1.4 Fasteners

ERAM provides mechanical means of securing connectors used in the interface between directly connected user systems or between intermediate telecommunications equipment and the respective mating jacks at the applicable demarcation point.

3.3.1.5 Electromagnetic Compatibility

N/A.

3.3.1.6 Bi-Directional Interface

The IP interface for the ATM IPOP messages is bi-directional in that it allows the capability for simultaneous data transmission between ERAM and the ATM IPOP.

4. QUALITY ASSURANCE PROVISIONS

Each project is required to perform conformance testing.

Each project is required to perform interoperability testing at a FAA-approved facility.

Conformance and Interoperability testing as part of the ERAM program will be conducted as defined in the ERAM Contractor Master Test Plan (MTP).

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5. PREPARATION FOR DELIVERY

This ICD imposes no explicit Preparation for Delivery requirements.

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6. NOTES

6.1 Definitions

This section is not applicable.

6.2 Abbreviations and Acronyms

AAR	Adapted Arrival Route
AC	Instrument Approach Count Adjustment
ADAR	Adapted Departure Arrival Route
ADR	Adapted Departure Route
AFDI	Arrival Flight Drop Interval
AFMP	Arrival Flow Management Point
AH	Flight Amendment Information
AID	Aircraft Identification
AK	Traffic Count Adjustment
AM	Amendment
ANSI	American National Standards Institute
AP	Application Process
ARD	Application Reconstitution Data (Ready to Receive)
ARP	Address Resolution Protocol
ARR	Application Requests Reconstitution
ARTCC	Air Route Traffic Control Center
ARTS	Automated Radar Terminal System
ATM	Air Traffic Management
BA	Beacon Code Reassignment Information
BCRO	Beacon Code Utilization Report Output to CMS
BTH	Block Transmission Header

CAS	Calibrated Airspeed
CBTP	CMS Block Transmission Protocol
CD	Collision Detection
CI	Client Status information
CID	Computer Identification
CK	Health Check
CL	Cancellation Information
CMS	Common Message Set
Coele	Contents Of Element in Error
Cofie	Contents Of Field In Error
CP	Change Parameter
CS	Resector
CSMA/CD	Carrier Sense Multiple Access with Collision Detection
CSP	Constraint Satisfaction Point
CTA	Calculated Time of Arrival
CTAS	Center/TRACON Automation System
DH	Departure Information
DM	Departure
DSP	Departure Spacing Program
DT	Data Test
EBCDIC	Extended Binary Coded Decimal Interchange Code
ECG	En Route Communications Gateway
EDCT	Estimated Departure Clearance Time
EDDS	En Route Data Distribution System
EFDI	Expire Fix Drop Interval
EIA	Electronic Industries Alliance
EIP	ERAM/IPOP Protocol
ERAM	En Route Automation Modernization

ERFMP	En Route Flow Management Point
EST	Estimate
ET	Expected Departure Time Information
FAA	Federal Aviation Administration
FAD	Fuel Advisory Delay
FAV	Fixed Airspace Volume
FDB	Full Data Block
FDEP	Flight Data Entry and Printout Equipment
FDP	Flight Data Processing
FH	Flight Plan Information
FP	Flight Plan
FR	Flight Plan Readout
GFE	Government Furnished Equipment
GH	General Information
GIM-S	Ground-based Interval Management - Spacing
HA	Altimeter Setting Information
HADDS	Host Air Traffic Management Data Distribution System
HB	Manual Swap Information
HC	Resequence Information e
HD	Metering List Display Suppress Information
HE	Interim Altitude Status Information
HF	FDB Fourth Line Information
HH	Hold Information
HID	Host Interface Device
HIDP	Host Interface Device (HID) Protocol
HO	Hold Status Information
HP	Position Update Information
HR	Route Status Information
HRC	Host Reconstitution Data Complete
HRR	Host Requested Reconstitution
HRS	Host Reconstitution Data Ready to Send

HS	ERAM Status Information
HT	Point Out Information
HU	Flight Plan Update Information
HV	Flight Arrival Information
HX	Converted Route Information
HZ	ARTS Flow Control Track/Full Data Block (TZ) Information
IA	Information Accept
IC	Instrument Approach Count
ICAO	International Civil Aviation Organization
ICD	Interface Control Document
ICMP	Internet Control Message Protocol
ID	Estimated Departure Clearance Time Information
IE	Delete Aircraft
IEEE	Institute of Electrical and Electronics Engineers
IETF	Internet Engineering Task Force
IF	Flow Control Advisory Information
IFPA	Interface Proxies Set A
IH	Aircraft Identification Amendment Information
IL	Interface Reply
IM	Meter Reference Point List
IO	Flight Plan Readout Request
IP	Internet Protocol
IPOP	Intermediate Point of Presence
IPT	Integrated Product Team
IR	Information Reject
IRD	Interface Requirements Document
IT	Interface Test
IX	Airport Configuration Information Header
LAN	Local Area Network
LH	Interim Altitude Information

M&C	Monitor and Control
MC	Message Command
MR	Message Response
MRP	Meter Reference Point
MTP	Master Test Plan
MW	Manual Swap Request
NAS	National Airspace System
NI	Tentative Aircraft Identification Amendment Information
NL	Tentative Flight Plan Removal
NP	Tentative Flight Plan Information
NU	Tentative Flight Plan Amendment Information
OH	Handoff Status Message
OSI	Open Systems Interconnection
PA	Proposed Speed Advisory Message
PAS	Primary Address Space
PDT	Provide Delay Time
PH	Progress Report Information
PR	Progress Report
PT	Inbound Point Out Information
QP	Point Out
QP	Suppress/Unsuppress Display of Meter List Entry
RE	Beacon Code Restricted Information
RFC	Request For Comments
RFW	Router/Firewall
RH	Drop Track Information
RN	Reconstitution Information

SAA	Special Activities Airspace
SAFA	Store and Forward Application
SAS	Standby Address Space
SDM	Standby Data Management
SH	Sector Assignment Status Information
SSPID	Site Specific Plan Identifier
SQ	Resequence Request
STD	Standard
SU	Special Activities Airspace Information
SY	Sign In/Sign Out Information
T&T	Test and Training
TB	Terminate Beacon Code
TC	Traffic Count Adjustment
TCP	Transmission Control Protocol
TFMS	Traffic Flow Management System
TH	Track Information
TIA	Telecommunications Industry Association
TMA	Traffic Management Advisor
TR	Test
TRACON	Terminal Radar Approach Control
TZ	Track/Full Data Block
UB	Beacon Code Utilization Information
UG	Geographic Beacon Code Utilization
UI	Unsuccessful Information Transmission
vs	versus
WJHTC	William J. Hughes Technical Center

Appendix A. ERAM TO ATM IPOP

Message and data characteristics for all known ATM IPOPs are included in the Common Message Set. Message data is available for distribution to any subscribing ATM client application. This appendix defines each ERAM to ATM IPOP message, specifying the message format, message content, and transmission eligibility. The message format contains the reference numbers (such as 01, 02, 12) of fields that comprise the message; for each field, field elements (such as a, b, c) are also defined. When the field element is numeric, a period is used to separate the reference number and the field element (e.g., 13.5 represents reference number 13 field element 5). Optional fields are enclosed in parentheses (e.g., (02)); an "or" condition between fields or field elements is indicated by brackets (e.g., [34a or 34b]). Where fields are repeatable within a message, the field(s) that are repeatable are shown two times with three periods between them to indicate that the groups of fields are repeatable several times (e.g., 68c 68c ... (68c) shows that the Field 68c must appear in the message at least two times, but optionally can be repeated multiple times. The number of times that the field(s) are repeatable is provided in the Message Format section for each message. Refer to Appendix C for a detailed definition of the field elements that apply to each message.

Message Headers (Field 150a) are required at the beginning of every message. Field Headers (Field 151a) are required before each and every field; note that field headers are not shown in the message formats (because of the length of the messages), but are shown in the accompanying tables for each message. Field 151a uses a numerical representation to identify the associated message's field number. Since non-ICAO field numbers do not represent the same information as the corresponding ICAO field numbers (e.g., ERAM Field 08, Altitude versus (vs.) ICAO Field 08, Flight Rules) a method is needed to distinguish the two sets of fields. In order to differentiate between ERAM Field numbers and ICAO field numbers, all ICAO Field numbers identified in Field 151a are represented by adding 900 (decimal) to the ICAO Field numbers. In the previous example, ERAM Field 08 is represented in Field 151a as 08, whereas ICAO Field 08 is represented in Field 151a as 908.

Data fields (except fields 167a, 170a, 173a, 316a, and 342a) use the EBCDIC format (see Appendix D). Fields 167a, 170a, 173a, and 342a contain binary data. Message headers (150a) and Field headers (151a) contain both EBCDIC and binary data. Field 316a uses the ASCII format.

Table A-I summarizes ERAM to ATM IPOP data messages and their specifications. There are seven message classes in the ATM Common Message Set: Flight Data, Track Data, Airspace Utilization, Metering Data, Miscellaneous, Display Status, and Communication.

Table A-I. Data Messages Sent From ERAM to ATM IPOP

Message Name	Message Type	Message Class
Flight Plan Information	FH	Flight Data
Flight Amendment Information	AH	Flight Data
Converted Route Information	HX	Flight Data
Cancellation Information	CL	Flight Data
Departure Information	DH	Flight Data
Aircraft ID Amend Information	IH	Flight Data
Hold Information	HH	Flight Data
Progress Report Information	PH	Flight Data
Flight Arrival Information	HV	Flight Data
Flight Plan Update Information	HU	Flight Data
Expected Departure Time Information	ET	Flight Data
Position Update Information	HP	Flight Data
Tentative Flight Plan Information	NP	Flight Data
Tentative Flight Plan Amendment Information	NU	Flight Data
Tentative Aircraft Identification Amendment Information	NI	Flight Data
Tentative Flight Plan Removal	NL	Flight Data
Track Information	TH	Track Data
Drop Track Information	RH	Track Data
Interim Altitude Information	LH	Track Data
FDB Fourth Line Information	HF	Track Data
Point Out Information	HT	Track Data
ARTS TZ Information	HZ	Track Data
Handoff Status	OH	Track Data
Inbound Point Out Information	PT	Track Data
Sector Assignment Status Information	SH	Airspace Util.
Route Status Information	HR	Airspace Util.
Special Activities Airspace Information	SU	Airspace Util.
Manual Swap Information	HB	Metering Data
Resequence Information	HC	Metering Data
Metering List Display Suppress Information	HD	Metering Data
Altimeter Setting Information	HA	Miscellaneous
Beacon Code Reassignment Information	BA	Miscellaneous

Table A-I. Data Messages Sent From ERAM to ATM IPOP

Message Name	Message Type	Message Class
Beacon Code Restricted Information	RE	Miscellaneous
Beacon Code Utilization Information	UB	Miscellaneous
Geographic Beacon Code Utilization	UG	Miscellaneous
General Information	GH	Miscellaneous
Traffic Count Adjustment	AK	Miscellaneous
Instrument Approach Count Adjustment	AC	Miscellaneous
Sign In/Sign Out Information	SY	Miscellaneous
Unsuccessful Information Transmission	UI	Miscellaneous
Interim Altitude Status Information	HE	Display Status
Hold Status Information	HO	Display Status
Interface Reply	IL	Communication
Interface Test	IT	Communication
Information Reject	IR	Communication
Information Accept	IA	Communication
ERAM Status	HS	Communication
Reconstitution Information	RN	Communication
Health Check	CK	Communication

A.1 Flight Data Message Class

The sixteen messages in this message class are as follows: the Flight Plan Information (FH) message, the Flight Amendment Information (AH) message, the Converted Route Information (HX) message, the Cancellation Information (CL) message, the Departure Information (DH) message, the Aircraft Identification Amend Information (IH)message, the Hold Information (HH) message, the Progress Report Information (PH) message, the Flight Arrival Information (HV)message, the Flight Plan Update Information (HU) message, the Expected Departure Time Information (ET) message, the Position Update Information (HP) message, the Tentative Flight Plan Information (NP) message), Tentative Flight Plan Amendment Information (NU) message, Tentative Aircraft Identification Amendment Information (NI) message and the Tentative Flight Plan Removal (NL) message.

ERAM will provide optional fields in the messages in the flight data message class whenever ERAM has valid data for that field for the aircraft. If an optional field is absent, ERAM has no data, and any previously received value for that field is no longer valid for the aircraft.

A.1.1 Flight Plan Information (FH)

The Flight Plan Information messages are used to transfer active and proposed flight plan data to an ATM IPOP.

A.1.1.1 Message Format

The data/fields that accommodate all characteristics for the Flight Plan Information messages are:

150a 00e 02a (02d) 316a 167a (03a) 03c (03e) (04a) (04b) [05a or 05c or 05d] 06a 07d (07e) [08[a b c d e f g h] and/or 09[a b c d e f g]] 10a (143b) (143b) (143b) (143b) (141a) (141b) (141c) ([142a or 142b]) ([142c or 142d]) ([142e or 142f]) (11c) (908a) (908b) (909c) [910a or 910c or 910a and 910c] [910b or 910d or 910b and 910d] (916c) (918b) ... (918x) (925a)…(925f) (925g)…(925l) (999a) ... (999y) (10b) (10c) (68g 343a [344a or 344b]) (343a [344a or 344b]) 149a

Table A-II shows the data required for the Flight Plan Information message.

Table A-II. Data Flight Plan Information Message (FH)

Field Ref No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source ID	
151a	Field Header	
02a	Flight Identification	
151a	Field Header	
(02d)	Computer Identification	
151a	Field Header	
316a	Global Unique Flight ID (GUFI)	Field is Not in Host message
151a	Field Header	
167a	Site Specific Plan Identifier	Field is Not in Host message
151a	Field Header	
(03a)	Aircraft Data	
151a	Field Header	
03c	Type of Aircraft	
151a	Field Header	
(03e)	Airborne Equipment Qualifier	
151a	Field Header	

Table A-II. Data Flight Plan Information Message (FH)

Field Ref No.	Data Item	Notes
(04a)	Beacon Code	
151a	Field Header	
(04b)	External Beacon Code	The External Beacon Code (when present and different than the assigned beacon code).
151a	Field Header	
05a	Speed	
(or)		
05c	Speed	
(or)		
05d	Speed	
151a	Field Header	
06a	Coordination Fix	
151a	Field Header	
07d	Coordination Time	
151a	Field Header	
(07e)	Coordination Time	
151a	Field Header	
08[a b c d e f g h]	Assigned Altitude	
(and/or)		
151a	Field Header	
09[a b c d e f g]	Requested Altitude (proposed)	
151a	Field Header	
10a	Flight Plan Route	**Flight Plan Route** – The currently cleared flight plan route. The flight plan route does not include any unacknowledged auto routes. It is intended for clients that wish to know the currently cleared route. The Appendix C (Common Appendix) to describe the Field 10a starts at the first route element the departure point, then the second element, followed by the third element, followed possibly by any number of elements up to the maximum field length that includes the destination point. Note: Field 10 can contain a minimum of two elements containing the departure element followed by the destination element. See Appendix C for the format and number of characters of each Field 10a element. The ATM IPOP Field 10a is 6-1000 characters and consists of multiple Field 10a elements described in Appendix C.

Table A-II. Data Flight Plan Information Message (FH)

Field Ref No.	Data Item	Notes
151a	Field Header	
(143b)	Uncombined FAV Containing the First AAR Fix	The FAV number containing the first fix where the route alteration due to AAR application. Field can be repeated up to 4 times.
151a	Field Header	
(141a)	Adapted Route indicator	5 bytes = Adapted Departure Arrival Route (ADAR) ID
151a	Field Header	
(141b)	Adapted Route indicator	5 bytes = Adapted Departure Route (ADR) ID
151a	Field Header	
(141c)	Adapted Route indicator	5 bytes = Adapted Arrival Route (AAR) ID
151a	Field Header	
(142a)	ADAR Alphanumerics (Field 10 format)	ADAR alphanumerics in Field 10 format.
(or)		
(142b)	ADAR Alphanumerics (Non-Field 10 format)	ADAR alphanumerics in non-Field 10 format. Alphanumerics not in Field 10 format are enclosed by a 1 character delimiter. The delimiter = '+'.
151a	Field Header	
(142c)	ADR Alphanumerics and following Field 10 Element (Field 10 format)	ADR alphanumerics (including the Transition-fix). These alphanumerics are followed by the Field 10 element (in the filed route) that follows the ADR Transition-fix in the merged route.
(or)		
(142d)	ADR Alphanumerics and following Field 10 Element (Non-Field 10 format)	ADR alphanumerics (including the Transition-fix). These alphanumerics are followed by the Field 10 element (in the filed route) that follows the ADR Transition-fix in the merged route. Alphanumerics not in Field 10 format are enclosed by a 1 character delimiter. The delimiter = '+'.
151a	Field Header	
(142e)	AAR Alphanumerics and preceding Field 10 Element (Field 10 format)	AAR Alphanumerics (including the AAR Transition-fix), preceded by the Field 10 Element (in the filed route) that precedes the AAR Transition-fix in the merged route.
(or)		
(142f)	AAR Alphanumerics and preceding Field	AAR alphanumerics (including the AAR Transition-fix). These alphanumerics are preceded by the Field 10 element (in the filed

Table A-II. Data Flight Plan Information Message (FH)

Field Ref No.	Data Item	Notes
	10 Element (Non-Field 10 format)	route) that follows the AAR Transition-fix in the merged route. Alphanumerics not in Field 10 format are enclosed by a 1 character delimiter. The delimiter = ‘+’.
151a	Field Header	
(11c)	Remarks	Clear or overcast weather symbols are used to indicate whether remarks are intercenter or intracenter, respectively. ‘ + ‘ will signify truncation indicator.
151a	Field Header	
(908a)	Flight Rules	
151a	Field Header	
(908b)	Type of Flight	
151a	Field Header	
(909c)	Wake Turbulence Category	
151a	Field Header	
910a	Radio Communication, Navigation and Approach AID Equipment	If the FH message is sent using Present ICAO format then it will include Field 910a. If the FH message is sent using Indeterminate ICAO format then it will include Field 910a and will also include Field 910c with the same value.
151a	Field Header	
910b	Surveillance Equipment	If the FH message is sent using Present ICAO format then it will include Field 910b. If the FH message is sent using Indeterminate ICAO format then it will include Field 910b and will also include Field 910d with the same value.
151a	Field Header	
910c	Radio Communication, Navigation and Approach AID Equipment	If the FH message is sent using New ICAO2012 format then it will include Field 910c. If the FH message is sent using Indeterminate ICAO format then it will include Field 910c and will also include Field 910a with the same value.
151a	Field Header	
910d	Surveillance Equipment	If the FH message is sent using New ICAO2012 format then it will include Field 910d. If the FH message is sent using Indeterminate ICAO format then it will include Field 910d and will also include Field 910b with the same value.
151a	Field Header	

Table A-II. Data Flight Plan Information Message (FH)

Field Ref No.	Data Item	Notes
(916c)	Alternate Aerodromes	
151a	Field Header	
(918b)	EET/ Indicator	
151a	Field Header	
(918c)	RIF/ Indicator	
151a	Field Header	
(918d)	REG/ Indicator	
151a	Field Header	
(918e)	SEL/ Indicator	
151a	Field Header	
(918f)	OPR/ Indicator	
151a	Field Header	
(918g)	STS/ Indicator	
151a	Field Header	
(918h)	TYP/ Indicator	
151a	Field Header	
(918i)	PER/ Indicator	
151a	Field Header	
(918j)	COM/ Indicator	
151a	Field Header	
(918k)	DAT/ Indicator	
151a	Field Header	
(918l)	NAV/ Indicator	
151a	Field Header	
(918m)	DEP/ Indicator	
151a	Field Header	
(918n)	DEST/ Indicator	
151a	Field Header	
(918o)	ALTN/ Indicator	
151a	Field Header	
(918p)	RALT/ Indicator	
151a	Field Header	
(918q)	CODE/ Indicator	

Table A-II. Data Flight Plan Information Message (FH)

Field Ref No.	Data Item	Notes
151a	Field Header	
(918r)	RACE/ Indicator	
151a	Field Header	
(918s)	SUR/ Indicator	Used (optionally) if FH message is sent using New ICAO2012 format.
151a	Field Header	
(918t)	DLE/ Indicator	Used (optionally) if FH message is sent using New ICAO2012 format.
151a	Field Header	
(918u)	TALT/ Indicator	Used (optionally) if FH message is sent using New ICAO2012 format.
151a	Field Header	
(918v)	DOF/ Indicator	Used (optionally) if FH message is sent using New ICAO2012 format. Used (optionally) if FH message is sent using Indeterminate ICAO2012 format (and see note below).
151a	Field Header	
(918w)	ORGN/ Indicator	Used (optionally) if FH message is sent using New ICAO2012 format. Used (optionally) if FH message is sent using Indeterminate ICAO2012 format (and see note below).
151a	Field Header	
(918x)	PBN/ Indicator	Used (optionally) if FH message is sent using New ICAO2012 format.
151a	Field Header	
(925a)	RNV Arrival Type Value	
151a	Field Header	
(925b)	RNV En Route Type Value	
151a	Field Header	
(925c)	RNV Oceanic Type Value	
151a	Field Header	
(925d)	RNV Departure Type Value	
151a	Field Header	

Table A-II. Data Flight Plan Information Message (FH)

Field Ref No.	Data Item	Notes
(925e)	RNV Spare 1 Type Value	
151a	Field Header	
(925f)	RNV Spare 2 Type Value	
151a	Field Header	
(925g)	RNP Arrival Type Value	
151a	Field Header	
(925h)	RNP En Route Type Value	
151a	Field Header	
(925i)	RNP Oceanic Type Value	
151a	Field Header	
(925j)	RNP Departure Type Value	
151a	Field Header	
(925k)	RNP Spare 1 Type Value	
151a	Field Header	
(925l)	RNP Spare 2 Type Value	
151a	Field Header	
(999a)	First Adapted Field 918 Indicator	(See note below)
151a	Field Header	
(999b)	Second Adapted Field 918 Indicator	(See note below)
151a	Field Header	
(999c)	Third Adapted Field 918 Indicator	(See note below)
151a	Field Header	
(999d)	Fourth Adapted Field 918 Indicator	
151a	Field Header	

Table A-II. Data Flight Plan Information Message (FH)

Field Ref No.	Data Item	Notes
(999e)	Fifth Adapted Field 918 Indicator	
151a	Field Header	
(999f)	Sixth Adapted Field 918 Indicator	
151a	Field Header	
(999g)	Seventh Adapted Field 918 Indicator	
151a	Field Header	
(999h)	Eighth Adapted Field 918 Indicator	
151a	Field Header	
(999i)	Ninth Adapted Field 918 Indicator	
151a	Field Header	
(999j)	Tenth Adapted Field 918 Indicator	
151a	Field Header	
(999k)	Eleventh Adapted Field 918 Indicator	
151a	Field Header	
(999l)	Twelfth Adapted Field 918 Indicator	
151a	Field Header	
(999m)	Thirteenth Adapted Field 918 Indicator	
151a	Field Header	
(999n)	Fourteenth Adapted Field 918 Indicator	
151a	Field Header	
(999o)	Fifteenth Adapted Field 918 Indicator	
151a	Field Header	
(999p)	Sixteenth Adapted Field 918 Indicator	
151a	Field Header	
(999q)	Seventeenth Adapted	

Table A-II. Data Flight Plan Information Message (FH)

Field Ref No.	Data Item	Notes
	Field 918 Indicator	
151a	Field Header	
(999r)	Eighteenth Adapted Field 918 Indicator	
151a	Field Header	
(999s)	Nineteenth Adapted Field 918 Indicator	
151a	Field Header	
(999t)	Twentieth Adapted Field 918 Indicator	
151a	Field Header	
(999u)	Twenty-First Adapted Field 918 Indicator	
151a	Field Header	
(999v)	Twenty-Second Adapted Field 918 Indicator	
151a	Field Header	
(999w)	Twenty-Third Adapted Field 918 Indicator	
151a	Field Header	
(999x)	Twenty-Fourth Adapted Field 918 Indicator	
151a	Field Header	
(999y)	Twenty-Fifth Adapted Field 918 Indicator	
151a	Field Header	
(10b)	Route Local Intended Route	**Local Intended Route** – The flight plan route that is coordinated to penetrated facilities. It consists of the flight plan route with any expected-to-be-applied-by-the-controlling-center ADRs, ADARs or AARs already applied. It is intended for the clients that wish to know the expected state of the flight plan when the current facility releases control of the flight. Local Intended Route. Field 10b contains the filed route (Field 10a) merged with any locally applicable adapted routes (preferential routes, transition fixes and A-line fixes). Optional Field 10b will be sent to ATM IPOP, when Field 10b is not the same as Field 10a.

Table A-II. Data Flight Plan Information Message (FH)

Field Ref No.	Data Item	Notes
151a	Field Header	
(10c)	Route ATC Intended Route	**ATC Intended Route** – The current cleared flight plan route with any unacknowledged auto routes already applied. The ATC Intended Route includes to-be-applied AARs that are not to be notified in the current center. It is intended for clients that wish to know the currently expected route of the flight across contiguous ERAM airspace. Field 10c contains the filed route (Field 10a) merged with any adapted routes (preferential routes, transition fixes and A-line fixes) Optional Field 10c will be sent to ATM IPOP, when parameter Merged ATC Intended Route Switch (MARS) is ON and if either one of the following is true: – If Field 10b exists and Field 10c is not the same as Field 10b If Field 10b does not exist and Field 10c is not the same as Field 10a.
151a	Field Header	
(68g)	CSP Name	CSP (ERFMP or AFMP) Name
151a	Field Header	
(343a)	Speed Advisory Flight Phase	a where: a = C or D Cruise or Descent If present, it must be accompanied with a Speed Advisory Value field [344a or 344b]. There can be up to 2 pairs of field 343a and [344a or 344b]; if both pairs are present, one represents the accepted cruise speed for the cruise phase of the advisory and one represents the accepted descent speed for the descent phase of the advisory. If only one pair of 343, 344 fields is present, it must be for the cruise phase. If 343, 344 fields are provided for both the cruise and descent phases, the order of the phases does not matter.
151a	Field Header	
(344a)	Speed Advisory Value - Mach	Speed expressed as Mach speed. When used in the FH message, the speed advisory value represents a speed that has been accepted by the ERAM controller. Cruise speed can be specified as either Mach or CAS. Descent speed can only be specified as CAS.
(or)		
(344b)	Speed Advisory Value - CAS	Speed expressed as calibrated airspeed. When used in the FH message, the speed advisory value represents a speed that has been accepted by the ERAM controller. Cruise speed can be specified as either Mach or CAS. Descent speed can only be specified as CAS.
151a	Field Header	
149a	End of Message	

Note:

If FH message is sent using Present ICAO format, it may optionally include the 999 field adapted for DOF/ and contain DOF/ data.

If FH message is sent using Present ICAO format, it may optionally include the 999 field adapted for ORGN/ and contain ORGN/ data.

If FH message is sent using Indeterminate ICAO format, it may optionally include the 999 field adapted for DOF/ and contain the same value for 918v.

If FH message is sent using Indeterminate ICAO format, it may optionally include the 999 field adapted for ORGN/ and contain the same value for 918w.

A.1.1.2 Message Content

The ATM Flight Plan Information message includes the following information for a flight: source, flight identification, optional computer identification, Flight Unique ID, Site Specific Plan Identifier, aircraft data, beacon code, beacon code (when different), speed, coordination fix, coordination time, assigned or requested altitude, route Field 10a, adapted route indicator with ADR/ADAR and/or AAR alphanumerics (when provided), remarks (when provided), ICAO Data Field/Element/Indicators (when provided), route Fields 10b and 10c (when provided), and accepted speed advisories.

A.1.1.3 Message Transmission Eligibility

ERAM sends the data required in an ATM Flight Plan Information message to the ATM IPOP when ERAM receives indication of a new flight plan (active or proposed) in the Area of Responsibility (AOR) except for tentative flight plans. A flight plan is considered to be an AOR flight plan if the route originates within or enters the ERAM AOR. Additionally, the message is sent when a request for flight plan data is received at ERAM from an ATM IPOP. ERAM transmits Flight Plan (FH) Information messages for all active and proposed flight plans as part of system initialization of an ATM IPOP.

A.1.2 Flight Amendment Information (AH)

Flight amendment messages resend all data/fields in the Flight Plan Information message when providing amendment data on non-tentative flight plans already received by an ATM IPOP.

A.1.2.1 Message Format

The data/fields for a Flight Amendment Information message are:

150a 00e 02a (02d) 167a (03a) 03c (03e) (04a) (04b) [05a or 05c or 05d] 06a 07d (07e) [08[a b c d e f g h] and/or 09[a b c d e f g]] 10a (143b) (143b) (143b) (143b) (141a) (141b) (141c) ([142a or 142b]) ([142c or 142d]) ([142e or 142f]) (11c) (908a) (908b) (909c) [910a or 910c or 910a and 910c] [910b or 910d or 910b and 910d] (916c) (918b) … (918x) (925a) …(925f) (925g) … (925l) (999a) ... (999y) (10b) (10c) (68g 343a [344a or 344b]) (343a [344a or 344b]) 149a

Table A-III shows the data required for the Flight Amendment Information message.

Table A-III. Flight Amendment Information Message (AH)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source ID	
151a	Field Header	
02a	Flight Identification	
151a	Field Header	
(02d)	Computer Identification	
151a	Field Header	
167a	Site Specific Plan Identifier	Field is Not in Host message
151a	Field Header	
(03a)	Aircraft Data	
151a	Field Header	
03c	Type of Aircraft	
151a	Field Header	
(03e)	Airborne Equipment Qualifier	
151a	Field Header	
(04a)	Beacon Code	
151a	Field Header	
(04b)	External Beacon Code	The External Beacon Code (when present and different than the assigned beacon code).
151a	Field Header	
05a	Speed	
(or)		
05c	Speed	
(or)		
05d	Speed	
151a	Field Header	
06a	Coordination Fix	
151a	Field Header	
07d	Coordination Time	
151a	Field Header	
(07e)	Coordination Time	

Table A-III. Flight Amendment Information Message (AH)

Field Ref. No.	Data Item	Notes
151a	Field Header	
08[a b c d e f g h]	Assigned Altitude	
(and/or)		
(151a)	Field Header	
09[a b c d e f g]	Requested Altitude (proposed)	
151a	Field Header	
10a	Flight Plan Route	**Flight Plan Route** – The currently cleared flight plan route. The flight plan route does not include any unacknowledged auto routes. It is intended for clients that wish to know the currently cleared route. The Appendix C (Common Appendix) to describe the Field 10a starts at the first route element the departure point, then the second element, followed by the third element, followed possibly by any number of elements up to the maximum field length that includes the destination point. Note: Field 10 can contain a minimum of two elements containing the departure element followed by the destination element. See Appendix C for the format and number of characters of each Field 10a element. The ATM IPOP Field 10a is 6-1000 characters and consists of multiple Field 10a elements described in Appendix C.
151a	Field Header	
(143b)	Uncombined FAV Containing the First AAR Fix	The FAV number containing the first fix where the route alteration due to AAR application. Field can be repeated up to 4 times
151a	Field Header	
(141a)	Adapted Route indicator	5 bytes = Adapted Departure Arrival Route (ADAR) ID
151a	Field Header	
(141b)	Adapted Route indicator	5 bytes = Adapted Departure Route (ADR) ID
151a	Field Header	
(141c)	Adapted Route indicator	5 bytes = Adapted Arrival Route (AAR) ID
151a	Field Header	
(142a)	ADAR Alphanumerics (Field 10 format)	ADAR alphanumerics in Field 10 format.
(or)		

Table A-III. Flight Amendment Information Message (AH)

Field Ref. No.	Data Item	Notes
(142b)	ADAR Alphanumerics (Non-Field 10 format)	ADAR alphanumerics in non-Field 10 format. Alphanumerics not in Field 10 format are enclosed by a 1 character delimiter. The delimiter = '+'
151a	Field Header	5 bytes
(142c)	ADR Alphanumerics and following Field 10 Element (Field 10 format)	ADR alphanumerics (including the Transition-fix). These alphanumerics are followed by the Field 10 element (in the filed route) that follows the ADR Transition-fix in the merged route.
(or)		
(142d)	ADR Alphanumerics and following Field 10 Element (Non-Field 10 format)	ADR alphanumerics (including the Transition-fix). These alphanumerics are followed by the Field 10 element (in the filed route) that follows the ADR Transition-fix in the merged route. Alphanumerics not in Field 10 format are enclosed by a 1 character delimiter. The delimiter = '+'.
151a	Field Header	
(142e)	AAR Alphanumerics and preceding Field 10 Element (Field 10 format)	AAR Alphanumerics (including the AAR Transition-fix), preceded by the Field 10 Element (in the filed route) that precedes the AAR Transition-fix in the merged route.
(or)		
(142f)	AAR Alphanumerics and preceding Field 10 Element (Non-Field 10 format)	AAR alphanumerics (including the AAR Transition-fix). These alphanumerics are preceded by the Field 10 element (in the filed route) that follows the AAR Transition-fix in the merged route. Alphanumerics not in Field 10 format are enclosed by a 1 character delimiter. The delimiter = '+'.
151a	Field Header	
(11c)	Remarks	Clear or overcast weather symbols are used to indicate whether remarks are intercenter or intracenter, respectively. ' + ' will signify truncation indicator.
151a	Field Header	
(908a)	Flight Rules	
151a	Field Header	
(908b)	Type of Flight	
151a	Field Header	
(909c)	Wake Turbulence Category	
151a	Field Header	
910a	Radio Communication, Navigation and Approach AID Equipment	If the AH message is sent using Present ICAO format then it will include Field 910a. If the AH message is sent using Indeterminate ICAO format then it will include Field 910a and will also include Field 910c with the same value.

Table A-III. Flight Amendment Information Message (AH)

Field Ref. No.	Data Item	Notes
151a	Field Header	
910b	Surveillance Equipment	If the AH message is sent using Present ICAO format then it will include Field 910b. If the AH message is sent using Indeterminate ICAO format then it will include Field 910b and will also include Field 910d with the same value.
151a	Field Header	
910c	Radio Communication, Navigation and Approach AID Equipment	If the AH message is sent using New ICAO2012 format then it will include Field 910c. If the AH message is sent using Indeterminate ICAO format then it will include Field 910c and will also include Field 910a with the same value.
151a	Field Header	
910d	Surveillance Equipment	If the AH message is sent using New ICAO2012 format then it will include Field 910d. If the AH message is sent using Indeterminate ICAO format then it will include Field 910d and will also include Field 910b with the same value.
151a	Field Header	
(916c)	Alternate Aerodromes	
151a	Field Header	
(918b)	EET/ Indicator	
151a	Field Header	
(918c)	RIF/ Indicator	
151a	Field Header	
(918d)	REG/ Indicator	
151a	Field Header	
(918e)	SEL/ Indicator	
151a	Field Header	
(918f)	OPR/ Indicator	
151a	Field Header	
(918g)	STS/ Indicator	
151a	Field Header	
(918h)	TYP/ Indicator	
151a	Field Header	
(918i)	PER/ Indicator	

Table A-III. Flight Amendment Information Message (AH)

Field Ref. No.	Data Item	Notes
151a	Field Header	
(918j)	COM/ Indicator	
151a	Field Header	
(918k)	DAT/ Indicator	
151a	Field Header	
(918l)	NAV/ Indicator	
151a	Field Header	
(918m)	DEP/ Indicator	
151a	Field Header	
(918n)	DEST/ Indicator	
151a	Field Header	
(918o)	ALTN/ Indicator	
151a	Field Header	
(918p)	RALT/ Indicator	
151a	Field Header	
(918q)	CODE/ Indicator	
151a	Field Header	
(918r)	RACE/ Indicator	
151a	Field Header	
(918s)	SUR/ Indicator	Used (optionally) if AH message is sent using New ICAO2012 format.
151a	Field Header	
(918t)	DLE/ Indicator	Used (optionally) if AH message is sent using New ICAO2012 format.
151a	Field Header	
(918u)	TALT/ Indicator	Used (optionally) if AH message is sent using New ICAO2012 format.
151a	Field Header	
(918v)	DOF/ Indicator	Used (optionally) if AH message is sent using New ICAO2012 format. Used (optionally) if AH message is sent using Indeterminate ICAO2012 format (and see note below).
151a	Field Header	

Table A-III. Flight Amendment Information Message (AH)

Field Ref. No.	Data Item	Notes
(918w)	ORGN/ Indicator	Used (optionally) if AH message is sent using New ICAO2012 format. Used (optionally) if AH message is sent using Indeterminate ICAO2012 format (and see note below).
151a	Field Header	
(918x)	PBN/ Indicator	Used (optionally) if AH message is sent using New ICAO2012 format.
151a	Field Header	
(925a)	RNV Arrival Type Value	
151a	Field Header	
(925b)	RNV En Route Type Value	
151a	Field Header	
(925c)	RNV Oceanic Type Value	
151a	Field Header	
(925d)	RNV Departure Type Value	
151a	Field Header	
(925e)	RNV Spare 1 Type Value	
151a	Field Header	
(925f)	RNV Spare 2 Type Value	
151a	Field Header	
(925g)	RNP Arrival Type Value	
151a	Field Header	
(925h)	RNP En Route Type Value	
151a	Field Header	
(925i)	RNP Oceanic Type Value	
151a	Field Header	
(925j)	RNP Departure Type Value	
151a	Field Header	
(925k)	RNP Spare 1 Type Value	
151a	Field Header	
(925l)	RNP Spare 2 Type Value	
151a	Field Header	
(999a)	First Adapted Field ICAO 18 Indicator	(See note below)

Table A-III. Flight Amendment Information Message (AH)

Field Ref. No.	Data Item	Notes
151a	Field Header	
(999b)	Second Adapted Field ICAO 18 Indicator	(See note below)
151a	Field Header	
(999c)	Third Adapted Field ICAO 18 Indicator	(See note below)
151a	Field Header	
(999d)	Fourth Adapted Field ICAO 18 Indicator	
151a	Field Header	
(999e)	Fifth Adapted Field ICAO 18 Indicator	
151a	Field Header	
(999f)	Sixth Adapted Field ICAO 18 Indicator	
151a	Field Header	
(999g)	Seventh Adapted Field ICAO 18 Indicator	
151a	Field Header	
(999h)	Eighth Adapted Field ICAO 18 Indicator	
151a	Field Header	
(999i)	Ninth Adapted Field ICAO 18 Indicator	
151a	Field Header	
(999j)	Tenth Adapted Field ICAO 18 Indicator	
151a	Field Header	
(999k)	Eleventh Adapted Field ICAO 18 Indicator	
151a	Field Header	
(999l)	Twelfth Adapted Field ICAO 18 Indicator	
151a	Field Header	
(999m)	Thirteenth Adapted Field ICAO 18 Indicator	
151a	Field Header	

Table A-III. Flight Amendment Information Message (AH)

Field Ref. No.	Data Item	Notes
(999n)	Fourteenth Adapted Field ICAO 18 Indicator	
151a	Field Header	
(999o)	Fifteenth Adapted Field ICAO 18 Indicator	
151a	Field Header	
(999p)	Sixteenth Adapted Field ICAO 18 Indicator	
151a	Field Header	
(999q)	Seventeenth Adapted Field ICAO 18 Indicator	
151a	Field Header	
(999r)	Eighteenth Adapted Field ICAO 18 Indicator	
151a	Field Header	
(999s)	Nineteenth Adapted Field ICAO 18 Indicator	
151a	Field Header	
(999t)	Twentieth Adapted Field ICAO 18 Indicator	
151a	Field Header	
(999u)	Twenty-First Adapted Field ICAO 18 Indicator	
151a	Field Header	
(999v)	Twenty-Second Adapted Field ICAO 18 Indicator	
151a	Field Header	
(999w)	Twenty-Third Adapted Field ICAO 18 Indicator	
151a	Field Header	
(999x)	Twenty-Fourth Adapted Field ICAO 18 Indicator	
151a	Field Header	
(999y)	Twenty-Fifth Adapted Field ICAO 18 Indicator	
151a	Field Header	

Table A-III. Flight Amendment Information Message (AH)

Field Ref. No.	Data Item	Notes
(10b)	Route Local Intended Route	**Local Intended Route** – The flight plan route that is coordinated to penetrated facilities. It consists of the flight plan route with any expected-to-be-applied-by-the-controlling-center ADRs, ADARs or AARs already applied. It is intended for the clients that wish to know the expected state of the flight plan when the current facility releases control of the flight. Local Intended Route. Field 10b contains the filed route (Field 10a) merged with any locally applicable adapted routes (preferential routes, transition fixes and A-line fixes) Optional Field 10b will be sent to ATM IPOP, when Field 10b is not the same as Field 10a.
151a	Field Header	
(10c)	Route ATC Intended Route	**ATC Intended Route** – The current cleared flight plan route with any unacknowledged auto routes already applied. The ATC Intended Route includes to-be-applied AARs that are not to be notified in the current center. It is intended for clients that wish to know the currently expected route of the flight across contiguous ERAM airspace. Field 10c contains the filed route (Field 10a) merged with any adapted routes (preferential routes, transition fixes and A-line fixes) Optional Field 10c will be sent to ATM IPOP, when parameter Merged ATC Intended Route Switch (MARS) is ON and if either one of the following is true: – If Field 10b exists and Field 10c is not the same as Field 10b – If Field 10b does not exist and Field 10c is not the same as Field 10a.
151a	Field Header	
(68g)	CSP Name	CSP (ERFMP or AFMP) Name
151a	Field Header	

Table A-III. Flight Amendment Information Message (AH)

Field Ref. No.	Data Item	Notes
(343a)	Speed Advisory Flight Phase	a where: a = C or D Cruise or Descent If present, it must be accompanied with a Speed Advisory Value field [344a or 344b]. There can be up to 2 pairs of field 343a and [344a or 344b]; if both pairs are present, one represents the accepted cruise speed for the cruise phase of the advisory and one represents the accepted descent speed for the descent phase of the advisory. If only one pair of 343, 344 fields is present, it must be for the cruise phase. If 343, 344 fields are provided for both the cruise and descent phases, the order of the phases does not matter.
151a	Field Header	
(344a)	Speed Advisory Value - Mach	Speed expressed as Mach speed. When used in the AH message, the speed advisory value represents a speed that has been accepted by the ERAM controller. Cruise speed can be specified as either Mach or CAS. Descent speed can only be specified as CAS.
(or)		
(344b)	Speed Advisory Value - CAS	Speed expressed as calibrated airspeed. When used in the AH message, the speed advisory value represents a speed that has been accepted by the ERAM controller. Cruise speed can be specified as either Mach or CAS. Descent speed can only be specified as CAS.
151a	Field Header	
149a	End of Message	

Note:

If AH message is sent using Present ICAO format, it may optionally include the 999 field adapted for DOF/ and contain DOF/ data.

If AH message is sent using Present ICAO format, it may optionally include the 999 field adapted for ORGN/ and contain ORGN/ data.

If AH message is sent using Indeterminate ICAO format, it may optionally include the 999 field adapted for DOF/ and contain the same value for 918v.

If AH message is sent using Indeterminate ICAO format, it may optionally include the 999 field adapted for ORGN/ and contain the same value for 918w.

A.1.2.2 Message Content

The Flight Amendment Information message includes the following information for a flight: source, flight identification, optional computer identification, Site Specific Plan Identifier, aircraft data, beacon code, beacon code (when different), speed, coordination fix, coordination time, assigned or requested altitude, route Field 10a, adapted route indicator with ADR/ADAR and/or AAR alphanumerics (when provided), remarks (when provided), ICAO Data Field/Element/Indicators (when provided), route Fields 10b and 10c (when provided), and accepted speed advisories.

A.1.2.3 Message Transmission Eligibility

The data required in a Flight Amendment Information message is sent to the ATM IPOP when a change is made to an active or proposed flight plan field (except aircraft identification), when the external beacon code (EBC) is amended or is changed/deleted (transmitted as field number 04b in this message), or when proposed speed advisory(s) sent from TBFM have been accepted by the ERAM controller and if they change or are cancelled. Note that flight plan speed is not amended when a speed advisory is accepted or cancelled.

A.1.3 Converted Route Information (HX)

The Converted Route Information message is sent to an ATM IPOP to provide fix and calculated time of arrival at each fix that describes an aircraft's ERAM converted route of flight.

A.1.3.1 Message Format

The format for the Converted Route Information message is:

150a 00e 02a (02d) 167a 68c 68c ... (68c) 149a

Element 68c can be repeated 2-326 times.

Table A-IV shows the data required for the ATM Converted Route Information message.

Table A-IV. Converted Route Information Message (HX)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source	
151a	Field Header	
02a	Flight Identification	
151a	Field Header	
(02d)	Computer Identification	
151a	Field Header	
167a	Site Specific Plan Identifier	Field is Not in Host message
151a	Field Header	

Table A-IV. Converted Route Information Message (HX)

Field Ref. No.	Data Item	Notes
68c	Fix/Time	expected time of arrival at fix in hours and minutes
151a	Field Header	
149a	End of Message	

A.1.3.2 Message Content

The Converted Route Information message includes the listing of fixes and calculated times of arrival at each fix that describe the route for a flight. The source, flight identification, optional computer identification, and required Site Specific Plan Identifier are followed by Fix/time with field header, repeated as necessary to completely describe the route.

A.1.3.3 Message Transmission Eligibility

The Converted Route Information message is sent whenever an FH message or AH message is transmitted to an ATM IPOP. The Converted Route Information message is sent whenever route conversion occurs for a flight or when fix time calculations change more than parameter PTUI (Posted Time Update Interval) minutes from the previous times. ERAM sends the Converted Route Information message as part of system initialization of an ATM IPOP.

A.1.4 Cancellation Information (CL)

The Cancellation Information messages provide an ATM IPOP with Cancellation data for a flight plan.

A.1.4.1 Message Format

The data/fields for the ATM Cancellation Information message are:

150a 00e 02a (02d) 167a 26a 27a 149a

Table A-V shows the data required for the ATM Cancellation Information message.

Table A-V. Cancellation Information Message (CL)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source ID	
151a	Field Header	
02a	Flight Identification	

Table A-V. Cancellation Information Message (CL)

Field Ref. No.	Data Item	Notes
151a	Field Header	
(02d)	Computer Identification	
151a	Field Header	
167a	Site Specific Plan Identifier	Field is Not in Host message
151a	Field Header	
26a	Departure Point	
151a	Field Header	
27a	Destination	
151a	Field Header	
149a	End of Message	

A.1.4.2 Message Content

The Cancellation Information message includes the source, flight identification, optional computer identification, Site Specific Plan Identifier to be canceled and the flight departure point and destination.

A.1.4.3 Message Transmission Eligibility

The ATM Cancellation Information message is sent when a flight plan previously transferred from ERAM to ATM IPOP is removed from ERAM.

A.1.5 Departure Information (DH)

The Departure Information message provides the ATM IPOP with certain Flight plan departure related data for all flight plans.

A.1.5.1 Message Format

The data/fields for the ATM Departure Information message are:

150a 00e 02a 02d 167a (03a) 03c (03e) 26a 07d 27a (28a) 149a

Table A-VI shows the data required for the ATM Departure Information message.

Table A-VI. Departure Information Message (DH)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source ID	
151a	Field Header	
02a	Flight Identification	
151a	Field Header	
02d	Computer Identification	
151a	Field Header	
167a	Site Specific Plan Identifier	Field is Not in Host message
151a	Field Header	
(03a)	Aircraft Data	
151a	Field Header	
03c	Type of Aircraft	
151a	Field Header	
(03e)	Airborne Equipment Qualifier	
151a	Field Header	
26a	Departure Point	
151a	Field Header	
07d	Coordination Time	
151a	Field Header	
27a	Destination	
151a	Field Header	
(28a)	ETA	
151a	Field Header	
149a	End of Message	

A.1.5.2 Message Content

The Departure Information message includes the following: source, flight identification, computer identification, Site Specific Plan Identifier, aircraft data, departure point, departure time, destination, and optional estimated arrival time.

A.1.5.3 Message Transmission Eligibility

The Departure Information message is transmitted to ATM IPOP for all eligible initially activated flight plans when any one of the following conditions exist:

- A valid Departure (DM) message is entered in ERAM.
- A valid Amendment (AM) message is entered in ERAM that amends Field 07 from a P-time to a D-time.
- An ICAO Estimate (EST) message is processed by ERAM.

A.1.6 Aircraft Identification Amend Information (IH)

The ATM Aircraft Identification Amend Information (IH) message is sent by ERAM to indicate a change to the flight identification field (Field 02a) or assignment of computer identification (Field 02d) for a flight plan.

A.1.6.1 Message Format

The data/fields for the Aircraft Identification Amend Information message are:

150a 00e 02a (02d) 167a 02a (02d) 167a 26a 27a 149a

The specific format for AID change is as follows:

150a 00e 02a (02d) 167a 02a (02d) 167a 26a 27a 149a

The specific format for CID assignment is as follows:

150a 00e 02a 167a 02a 02d 167a 26a 27a 149a

Table A-VII shows the data required for the ATM Aircraft Identification Amend Information message.

Table A-VII. Aircraft Identification Amend Information Message (IH)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source	
151a	Field Header	

Table A-VII. Aircraft Identification Amend Information Message (IH)

Field Ref. No.	Data Item	Notes
02a	Flight Identification (Old Identifier)	
151a	Field Header	
(02d)	Computer Identification (Old Identifier)	
151a	Field Header	
167a	Site Specific Plan Identifier (Old Identifier)	Field is Not in Host message
151a	Field Header	
02a	Flight Identification (New Identifier)	
151a	Field Header	
(02d)	Computer Identification (New Identifier)	
151a	Field Header	
167a	Site Specific Plan Identifier (New Identifier)	Field is Not in Host message. The new Site Specific Plan Identifier will always be the same as the old Site Specific Plan Identifier.
151a	Field Header	
26a	Departure Point	
151a	Field Header	
27a	Destination	
151a	Field Header	
149a	End of Message	

A.1.6.2 Message Content

The ATM Aircraft Identification Amend Information message includes the following: source, old flight identifier, optional computer identification, Site Specific Plan Identifier, new flight identifier, optional computer identification, Site Specific Plan Identifier, departure point, and destination.

A.1.6.3 Message Transmission Eligibility

The ATM Aircraft Identification Amend Information message is sent to an ATM IPOP when the aircraft identification field of a flight plan has been amended or when a CID is assigned to the flight plan.

A.1.7 Hold Information (HH)

The Hold Information message indicates a hold of a definite duration, an indefinite hold, or hold release for a specified flight.

A.1.7.1 Message Format

The data/fields for the Hold Information message are as follows:

150a 00e 02a 02d 167a [(21a (21d)) or (21e)] 149a

Either Fields 21a and optionally 21d, or Field 21e is sent. Field 21a is a fix on the flight's converted route. Table A-VIII shows the data required for the ATM Hold Information message.

Table A-VIII. Hold Information Message (HH)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source ID	
151a	Field Header	
02a	Flight Identification	
151a	Field Header	
02d	Computer Identification	
151a	Field Header	
167a	Site Specific Plan Identifier	Field is Not in Host message
151a	Field Header	
(21a)	Fix	
151a	Field Header	
(21d)	Time	Estimated hold departure time in UTC
(or)		
(21e)	Action	Not included if 21a and optional 21d are present
151a	Field Header	
149a	End of Message	

A.1.7.2 Message Content

The Hold Information message includes the following information on a flight: Source, Flight Identification, computer identification, Site Specific Plan Identifier and either a Fix with an optional Time, or Action.

A.1.7.3 Message Transmission Eligibility

An ATM Hold Information message is sent to an ATM IPOP when there is a Hold message entered in ERAM to initiate or remove a hold. Additionally, an ATM Hold Information message is sent to an ATM IPOP when hold status is cancelled or modified.

A.1.8 Progress Report Information (PH)

The Progress Report Information message is sent from ERAM to an ATM IPOP to update the position of an active flight plan, or release it from a prior hold status.

A.1.8.1 Message Format

The data/fields for the Progress Report Information messages are:

150a 00e 02a 02d 167a 18a 18d 149a

Table A-IX shows the data required for the ATM Progress Report Information message.

Table A-IX. Progress Report Information Message (PH)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source ID	
151a	Field Header	
02a	Flight Identification	
151a	Field Header	
02d	Computer Identification	
151a	Field Header	
167a	Site Specific Plan Identifier	Field is Not in Host message
151a	Field Header	
18a	Fix	
151a	Field Header	
18d	Time	

Table A-IX. Progress Report Information Message (PH)

Field Ref. No.	Data Item	Notes
151a	Field Header	
149a	End of Message	

A.1.8.2 Message Content

The ATM Progress Report Information message includes the following information: source, flight identification, computer identification, Site Specific Plan Identifier, position and fix/time status.

A.1.8.3 Message Transmission Eligibility

A Progress Report Information message is sent to an ATM IPOP when a Progress Report (PR) has been entered into ERAM.

A.1.9 Flight Arrival Information (HV)

Flight Arrival Information messages provides arrival data from ERAM for all arriving flights.

A.1.9.1 Message Format

The format for the Flight Arrival Information message is:

150a 00e 02a 02d 167a 26a 27a 28b 149a

Table A-X shows data required for the Flight Arrival Information message.

Table A-X. Flight Arrival Information Message (HV)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source ID	
151a	Field Header	
02a	Flight Identification	
151a	Field Header	
02d	Computer Identification	
151a	Field Header	
167a	Site Specific Plan Identifier	Field is Not in Host message

Table A-X. Flight Arrival Information Message (HV)

Field Ref. No.	Data Item	Notes
151a	Field Header	
26a	Departure Point	
151a	Field Header	
27a	Destination	
151a	Field Header	
28b	Arrival Time	Ldddd where L =A if time received in Field 00 of TB message caused flight to be dropped; L = E if flight dropped by application of AFDI or EFDI.; dddd = hhmm
151a	Field Header	
149a	End of Message	

A.1.9.2 Message Content

The Flight Arrival Information message contains the source, flight identification, computer identification, Site Specific Plan Identifier and the departure and destination points and arrival time of an aircraft.

A.1.9.3 Message Transmission Eligibility

The Flight Arrival Information message is transmitted when a flight arrives at its destination and the flight plan's destination is internal to the center at the ground and either of the following conditions is true:

- A Terminate Beacon Code (TB) message is received from an ARTS facility that causes the flight plan to be dropped from the En Route Center's database.

- The flight plan is automatically dropped from the En Route Center's data base time after parameter Arrival Flight Drop Interval (AFDI) time, or where AFDI is not available, Expire Fix Drop Interval (EFDI) time, past the Calculated Time of Arrival at the flight plan's destination fix.

A.1.10 Flight Plan Update Information (HU)

The Flight Plan Update Information message provides flight plan updates on active flight plans inbound from an adjacent ARTCC.

A.1.10.1 Message Format

The format for the Flight Plan Update Information message is as follows:

150a 00e 02a 02d 167a (03a) 03c (03e) (04a) [05a or 05c or 05d] 06a 07d (07e) 08[a b c d e f g h] 10a (143b) (143b) (143b) (143b) (141a) (141b) (141c) ([142a or 142b]) ([142c or 142d]) ([142e or 142f]) (11c) (908a) (908b) (909c) [910a or 910c or 910a and 910c] [910b or 910d or 910b and 910d] (916c) (918b) ... (918x) (925a)…(925f) (925g)…(925l) (999a) … (999y) (10b) (10c) (68g 343a [344a or 344b]) (343a [344a or 344b]) 149a

Table A-XI shows the data required for the Flight Plan Update Information message.

Table A-XI. Flight Plan Update Information Message (HU)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source ID	
151a	Field Header	
02a	Flight Identification	
151a	Field Header	
02d	Computer Identification	
151a	Field Header	
167a	Site Specific Plan Identifier	Field is Not in Host message
151a	Field Header	
(03a)	Aircraft Data	
151a	Field Header	
03c	Type of Aircraft	
151a	Field Header	
(03e)	Airborne Equipment Qualifier	
151a	Field Header	
(04a)	Beacon Code	
151a	Field Header	
05a	Speed	
(or)		
05c	Speed	
(or)		
05d	Speed	
151a	Field Header	

Table A-XI. Flight Plan Update Information Message (HU)

Field Ref. No.	Data Item	Notes
06a	Coordination Fix	
151a	Field Header	
07d	Coordination Time	
151a	Field Header	
(07e)	Coordination Time	
151a	Field Header	
08[a b c d e f g h]	Assigned Altitude	
151a	Field Header	
10a	Route Flight Plan Route	**Flight Plan Route** - The currently cleared flight plan route. The flight plan route does not include any unacknowledged auto routes. It is intended for clients that wish to know the currently cleared route. The Appendix C (Common Appendix) to describe the Field 10a starts at the first route element the departure point, then the second element, followed by the third element, followed possibly by any number of elements up to the maximum field length that includes the destination point. **Note**: Field 10 can contain a minimum of two elements containing the departure element followed by the destination element. See Appendix C for the format and number of characters of each Field 10a element. The ATM IPOP Field 10a is 6-1000 characters and consists of multiple Field 10a elements described in Appendix C.
151a	Field Header	
(143b)	Uncombined FAV Containing the First AAR Fix	The FAV number containing the first fix where the route alteration due to AAR application. Field can be repeated up to 4 times.
151a	Field Header	
(141a)	Adapted Route indicator	5 bytes = Adapted Departure Arrival Route (ADAR) ID
151a	Field Header	
(141b)	Adapted Route indicator	5 bytes = Adapted Departure Route (ADR) ID
151a	Field Header	
(141c)	Adapted Route indicator	5 bytes = Adapted Arrival Route (AAR) ID
151a	Field Header	
(142a)	ADAR Alphanumerics (Field 10 format)	ADAR alphanumerics in Field 10 format.
(or)		

Table A-XI. Flight Plan Update Information Message (HU)

Field Ref. No.	Data Item	Notes
(142b)	ADAR Alphanumerics (Non-Field 10 format)	ADAR alphanumerics in non-Field 10 format. Alphanumerics not in Field 10 format are enclosed by a 1 character delimiter. The delimiter = '+'.
151a	Field Header	
(142c)	ADR Alphanumerics and following Field 10 Element (Field 10 format)	ADR alphanumerics (including the Transition-fix). These alphanumerics are followed by the Field 10 element (in the filed route) that follows the ADR Transition-fix in the merged route.
(or)		
(142d)	ADR Alphanumerics and following Field 10 Element (Non-Field 10 format)	ADR alphanumerics (including the Transition-fix). These alphanumerics are followed by the Field 10 element (in the filed route) that follows the ADR Transition-fix in the merged route. Alphanumerics not in Field 10 format are enclosed by a 1 character delimiter. The delimiter = '+'.
151a	Field Header	
(142e)	AAR Alphanumerics and preceding Field 10 Element (Field 10 format)	AAR Alphanumerics (including the AAR Transition-fix), preceded by the Field 10 Element (in the filed route) that precedes the AAR Transition-fix in the merged route. . For AARs applied as a result of A-line intersection, the alphanumerics of the A-line intersection point are inserted into Field 142e following the Field 10 element (in the filed route) and preceding the AAR transition fix.
(or)		
(142f)	AAR Alphanumerics and preceding Field 10 Element (Non-Field 10 format)	AAR alphanumerics (including the AAR Transition-fix). These alphanumerics are preceded by the Field 10 element (in the filed route) that follows the AAR Transition-fix in the merged route. Alphanumerics not in Field 10 format are enclosed by a 1 character delimiter. The delimiter = '+'. For AARs applied as a result of A-line intersection, the alphanumerics of the A-line intersection point are inserted into Field 142f following the Field 10 element (in the filed route) and preceding the AAR transition fix.
151a	Field Header	
(11c)	Remarks	Clear weather symbol is used to indicate remarks for intercenter remarks. ' + ' will signify truncation indicator. Note: intracenter remarks are not transmitted in the HU message.
151a	Field Header	
(908a)	Flight Rules	
151a	Field Header	
(908b)	Type of Flight	
151a	Field Header	

Table A-XI. Flight Plan Update Information Message (HU)

Field Ref. No.	Data Item	Notes
(909c)	Wake Turbulence Category	
151a	Field Header	
910a	Radio Communication, Navigation and Approach AID Equipment	If the HU message is sent using Present ICAO format then it will include Field 910a. If the HU message is sent using Indeterminate ICAO format then it will include Field 910a and will also include Field 910c with the same value.
151a	Field Header	
910b	Surveillance Equipment	If the HU message is sent using Present ICAO format then it will include Field 910b. If the HU message is sent using Indeterminate ICAO format then it will include Field 910b and will also include Field 910d with the same value.
151a	Field Header	
910c	Radio Communication, Navigation and Approach AID Equipment	If the HU message is sent using New ICAO2012 format then it will include Field 910c. If the HU message is sent using Indeterminate ICAO format then it will include Field 910c and will also include Field 910a with the same value.
151a	Field Header	
910d	Surveillance Equipment	If the HU message is sent using New ICAO2012 format then it will include Field 910d. If the HU message is sent using Indeterminate ICAO format then it will include Field 910d and will also include Field 910b with the same value.
151a	Field Header	
(916c)	Alternate Aerodromes	
151a	Field Header	
(918b)	EET/ Indicator	
151a	Field Header	
(918c)	RIF/ Indicator	
151a	Field Header	
(918d)	REG/ Indicator	
151a	Field Header	
(918e)	SEL/ Indicator	
151a	Field Header	
(918f)	OPR/ Indicator	

Table A-XI. Flight Plan Update Information Message (HU)

Field Ref. No.	Data Item	Notes
151a	Field Header	
(918g)	STS/ Indicator	
151a	Field Header	
(918h)	TYP/ Indicator	
151a	Field Header	
(918i)	PER/ Indicator	
151a	Field Header	
(918j)	COM/ Indicator	
151a	Field Header	
(918k)	DAT/ Indicator	
151a	Field Header	
(918l)	NAV/ Indicator	
151a	Field Header	
(918m)	DEP/ Indicator	
151a	Field Header	
(918n)	DEST/ Indicator	
151a	Field Header	
(918o)	ALTN/ Indicator	
151a	Field Header	
(918p)	RALT/ Indicator	
151a	Field Header	
(918q)	CODE/ Indicator	
151a	Field Header	
(918r)	RACE/Header	
151a	Field Header	
(918s)	SUR/ Indicator	Used (optionally) if HU message is sent using New ICAO2012 format.
151a	Field Header	
(918t)	DLE/ Indicator	Used (optionally) if HU message is sent using New ICAO2012 format.
151a	Field Header	
(918u)	TALT/ Indicator	Used (optionally) if HU message is sent using New ICAO2012 format.
151a	Field Header	

Table A-XI. Flight Plan Update Information Message (HU)

Field Ref. No.	Data Item	Notes
(918v)	DOF/ Indicator	Used (optionally) if HU message is sent using New ICAO2012 format. Used (optionally) if HU message is sent using Indeterminate ICAO2012 format (and see note below).
151a	Field Header	
(918w)	ORGN/ Indicator	Used (optionally) if HU message is sent using New ICAO2012 format. Used (optionally) if HU message is sent using Indeterminate ICAO2012 format (and see note below).
151a	Field Header	
(918x)	PBN/ Indicator	Used (optionally) if HU message is sent using New ICAO2012 format.
151a	Field Header	
(925a)	RNV Arrival Type Value	
151a	Field Header	
(925b)	RNV En Route Type Value	
151a	Field Header	
(925c)	RNV Oceanic Type Value	
151a	Field Header	
(925d)	RNV Departure Type Value	
151a	Field Header	
(925e)	RNV Spare 1 Type Value	
151a	Field Header	
(925f)	RNV Spare 2 Type Value	
151a	Field Header	
(925g)	RNP Arrival Type Value	
151a	Field Header	
(925h)	RNP En Route Type Value	
151a	Field Header	
(925i)	RNP Oceanic Type Value	
151a	Field Header	
(925j)	RNP Departure Type Value	
151a	Field Header	

Table A-XI. Flight Plan Update Information Message (HU)

Field Ref. No.	Data Item	Notes
(925k)	RNP Spare 1 Type Value	
151a	Field Header	
(925l)	RNP Spare 2 Type Value	
151a	Field Header	
(999a)	First Adapted Field 918 Indicator	(See note below)
151a	Field Header	
(999b)	Second Adapted Field 918 Indicator	(See note below)
151a	Field Header	
(999c)	Third Adapted Field 918 Indicator	(See note below)
151a	Field Header	
(999d)	Fourth Adapted Field 918 Indicator	
151a	Field Header	
(999e)	Fifth Adapted Field 918 Indicator	
151a	Field Header	
(999f)	Sixth Adapted Field 918 Indicator	
151a	Field Header	
(999g)	Seventh Adapted Field 918 Indicator	
151a	Field Header	
(999h)	Eighth Adapted Field 918 Indicator	
151a	Field Header	
(999i)	Ninth Adapted Field 918 Indicator	
151a	Field Header	
(999j)	Tenth Adapted Field 918 Indicator	
151a	Field Header	
(999k)	Eleventh Adapted Field 918 Indicator	

Table A-XI. Flight Plan Update Information Message (HU)

Field Ref. No.	Data Item	Notes
151a	Field Header	
(999l)	Twelfth Adapted Field 918 Indicator	
151a	Field Header	
(999m)	Thirteenth Adapted Field 918 Indicator	
151a	Field Header	
(999n)	Fourteenth Adapted Field 918 Indicator	
151a	Field Header	
(999o)	Fifteenth Adapted Field 918 Indicator	
151a	Field Header	
(999p)	Sixteenth Adapted Field 918 Indicator	
151a	Field Header	
(999q)	Seventeenth Adapted Field 918 Indicator	
151a	Field Header	
(999r)	Eighteenth Adapted Field 918 Indicator	
151a	Field Header	
(999s)	Nineteenth Adapted Field 918 Indicator	
151a	Field Header	
(999t)	Twentieth Adapted Field 918 Indicator	
151a	Field Header	
(999u)	Twenty-First Adapted Field 918 Indicator	
151a	Field Header	
(999v)	Twenty-Second Adapted Field 918 Indicator	
151a	Field Header	
(999w)	Twenty-Third Adapted Field 918 Indicator	
151a	Field Header	

Table A-XI. Flight Plan Update Information Message (HU)

Field Ref. No.	Data Item	Notes
(999x)	Twenty-Fourth Adapted Field 918 Indicator	
151a	Field Header	
(999y)	Twenty-Fifth Adapted Field 918 Indicator	
151a	Field Header	
(10b)	Route Local Intended Route	**Local Intended Route** – The flight plan route that is coordinated to penetrated facilities. It consists of the flight plan route with any expected-to-be-applied-by-the-controlling-center ADRs, ADARs or AARs already applied. It is intended for the clients that wish to know the expected state of the flight plan when the current facility releases control of the flight. Local Intended Route. Field 10b contains the filed route (Field 10a) merged with any locally applicable adapted routes (preferential routes, transition fixes and A-line fixes) Optional Field 10b will be sent to ATM IPOP, when Field 10b is not the same as Field 10a.
151a	Field Header	
(10c)	Route ATC Intended Route	**ATC Intended Route** – The current cleared flight plan route with any unacknowledged auto routes already applied. The ATC Intended Route includes to-be-applied AARs that are not to be notified in the current center. It is intended for clients that wish to know the currently expected route of the flight across contiguous ERAM airspace. Field 10c contains the filed route (Field 10a) merged with any adapted routes (preferential routes, transition fixes and A-line fixes) Optional Field 10c will be sent to ATM IPOP, when parameter Merged ATC Intended Route Switch (MARS) is ON and if either one of the following is true: – If Field 10b exists and Field 10c is not the same as Field 10b – If Field 10b does not exist and Field 10c is not the same as Field 10a.

Table A-XI. Flight Plan Update Information Message (HU)

Field Ref. No.	Data Item	Notes
151a	Field Header	
(68g)	CSP Name	CSP (ERFMP or AFMP) Name
151a	Field Header	
(343a)	Speed Advisory Flight Phase	a where: a = C or D Cruise or Descent If present, it must be accompanied with a Speed Advisory Value field [344a or 344b]. There can be up to 2 pairs of field 343a and [344a or 344b]; if both pairs are present, one represents the accepted cruise speed for the cruise phase of the advisory and one represents the accepted descent speed for the descent phase of the advisory. If only one pair of 343, 344 fields is present, it must be for the cruise phase. If 343, 344 fields are provided for both the cruise and descent phases, the order of the phases does not matter.
151a	Field Header	
(344a)	Speed Advisory Value - Mach	Speed expressed as Mach speed. When used in the HU message, the speed advisory value represents a speed that has been accepted by the ERAM controller. Cruise speed can be specified as either Mach or CAS. Descent speed can only be specified as CAS.
(or)		
(344b)	Speed Advisory Value - CAS	Speed expressed as calibrated airspeed. When used in the HU message, the speed advisory value represents a speed that has been accepted by the ERAM controller. Cruise speed can be specified as either Mach or CAS. Descent speed can only be specified as CAS.
151a	Field Header	
149a	End of Message	

Note:

If HU message is sent using Present ICAO format, it may optionally include the 999 field adapted for DOF/ and contain DOF/ data.

If HU message is sent using Present ICAO format, it may optionally include the 999 field adapted for ORGN/ and contain ORGN/ data.

If HU message is sent using Indeterminate ICAO format, it may optionally include the 999 field adapted for DOF/ and contain the same value for 918v.

If HU message is sent using Indeterminate ICAO format, it may optionally include the 999 field adapted for ORGN/ and contain the same value for 918w.

A.1.10.2 Message Content

The Flight Plan Update Information message contains the source, flight identification, computer identification, Site Specific Plan Identifier, aircraft and the update information which includes aircraft data, speed, boundary crossing point, boundary crossing time, altitude, route Field 10a, adapted route indicators with ADR/ADAR and/or AAR alphanumerics (when provided), intercenter remarks (when provided), ICAO Data Field/Element/Indicators (when provided), route Fields 10b and 10c (when provided), and accepted speed advisories.

A.1.10.3 Message Transmission Eligibility

The Flight Plan Update Information message is transmitted to an ATM IPOP when the following conditions are met. The flight plan must be active and inbound from an adjacent ARTCC, and the handoff is accepted or the Calculated Time of Arrival (CTA) at the inbound boundary crossing point is equal to or less than current clock time, whichever comes first.

A.1.11 Expected Departure Time Information (ET)

The Expected Departure Time Information (ET) message provides Estimated Departure Clearance Time (EDCT) information (i.e., the assigned flight departure time on a proposed flight plan inbound to a controlled airport with a ground delay in effect) to an ATM IPOP.

A.1.11.1 Message Format

The format for the Expected Departure Time Information message is as follows:

150a 00e 02a (02d) 167a [92a or 92b] 149a

Table A-XII shows the data required for the Expected Departure Time Information message.

Table A-XII. Expected Departure Time Information Message (ET)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source	
151a	Field Header	
02a	Flight Identification	
151a	Field Header	
(02d)	Computer Identification	
151a	Field Header	
167a	Site Specific Plan Identifier	Field is Not in Host message

Table A-XII. Expected Departure Time Information Message (ET)

Field Ref. No.	Data Item	Notes
151a	Field Header	
92a	EDCT	dddd = estimated departure clearance time Where dddd=start time (HHMM). The first two digits must not exceed 23. The last two digits must not exceed 59.
Or		
92b	Cancellation Indicator	one character L Where L = C for cancellation Field is not in Host message
151a	Field Header	
149a	End of Message	

A.1.11.2 Message Content

The ET message includes the following information for a flight: source, flight identification, optional computer identification, Site Specific Plan Identifier, the expected departure clearance time or cancellation indicator.

A.1.11.3 Message Transmission Eligibility

The ET message is transmitted to an ATM IPOP when a valid ID message has been input into ERAM by TFMS. The ET message is transmitted to an ATM IPOP when a valid CT message has been input into ERAM.

A.1.12 Position Update Information (HP)

The Position Update Information (HP) message is used to update the coordination time on an active flight when the present position fix time is updated.

A.1.12.1 Message Format

The format for the Position Update Information message is as follows:

150a 00e 02a 02d 167a 06a 07d (07e) 149a

Table A-XIII shows the data required for the Position Update Information message.

Table A-XIII. Position Update Information Message (HP)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source	
151a	Field Header	
02a	Flight Identification	
151a	Field Header	
02d	Computer Identification	
151a	Field Header	
167a	Site Specific Plan Identifier	Field is Not in Host message
151a	Field Header	
06a	Coordination Fix	
151a	Field Header	
07d	Coordination Time	
151a	Field Header	
(07e)	Coordination Time	
151a	Field Header	
149a	End of Message	

A.1.12.2 Message Content

The Position Update Information message includes the source, flight identification, computer identification, Site Specific Plan Identifier, the coordination fix and the updated coordination time.

A.1.12.3 Message Transmission Eligibility

The Position Update Information message is transmitted to an ATM IPOP whenever the present position fix (PPF) of a flight is updated.

A.1.13 Tentative Flight Plan Information (NP)

A Tentative Flight Plan Information (NP) message is sent to the ATM IPOP when a tentative flight plan is created. The NP message is also transmitted during reconstitution of ATM IPOP. The Tentative Flight Plan Information message includes the source, flight identification, and may include optional Flight Unique ID, aircraft data, type of aircraft, airborne equipment qualifier, beacon code, true airspeed or mach speed or classified speed, assigned altitude, reported altitude, and interim altitude.

A.1.13.1 Message Format

The format for the Tentative Flight Plan Information message is as follows:

150a 00e 02a 02d 316a 167a (03a) (03c) (03e) (04a) (05[a c d]) (08[a b c d e f g h]) (54a) (76b) 149a

Table A-XIV shows the data required for the Tentative Flight Plan Information message.

Table A-XIV. Tentative Flight Plan Information Message (NP)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source	
151a	Field Header	
02a	Flight Identification	
151a	Field Header	
02d	Computer Identification	
151a	Field Header	
316a	Global Unique Flight ID (GUFI)	Field is Not in Host message
151a	Field Header	
167a	Site Specific Plan Identifier	Field is Not in Host message
151a	Field Header	
(03a)	Aircraft Data	
151a	Field Header	
(03c)	Type of Aircraft	
151a	Field Header	
(03e)	Airborne Equipment Qualifier	
151a	Field Header	
(04a)	Beacon Code	
151a	Field Header	
(05[a c d])	Aircraft Speed	
151a	Field Header	
(08[a b c d e f g h])	Assigned Altitude	
151a	Field Header	
(54a)	Reported Altitude	
151a	Field Header	
(76b)	Interim Altitude	

Table A-XIV. Tentative Flight Plan Information Message (NP)

Field Ref. No.	Data Item	Notes
151a	Field Header	
149a	End of Message	

A.1.13.2 Message Content

The Tentative Flight Plan Information message includes the source, flight identification, computer identification, Flight Unique ID, Site Specific Plan Identifier, and may include optional aircraft data, type of aircraft, airborne equipment qualifier, beacon code, true airspeed or mach speed or classified speed, assigned altitude, reported altitude, and interim altitude.

A.1.13.3 Message Transmission Eligibility

The Tentative Flight Plan Information message is transmitted to an ATM IPOP whenever a tentative flight plan is created or a request is received at ERAM from ATM IPOP. The tentative Flight Plan Information is also transmitted during reconstitution of ATM IPOP.

A.1.14 Tentative Flight Plan Removal (NL)

The Tentative Flight Plan Removal (NL) message is used to inform the ATM IPOP of the removal of a tentative flight plan.

A.1.14.1 Message Format

The format for the Tentative Flight Plan Removal message is as follows:

150a 00e 02a 02d 167a 339a (341a) (342a) 149a

Table A-XV shows the data required for the Tentative Flight Plan Removal message.

Table A-XV. Tentative Flight Plan Removal Message (NL)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source	
151a	Field Header	
02a	Flight Identification	
151a	Field Header	
02d	Computer Identification	

Table A-XV. Tentative Flight Plan Removal Message (NL)

Field Ref. No.	Data Item	Notes
151a	Field Header	
167a	Site Specific Plan Identifier	Field is Not in Host message
151a	Field Header	
339a	Tentative Flight Plan Merge Status	L where L = N (deletion without merge – the tentative plan is deleted without merge) S* (merge – an active plan is merged into the tentative flight plan; the flight has the same CID and Site Specific Plan Identifier of the tentative plan) D* (merge – a proposed plan is activated and the tentative flight plan is merged into the activated plan; the flight has the CID and Site Specific Plan Identifier of the activated plan which are different from the tentative plan) * Note: For Field 339a L=S, an FH is sent for the merged flight plan. For Field 339a L = D, an AH or DH message is sent for the activated flight plan.
151a	Field Header	
(341a)	Merged Flight Plan CID	
151a	Field Header	
(342a)	Merged Flight Plan Site Specific Plan Identifier	Field is Not in Host message
151a	Field Header	
149a	End of Message	

A.1.14.2 Message Content

The Tentative Flight Plan Removal message includes the source, flight identification, computer identification, Site Specific Plan Identifier, and tentative flight plan merge status and optionally the merged flight plan CID and merged flight plan Site Specific Plan Identifier.

A.1.14.3 Message Transmission Eligibility

The Tentative Flight Plan Removal message is transmitted to an ATM IPOP whenever a tentative flight plan is deleted or merged. The NL message for a merge removal will only be sent after the FH, AH or DH messages are transmitted to ATM IPOP for the merged flight.

A.1.15 Tentative Flight Amendment Information (NU)

The Tentative Flight Amendment Information (NU) message is used to update tentative flight plan data transferred from ERAM to the ATM IPOP.

A.1.15.1 Message Format

The format for the Tentative Flight Amendment Information message is as follows:

150a 00e 02a 02d 167a (03a) (03c) (03e) (04a) (05[a c d]) (08[a b c d e f g h]) (54a) (76b) 149a

Table A-XVI shows the data required for the Tentative Flight Amendment Information message.

Table A-XVI. Tentative Flight Amendment Information Message (NU)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source	
151a	Field Header	
02a	Flight Identification	
151a	Field Header	
02d	Computer Identification	
151a	Field Header	
167a	Site Specific Plan Identifier	Field is Not in Host message
151a	Field Header	
(03a)	Aircraft Data	
151a	Field Header	
(03c)	Type of Aircraft	
151a	Field Header	
(03e)	Airborne Equipment Qualifier	
151a	Field Header	
(04a)	Beacon Code	
151a	Field Header	
(05[a c d])	Aircraft Speed	
151a	Field Header	
(08[a b c d e f g h])	Assigned Altitude	
151a	Field Header	
(54a)	Reported Altitude	

Table A-XVI. Tentative Flight Amendment Information Message (NU)

Field Ref. No.	Data Item	Notes
151a	Field Header	
(76b)	Interim Altitude	
151a	Field Header	
149a	End of Message	

A.1.15.2 Message Content

The Tentative Flight Amendment Information message includes the source, flight identification, computer identification, Site Specific Plan Identifier (SSPID), optional aircraft data, optional beacon code, optional aircraft speed, optional assigned altitude, optional reported altitude, and optional interim altitude.

A.1.15.3 Message Transmission Eligibility

The Tentative Flight Amendment Information message is transmitted from ERAM to an ATM IPOP when any field except when the aircraft identification is amended.

A.1.16 Tentative Aircraft Identification Amendment Information (NI)

The Tentative Aircraft Identification Amendment Information (NI) message is sent from ERAM to ATM IPOP to indicate a change to the flight identification field (Field 02) of a tentative flight plan.

A.1.16.1 Message Format

The format for the Tentative Aircraft Identification Amendment Information message is as follows:

150a 00e 02a 02d 167a 02a 02d 167a 149a

Table A-XVII shows the data required for the Tentative Aircraft Identification Amendment Information message.

Table A-XVII. Tentative Aircraft Identification Amendment Information Message (NI)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source	
151a	Field Header	

Table A-XVII. Tentative Aircraft Identification Amendment Information Message (NI)

Field Ref. No.	Data Item	Notes
02a	Aircraft Identification (Old Identifier)	
151a	Field Header	
02d	Computer Identification (Old Identifier)	
151a	Field Header	
167a	Site Specific Plan Identifier (Old Identifier)	Field is Not in Host message
151a	Field Header	
02a	Flight Identification (new)	
151a	Field Header	
02d	Computer Identification (New Identifier)	The new Computer Identification will always be the same as the old Computer Identification.
151a	Field Header	
167a	Site Specific Plan Identifier (New Identifier)	Field is Not in Host message The new Site Specific Plan Identifier will always be the same as the old Site Specific Plan Identifier.
151a	Field Header	
149a	End of Message	

A.1.16.2 Message Content

The Tentative Aircraft Identification Amendment Information message includes the following: source, old aircraft identification, computer identification, Site Specific Plan Identifier and new aircraft identification, computer identification, Site Specific Plan Identifier. The computer identification and Site Specific Plan Identifier remain unchanged.

A.1.16.3 Message Transmission Eligibility

The Tentative Aircraft Identification Amendment Information message is sent to an ATM IPOP when the aircraft identification field of a tentative flight plan has been amended.

A.2 Track Data Message Class

There are eight messages in this message class: the Track Information (TH) message, the Drop Track Information (RH) message, the Interim Altitude Information (LH) message, the FDB Fourth Line Information (HF) message, the Point Out Information (HT) message, the ARTS TZ Information (HZ) message, the Handoff Status (OH) message, and the Inbound Point Out Information (PT) message.

A.2.1 Track Information (TH)

The Track Information messages provide track data/target information, such as aircraft track/target position, altitude, and speed, to an ATM IPOP.

A.2.1.1 Message Format

The data/fields for Track Information messages are:

150a 00e 02a 02d 167a 05b (08[a b c d e f g h]) 54a 54b (54c) (138a) (138b) (139a) (139b) 23d 23e (153a) 170a (171a [172a or 172b] 173a) (174a 175a 176a 177a) (02a 02d 167a 05b (08) 54a 54b (54c) (138a) (138b) (139a) (139b) 23d 23e (153a) 170a (171a [172a or 172b] 173a) (174a 175a 176a 177a)) ... (02a 02d 167a 05b (08) 54a 54b (54c) (138a) (138b) (139a) (139b) 23d 23e (153a) 170a (171a [172a or 172b] 173a) (174a 175a 176a 177a)) 149a

Field 138 and/or 139 will always be present.

Table A-XVIII shows the data required for the ATM Track Information message.

Table A-XVIII. Track Information Message (TH)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source	
151a	Field Header	
02a	Flight Identification	
151a	Field Header	
02d	Computer Identification	
151a	Field Header	
167a	Site Specific Plan Identifier	Field is Not in Host message
151a	Field Header	
05b	Ground speed	
151a	Field Header	
(08[a b c d e f g h])	Assigned Altitude	
151a	Field Header	
54a	Reported Altitude	
151a	Field Header	
54b	Character B4	

Table A-XVIII. Track Information Message (TH)

Field Ref. No.	Data Item	Notes
151a	Field Header	
(54c)	Character C4	
151a	Field Header	
(138a)	Controlling Facility	
151a	Field Header	
(138b)	Controlling Sector	
151a	Field Header	
(139a)	Receiving facility	
151a	Field Header	
(139b)	Receiving facility/sector	
151a	Field Header	
23d	Track Position	ERAM Lat/Long Latitude = 7 bytes Format = ddddddL Char. '/' = 1 byte Longitude = 8 bytes Format = dddddddL
151a	Field Header	
23e	Track Velocity	Format = ad(d)(d)(d)/ad(d)(d)(d); ad(d)(d)(d) =X component /ad(d)(d)(d) =Y component a = + or -; d(d)(d) = velocity in NM per hour -0/-0 = not available -0/Sd(d)(d)(d) = only speed (in NM per hr) available
151a	Field Header	
(153a)	Indicator	L Where: L = C = coast
151a	Field Header	
170a	Time of Track Data	Time of track data Field 170a is the time of the track stored as a 32-bit integer representing the number of seconds elapsed since the start of the Unix epoch which began at 00:00:00 UTC, 1/1/1970. Field is Not in Host message
151a	Field Header	

Table A-XVIII. Track Information Message (TH)

Field Ref. No.	Data Item	Notes
(171a)	Target Position	ERAM Lat/Long Latitude = 7 bytes Format = ddddddL Char. '/' = 1 byte Longitude = 8 bytes Format = dddddddL Field is Not in Host message
151a	Field Header	
(172a)	Target Altitude	3 digits ddd Target altitude (corrected for barometric pressure) in hundreds of feet (leading zeros required). Field is Not in Host message
Or		
(172b)	Target Altitude	3 characters LLL = where: LLL = INV Field is Not in Host message
151a	Field Header	
(173a)	Time of Target Data	Time of target data Field 173a is the time of the correlated target return stored as a 32-bit integer representing the number of seconds elapsed since the start of the Unix epoch which began at 00:00:00 UTC, 1/1/1970. Field is Not in Host message
151a	Field Header	
(174a)	ADS-B target position	ADS-B target position latitude and longitude in degrees, minutes, seconds.
151a	Field Header	
(175a)	ADS-B target altitude	ADS-B target altitude, corrected barometric pressure
151a	Field Header	
(176a)	ADS-B target horizontal velocity	ADS-B target horizontal velocity, NM/hour
151a	Field Header	
(177a)	ADS-B target time	Time associated with ADS-B target data.
151a	Field Header	

Table A-XVIII. Track Information Message (TH)

Field Ref. No.	Data Item	Notes
149a	End of Message	
		Fields 02a through 173a are repeated for each flight until the maximum size of the CBTP is reached. If Field 153a = C (for COAST Track), Fields 171a, 172a, 172b and 173a are not included.

A.2.1.2 Message Content

The ATM Track Information message includes the following information: source, flight identification, computer identification, and Site Specific Plan Identifier, ground speed, assigned altitude, reported altitude, controlling facility/sector, receiving facility/sector, track position, track velocity, action indicator, and time of track data; target position, target altitude and time of target data can be optionally included; ADS-B target position, altitude, velocity, and time of applicability of the target position can also be optionally included provided all four elements are of adequate quality.

A.2.1.3 Message Transmission Eligibility

The data required in a Track Information message is transmitted to an ATM IPOP from ERAM every 12 seconds for each aircraft. The track data is sent periodically for all flight plans in the Area of Responsibility (AOR) that have been paired with search/beacon radar data currently in the AOR. A flight plan is considered to be an AOR flight plan if the route originates within or enters the ERAM AOR. The track data is also sent for tentative flights that have been paired.

A.2.2 Drop Track Information (RH)

The Drop Track Information messages provide data to indicate the discontinued tracking of a particular flight.

A.2.2.1 Message Format

The data/fields for the Drop Track Information message are as follows:

150a 00e 02a 02d 167a 149a

Table A-XIX shows the data required for the ATM Drop Track Information message.

Table A-XIX. Drop Track Information Message (RH)

Field Ref. No.	Data Item	Notes
150a	Message Header	

Table A-XIX. Drop Track Information Message (RH)

Field Ref. No.	Data Item	Notes
151a	Field Header	
00e	Source ID	
151a	Field Header	
02a	Flight Identification	
151a	Field Header	
02d	Computer Identification	
151a	Field Header	
167a	Site Specific Plan Identifier	Field is Not in Host message
151a	Field Header	
149a	End of Message	

A.2.2.2 Message Content

The Drop Track Information message sent to an ATM IPOP includes the source, flight identification, computer identification, and Site Specific Plan Identifier for a flight for which all tracking data has been removed from ERAM. Flight plan data will remain available in ERAM.

A.2.2.3 Message Transmission Eligibility

The ATM Drop Track Information message is sent to an ATM IPOP when a controller enters a Drop track message into ERAM. An RH message is also sent when a track is automatically terminated by ERAM.

A.2.3 Interim Altitude Information (LH)

The Interim Altitude Information message provides an ATM IPOP with interim altitude data for a flight.

A.2.3.1 Message Format

The data/fields that are required for the Interim Altitude Information message are:

150a 00e [76a or 76b] 02a 02d 167a 149a

Table A-XX shows the data required for the ATM Interim Altitude Information message.

Table A-XX. Interim Altitude Information Message (LH)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source ID	
151a	Field Header	
76a	Interim Altitude	
(or)		
76b	Interim Altitude	
151a	Field Header	
02a	Flight Identification	
151a	Field Header	
02d	Computer Identification	
151a	Field Header	
167a	Site Specific Plan Identifier	Field is Not in Host message
151a	Field Header	
149a	End of Message	

A.2.3.2 Message Content

The Interim Altitude Information message sent to an ATM IPOP includes the source, the interim altitude, and the flight identification, computer identification, and Site Specific Plan Identifier.

A.2.3.3 Message Transmission Eligibility

An ATM Interim Altitude Information (LH) message is sent to an ATM IPOP when a QQ (Interim Altitude) message has been entered into ERAM to add, delete, or modify an existing interim altitude, or when an interim altitude is applied from an adapted pref route. An Interim Altitude Information message is also sent when a TI (Initiate Transfer) message is received from an adjacent center that results in an interim altitude being assigned, replaced, or deleted; and when a TA (Accept Transfer) message is received from an adjacent center as a retraction of an inbound handoff and an interim altitude is replaced or deleted as a result of the TA message.

A.2.4 FDB Fourth Line Information (HF)

The FDB Fourth Line Information message provides an ATM IPOP with displayable, user-specified FDB fourth line data stored in ERAM, i.e., heading, speed or free form text, when this data is created, changed or deleted.

A.2.4.1 Message Format

The data/fields that are required for the FDB Fourth Line Information message are:

150a 00e 02a 02d 167a ((155a) (155b) (155c)) 149a

Table A-XXI shows the data required for the FDB Fourth Line Information message.

Table A-XXI. FDB Fourth Line Information message (HF)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source ID	
151a	Field Header	
02a	Flight Identification	
151a	Flight Header	
02d	Computer Identification	
151a	Field Header	
167a	Site Specific Plan Identifier	Field is Not in Host message
151a	Field Header	
(155a)	Heading	
151a	Field Header	
(155b)	Speed	
151a	Field Header	
(155c)	Free Form Text	
151a	Field Header	
149a	End of Message	
		Fields 02a, 02d, 167a, (155a), (155b) through (155c) are repeated for each flight for which FDB fourth line data is to be generated during the initialization process until the maximum size of the CBTP is reached. At least one element of Field 155 must be present during the initialization process.

A.2.4.2 Message Content

The FDB Fourth Line Information message includes source, flight identification, computer identification, Site Specific Plan Identifier and optionally user-specified FDB fourth line information. Fields 155a, 155b and 155c will not be transmitted when they contain null values (no data), however, they will always be transmitted when they contain data. When these fields are not present in the message it indicates that all user-specified FDB fourth line data has been deleted by ERAM and therefore is not displayable.

A.2.4.3 Message Transmission Eligibility

ERAM sends an FDB Fourth Line Information message, on flight plans already received by an ATM IPOP, to an ATM IPOP whenever an ERAM action creates changes or deletes user-specified fourth line data and whenever FDB fourth line data is present and ERAM initializes an ATM IPOP.

A.2.5 Point Out Information (HT)

The Point Out Information (HT) message is used to provide interfacility and intrafacility point out information when these actions occur, to an ATM IPOP.

A.2.5.1 Message Format

The data/fields that are required for the Point Out Information message are:

150a 00e 02a 02d 167a 134b 16g (16g) (16g) (16g) 149a

Table A-XXII shows the data required for the Point Out Information message.

Table A-XXII. Point Out Information Message (HT)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source ID	
151a	Field Header	
02a	Flight Identification	
151a	Field Header	
02d	Computer Identification	
151a	Field Header	
167a	Site Specific Plan Identifier	Field is Not in Host message
151a	Field Header	
134b	Source Sector Routing	
151a	Field Header	
16g	Target Facility/Sector	(L) dd Note: Field 16g can be repeated to a total of 4 Target Sector numbers per HT message.
151a	Field Header	
149a	End of Message	

A.2.5.2 Message Content

The Point Out Information message includes the source, flight identification, computer identification, Site Specific Plan Identifier, the entering sector number and the target sector number(s). The target sector number(s) in Field 16g are those entered in Field 16 of the Point Out message unless the point out was rerouted to a sector other than the addressed sector in Field 16, then the rerouted sector number will appear in Field 16g.

A.2.5.3 Message Transmission Eligibility

The Point Out Information message is transmitted to an ATM IPOP whenever a Point Out (QP) message from a local sector to another local sector is successfully processed. The Point Out Information message is also transmitted to an ATM IPOP whenever a Point Out message from a local sector to another ARTCC is successfully processed, i.e., when an accept response is returned for the Point Out message. The HT message will only be transmitted when a Flight Plan Information (FH) message was previously transmitted to an ATM IPOP.

A.2.6 ARTS TZ Information (HZ)

The ARTS TZ Information message provides the ATM IPOP with Flow Control Track/Full Data Block data for a flight.

A.2.6.1 Message Format

The data/fields that are required for the ARTS TZ Information message are:

150a 00e 154a (154a) 149a

Table A-XXIII shows the data required for the ATM ARTS TZ Information message.

Table A-XXIII. ARTS TZ Information message (HZ)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source ID	
151a	Field Header	
154a	ARTS TZ DATA ITEMS:	This field is actually a combination of Fields 02, 05, 08, and 23.
	Source ID	(LLLL) First L – Sending ERAM Center ID LLL – ARTS ID that originated the TZ message
	Data Item Separator	1 space

Table A-XXIII. ARTS TZ Information message (HZ)

Field Ref. No.	Data Item	Notes
	Flight Identification	AID/CID La (a) (a) (a) (a) (a) /daa
	Data Item Separator	1 space
	Ground Speed	ddd if ground speed not available will be 3 zeros
	Data Item Separator	1 space
	Altitude	3-7 characters
	Data Item Separator	1 space
	Track Position	ERAM Lat/Long
151a	Field Header	
149a	End of Message	
		Field 154a may be repeated one time in this physical message. If repeated, the Source ID data item will only be present in the first instance of this field.

A.2.6.2 Message Content

The ARTS TZ Information message sent to ATM IPOP includes the source, the ARTS TZ message data and the flight identification.

A.2.6.3 Message Transmission Eligibility

The ARTS TZ Information (HZ) message is sent to ATM IPOP when the TZ (Flow Control Track/Full Data Block Information) message has been successfully processed by ERAM.

A.2.7 Handoff Status (OH)

The Handoff Status message is sent to the ATM IPOP when a handoff is initiated, accepted, control is taken away (assert control), or retracted, or when the failure of handoff is detected.

A.2.7.1 Message Format

The data/fields that are required for the Handoff Status message are:

150a 00e 02a 02d 167a 138a 138b 139a 139b (334a) (335a) 336a 149a

Table A-XXIV shows the data required by the Handoff Status message.

Table A-XXIV. Handoff Status (OH)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source ID	
151a	Field Header	
02a	Flight Identification	
151a	Field Header	
02d	Computer Identification	
151a	Field Header	
167a	Site Specific Plan Identifier	Field is Not in Host message
151a	Field Header	
138a	Controlling Facility	
151a	Field Header	
138b	Controlling Sector	
151a	Field Header	
139a	Receiving facility	
151a	Field Header	
139b	Receiving Sector	
151a	Field Header	
(334a)	Accepting Facility	
151a	Field Header	
(335a)	Accepting Sector	
151a	Field Header	
336a	Handoff Event Indicator	L where L = I for Initiation L = A for Acceptance L = R for Retraction L = T for Take Control (Assert Control) L = U for Update L = F for Failure
151a	Field Header	
149a	End of Message	

A.2.7.2 Message Content

The Handoff Status message sent to the ATM IPOP includes the source, flight identification, computer identification, and Site Specific Plan Identifier for a flight being handed off to another facility (interfacility handoff) or sector (intrafacility handoff), optional identification of the facility/sector initiating, receiving, and/or accepting the handoff, and an indicator of success/failure of the handoff.

A.2.7.3 Message Transmission Eligibility

A Handoff Status (OH) message is sent from ERAM to ATM IPOP when a handoff is initiated, accepted, control is taken, or retracted, or when failure of the handoff is detected. A Handoff Status (OH) message is also sent when a DA response is returned for the TI (Initiate Transfer) message from the target facility and the DA identifies a different target sector than the original one.

A.2.8 Inbound Point Out Information (PT)

The Inbound Point Out Information message is sent to ATM IPOP from ERAM upon receipt of an interfacility pointout message from another center.

A.2.8.1 Message Format

The data/fields that are required for the Inbound Point Out message are:

150a 00e 02a 02d 167a 138a 138b 139a 139b 149a

Table A-XXV shows the data required by the Inbound Point Out Information message.

Table A-XXV. Inbound Pointout Information (PT)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source ID	
151a	Field Header	
02a	Flight Identification	
151a	Field Header	
02d	Computer Identification	
151a	Field Header	
167a	Site Specific Plan Identifier	Field is Not in Host message
151a	Field Header	
138a	Controlling Facility	
151a	Field Header	
138b	Controlling Sector	
151a	Field Header	

Table A-XXV. Inbound Pointout Information (PT)

Field Ref. No.	Data Item	Notes
139a	Receiving Facility	
151a	Field Header	
139b	ERAM Receiving sector	
151a	Field Header	
149a	End of Message	

A.2.8.2 Message Content

The Inbound Point Out Information message sent to ATM IPOP includes the source, flight identification, computer identification, and Site Specific Plan Identifier for a flight being pointed out from another facility and identification of the initiating facility/sector and the receiving facility/sector of the Point Out.

A.2.8.3 Message Transmission Eligibility

The Inbound Point Out Information (PT) message is sent from ERAM to ATM IPOP whenever an interfacility Point Out message is received from an adjacent center. The PT message will only be transmitted when either a Flight Plan Information (FH) message or a Tentative Flight Plan Information (NP) message was previously transmitted to an ATM IPOP.

A.3 Airspace Utilization Message Class

There are three messages in this message class: the Sector Assignment Status Information (SH) message, the Route Status Information (HR) message and Special Activities Airspace Information (SU).

A.3.1 Sector Assignment Status Information (SH)

Sector Assignment Status Information messages provide an ATM IPOP with current sector assignment data for all adapted sectors in the ARTCC.

A.3.1.1 Message Format

The format for the Sector Assignment Status Information message is as follows:

150a 00e 29a [29c or 29d (29d)…(29d)] (29a [29c or 29d (29d) ...(29d)]) ... (29a [29c or 29d (29d) ..(29d)]) 149a

Table A-XXVI shows the data required for the Sector Assignment Status Information message.

Table A-XXVI. Sector Assignment Status Information Message (SH)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source ID	
151a	Field Header	
29a	Sector number	
151a	Field Header	
(29c)	No FAV indicator	
(or)		
(29d)	FAV	
151a	Field Header	
149a	End of message	
		The order and sequencing of Fields 29a. through 29d. are variable depending on the specific FAV to sector mapping. Airspace assignment data (Field 29) may be repeated up to a total message length that can be contained in a single CBTP transmission.

A.3.1.2 Message Content

The Sector Assignment Status Information message contains fields identifying the source, sector number(s) and associated FAV(s).

A.3.1.3 Message Transmission Eligibility

A Sector Assignment Status Information message with current sector assignment data for all adapted sectors is transmitted to an ATM IPOP as part of the system initialization. All sector FAV assignments are sent in each SH. Subsequent message are transmitted when the Resector (CS) message has been successfully processed by ERAM.

A.3.2 Route Status Information (HR)

Route Status Information (HR) message are used to provide an ATM IPOP with the status of adapted arrival and departure routes (i.e., whether a given route is active or inactive).

A.3.2.1 Message Format

The format of the Route Status Information message is as follows:

150a 00e 135a 36a (135a 36a)…(135a 36a) 149a

Elements 135a 36a can be repeated 1-281 times.

Table A-XXVII shows the data required for the Route Status Information message.

Table A-XXVII. Route Status Information Message (HR)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source ID	
151a	Field Header	
135a	Route Status Elements	2-6 Route name alphanumerics aa(a)(a)(a)(a)
151a	Field Header	
36a	Action Indicator	LL(L) where the letters must be ON or OFF
151a	Field Header	
149a	End of Message	

A.3.2.2 Message Content

The Route Status Information message contains the source, adapted route status elements and the action indicator which provide route status information. The adapted names are Standard Instrument Departures (SID), Standard Terminal Arrival Routes (STAR), Adapted Arrival Routes (AAR), Adapted Departure Routes (ADR) and Adapted Departure and Arrival Routes (ADAR).

A.3.2.3 Message Transmission Eligibility

Route Status Information message are first transmitted to an ATM IPOP indicating the status of all routes when an ATM IPOP is initialized. HR message are repeated until all routes have been processed. Subsequent route status messages are transmitted to an ATM IPOP indicating the status of only the routes changed when a Switch Activity (SA) message has been successfully processed by ERAM.

A.3.3 Special Activities Airspace Information (SU)

The Special Activities Airspace Information (SU) message is sent to ATM IPOP to provide the status and schedules for the Special Activities Airspace (SAA).

A.3.3.1 Message Format

The format of the Special Activities Airspace Information message is as follows:

150a 00e 161a 162a (165a 165b) (166a 163a (164a 164b 165a 165b)) …(166a 163a (164a 164b 165a 165b)) 149a

The specific format for SAA Activation Type = "OFF" is as follows:

150a 00e 161a 162a 149a

The specific format for SAA Activation Type = "ON" is as follows:

150a 00e 161a 162a 165a 165b 149a

The specific format for SAA Activation Type = "SCHED" is as follows:

150a 00e 161a 162a 166a 163a (164a 164b 165a 165b) …(166a 163a (164a 164b 165a 165b)) 149a

Table A-XXVIII shows the data required for the Special Activities Airspace Information Message.

Table A-XXVIII. Special Activities Airspace Information Message (SU)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source	
151a	Field Header	
161a	SAA ID	
151a	Field Header	
162a	SAA Activation Type	
151a	Field Header	
(166a)	SAA Schedule ID	Repeating up to two scheduled entries per day and up to seven days may be entered.
151a	Field Header	
(163a)	SAA Schedule Type	
151a	Field Header	
(164a)	SAA Scheduled Activation Date & Time	
151a	Field Header	
(164b)	SAA Scheduled Deactivation Date & Time	
151a	Field Header	
(165a)	SAA Low Altitude	

Table A-XXVIII. Special Activities Airspace Information Message (SU)

Field Ref. No.	Data Item	Notes
151a	Field Header	
(165b)	SAA High Altitude	The high altitude must be greater than or equal to the low altitude. If the high altitude is equal to the low altitude, the SAA is active only at this altitude.
151a	Field Header	
149a	End of Message	

A.3.3.2 Message Content

The Special Activities Airspace Information Message contains the Source ID, SAA ID, SAA Activation Type, optional SAA Schedule ID, optional SAA Schedule Type, optional SAA Scheduled Activation Date & Time, along with the SAA Scheduled Deactivation Date & Time, optional SAA Low Altitude along with the SAA High Altitude.

A.3.3.3 Message Transmission Eligibility

The Special Activities Airspace Information Message is sent from ERAM to ATM IPOP during reconstitution of the ATM IPOP, a change is made to an SAA by a controller including SAA activation type, altitude limits, and/or SAA activation schedules or rollover of new schedule entries to extend the schedule for one more day.

A.4 Metering Data Message Class

There are three messages in this message class: Manual Swap Information (HB) message, Resequence Information (HC) message, and Metering List Display Suppress Information (HD) message.

A.4.1 Manual Swap Information (HB)

The Manual Swap Information message allows the sequence of two aircraft arrivals in the Meter Reference Point (MRP) list to be swapped. TMA will resequence the arrival times of the two aircraft.

A.4.1.1 Message Format

The format for the Manual Swap Information message is:

150a 00e (68f) 02a 02d 167a 02a 02d 167a 134a 149a

Table A-XXIX shows the data required for the HB message.

Table A-XXIX. Manual Swap Information Message (HB)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source	
151a	Field Header	
(68f)	Fix (MRP Name)	
151a	Field Header	
02a	Flight Identification (First aircraft to swap)	
151a	Field Header	
02d	Computer Identification (First aircraft to swap)	
151a	Field Header	
167a	Site Specific Plan Identifier	Field is Not in Host message
151a	Field Header	
02a	Flight Identification (Second aircraft to swap)	
151a	Field Header	
02d	Computer Identification (Second aircraft to swap)	
151a	Field Header	
167a	Site Specific Plan Identifier	Field is Not in Host message
151a	Field Header	
134a	Source Sector Routing	
151a	Field Header	
149a	End of Message	

A.4.1.2 Message Content

The Manual Swap Information message contains the source, MRP name and flight identifications, computer identifications, Site Specific Plan Identifiers of the two aircraft to be swapped. The Manual Swap Information message contains the sector number at which the swap message was entered.

A.4.1.3 Message Transmission Eligibility

ERAM transmits a Manual Swap Request (MW) message to indicate a manual swap in a MRP List when a Manual Swap Message is entered by the controller.

A.4.2 Resequence Information (HC)

The Resequence Information message allows the sequence of aircraft arrivals in the metering list to be modified. TMA will resequence and, if determined necessary, reschedule the arrival times of all indicated aircraft into the indicated sequence. The Resequence Information message may be used to resequence up to five aircraft.

A.4.2.1 Message Format

The format of the Resequence Information message is:

150a 00e (68f) 02a 02d 167a 02a 02d 167a (02a 02d 167a) (02a 02d 167a) (02a 02d 167a) 134a 149a

Table A-XXX shows the data required for the Resequence Information message.

Table A-XXX. Resequence Information Message (HC)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source	
151a	Field Header	
(68f)	Fix (MRP Name)	
151a	Field Header	
02a	Flight Identification	
151a	Field Header	
02d	Computer Identification	
151a	Field Header	
167a	Site Specific Plan Identifier	Field is Not in Host message
151a	Field Header	
134a	Source Sector Routing	
151a	Field Header	
149a	End of Message	
		Repeat Field 02a, 02d, and 167a for up to five flights.

A.4.2.2 Message Content

The Resequence Information message contains the source, MRP name and the flight identification, computer identification and Site Specific Plan Identifier of each aircraft to be resequenced. The aircraft are placed in the order specified by the controller. The Resequence Information message is used to resequence up to five aircraft. Resequence Information message contains the sector number of the sector that entered the resequence information message.

A.4.2.3 Message Transmission Eligibility

ERAM transmits a Resequence Information (HC) message to ATM IPOP to indicate resequencing of 2 to 5 entries in a MRP List when a Resequence Request (SQ) is entered by the controller.

A.4.3 Metering List Display Suppress Information (HD)

The Metering List Display Suppress Information message indicates the suppression or unsuppression of a MRP list entry.

A.4.3.1 Message Format

The format of the Metering List Display Suppress Information message is:

150a 00e 143b (68f) 02a 02d 167a 137b 149a

Table A-XXXI shows the data required for the Metering List Display Suppress Information message.

Table A-XXXI. Metering List Display Suppress Information (HD) Message

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source ID	
151a	Field Header	
143b	FAV	
151a	Field Header	
(68f)	Fix (MRP Name)	
151a	Field Header	
02a	Flight ID	
151a	Field Header	
02d	Computer Identification	
151a	Field Header	
167a	Site Specific Plan Identifier	Field is Not in Host message
151a	Field Header	

Table A-XXXI. Metering List Display Suppress Information (HD) Message

Field Ref. No.	Data Item	Notes
137b	Action Indicator (Suppress Action)	a where: a = U for Unsuppress S for Suppress
151a	Field Header	
149a	End of Message	

A.4.3.2 Message Content

The Metering List Display Suppress Information message contains the source, FAV, MRP name, flight identification, computer identification, Site Specific Plan Identifier and action indicator of suppress or unsuppress for a list entry suppressed or unsuppressed from the controller's display.

A.4.3.3 Message Transmission Eligibility

ERAM transmits a Metering List Display Suppress Information message upon successful processing of a Suppress/Unsuppress Display of Meter List Entry (QP) message from a Controller position. ERAM also transmits an HD message indicating the aircraft is unsuppressed when any sector containing a suppressed aircraft entry in its MRP list is combined into a new sector plan via the Resector (CS) message.

A.5 Miscellaneous Message Class

There are ten messages in this class: Altimeter Setting Information (HA) message, Beacon Code Reassignment Information (BA) message, Beacon Code Restricted Information (RE) message, Beacon Code Utilization Information (UB) message, Geographic Beacon Code Utilization (UG) message, General Information (GH) message, Traffic Count Adjustment (AK) message, Instrument Approach Count Adjustment (AC) message, Sign In/Sign Out Information (SY) message, and Unsuccessful Information Transmission (UI).

A.5.1 Altimeter Setting Information (HA)

The Altimeter Setting Information message is used to relay altimeter reference data for selected, adapted, reporting stations to an ATM IPOP. The altimeter data sent to ATM IPOP is used for altitude correction.

A.5.1.1 Message Format

The format of the Altimeter Setting Information message is as follows:

150a 00e (35a) 13.3 [34a or 34b] 149a

Table A-XXXII specifies the data required for the HA message.

Table A-XXXII. Altimeter Setting Information Message (HA)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source	
151a	Field Header	
(35a)	Altimeter Data Entrance Time	
151a	Field Header	
13.3	Altimeter reporting Station	aa(a)(a)(a)
151a	Field Header	
34a	Altimeter Data	ddd Where: ddd is last 3 digits of altimeter reading or barometric pressure; 000-499 = 3000-3499; 500-999 = 2500-2999
(or)		
34b	Altimeter Data	
151a	Field Header	
149a	End of Message	

A.5.1.2 Message Content

The HA message contains the source, the time of the report, and altimeter data which specifies barometric pressure at reporting station.

A.5.1.3 Message Transmission Eligibility

A HA message is sent to ATM IPOP whenever an AS or a WX message (with valid altimeter data) is successfully processed by ERAM. ERAM transmits HA messages as part of the system initialization of ATM IPOP.

A.5.2 Beacon Code Reassignment Information (BA)

The Beacon Code Reassignment Information message is used to provide updated beacon code reassignment information when ERAM determines that an automatic beacon code reassignment occurred because the requested beacon code was already in use by another aircraft.

A.5.2.1 Message Format

The format of the Beacon Code Reassignment Information message is as follows:

150a 00e 02a (02d) 316a 167a 04a 26a 27a 02a (02d) 316a 167a 04a 26a 27a 149a

Table A-XXXIII specifies the data required for the BA message.

Table A-XXXIII. Beacon Code Reassignment Information Message (BA)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source ID	
151a	Field Header	
02a	Flight Identification (Flight One)	
151a	Field Header	
(02d)	Computer Identification (Flight One)	
151a	Field Header	
316a	Global Unique Flight ID (GUFI) (Flight One)	Field is Not in Host message
151a	Field Header	
167a	Site Specific Plan Identifier (Flight One)	Field is Not in Host message
151a	Field Header	
04a	Beacon Code (Flight One, In Use)	
151a	Field Header	
26a	Departure Point (Flight One)	2-12 characters aa(a)(a)(a)(/)(a)(a)(a)(a)(a)(a) or the word `TENTATIVE'
151a	Field Header	
27a	Destination (Flight One)	2-12 characters aa(a)(a)(a)(/)(a)(a)(a)(a)(a)(a) or the word `TENTATIVE'
151a	Field Header	
02a	Flight Identification (Flight Two)	
151a	Field Header	
(02d)	Computer Identification (Flight Two)	
151a	Field Header	

Table A-XXXIII. Beacon Code Reassignment Information Message (BA)

Field Ref. No.	Data Item	Notes
316a	Global Unique Flight ID (GUFI) (Flight Two)	Field is Not in Host message
151a	Field Header	
167a	Site Specific Plan Identifier (Flight Two)	Field is Not in Host message
151a	Field Header	
04a	Beacon Code (Flight Two, Reassigned)	
151a	Field Header	
26a	Departure Point (Flight Two)	2-12 characters aa(a)(a)(a)(/)(a)(a)(a)(a)(a)(a) or the word `TENTATIVE'
151a	Field Header	
27a	Destination (Flight Two)	2-12 characters aa(a)(a)(a)(/)(a)(a)(a)(a)(a)(a) or the word `TENTATIVE'
151a	Field Header	
149a	End of Message	

A.5.2.2 Message Content

The BA message contains the source, and the following information for Flight One and Flight Two: flight identification, Flight Unique ID, optional CID, Site Specific Plan Identifier, beacon code, departure point, and destination. Tentative flight plans will have the word `TENTATIVE' inserted as the departure point and destination.

A.5.2.3 Message Transmission Eligibility

A BA message is sent to the ATM IPOP when ever an automatic beacon code reassignment occurs because the requested beacon code was already in use by another aircraft.

A.5.3 Beacon Code Restricted Information (RE)

The Beacon Code Restricted Information message is used to provide updated beacon code reassignment information when ERAM determines that a beacon code reassignment occurred because the requested beacon code is adapted as restricted.

A.5.3.1 Message Format

The format of the Beacon Code Restricted Information message is as follows:

150a 00e 02a (02d) 316a 167a 04a 26a 27a 04a 149a

Table A-XXXIV specifies the data required for the RE message.

Table A-XXXIV. Beacon Code Restricted Information Message (RE)

Field Ref No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source ID	
151a	Field Header	
02a	Flight Identification	
151a	Field Header	
(02d)	Computer Identification	
151a	Field Header	
316a	Global Unique Flight ID (GUFI)	Field is Not in Host message
151a	Field Header	
167a	Site Specific Plan Identifier	Field is Not in Host message
151a	Field Header	
04a	Beacon Code (Reassigned)	
151a	Field Header	
26a	Departure Point	
151a	Field Header	
27a	Destination	
151a	Field Header	
04a	Beacon Code (Restricted)	
151a	Field Header	
149a	End of Message	

A.5.3.2 Message Content

The Beacon Code Restricted Information (RE) message contains the source, flight identification, Flight Unique ID, optional CID, Site Specific Plan Identifier, beacon code (reassigned), departure point, destination and beacon code (restricted).

A.5.3.3 Message Transmission Eligibility

The Beacon Code Restricted Information (RE) message is sent to ATM IPOP whenever a beacon code reassignment occurs because the requested beacon code was adapted as restricted.

A.5.4 Beacon Code Utilization Information (UB)

The Beacon Code Utilization Information message is used to provide the peak number of beacon codes used the total number of adapted codes and the number of code reassignments since start-up or local midnight, for an adapted period of time. The peak number of beacon codes used and the total number of adapted codes will be broken down by the following categories:

1. Internal primary and secondary codes.
2. Internal tertiary codes.
3. External primary and secondary codes.
4. External tertiary codes.

A.5.4.1 Message Format

The format of the Beacon Code Utilization Information message is as follows:

150a 00e 47a 47b 47c 47d 47e 149a

Table A-XXXV specifies the data required for the UB message.

Table A-XXXV. Beacon Code Utilization Information Message (UB)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source ID	
151a	Field Header	
47a	Peak Number of Internal Primary + Secondary codes and the total number of adapted codes	
151a	Field Header	
47b	Peak Number of Internal Tertiary codes and the total number of adapted codes	
151a	Field Header	

Table A-XXXV. Beacon Code Utilization Information Message (UB)

Field Ref. No.	Data Item	Notes
47c	Peak Number of External Primary + Secondary codes and the total number of adapted codes	
151a	Field Header	
47d	Peak Number of External Tertiary codes and the total number of adapted codes	
151a	Field Header	
47e	Number of Code Reassignments Since Midnight	
151a	Field Header	
149a	End of Message	

A.5.4.2 Message Content

The UB message contains the source, peak number of internal primary and secondary codes, peak number of internal tertiary codes, peak number of external primary and secondary codes, peak number of external tertiary codes, the total number of adapted codes for each of the four categories, and the number of code reassignments since start-up or local midnight.

A.5.4.3 Message Transmission Eligibility

The UB message is sent to ATM IPOP every parameter Beacon Code Utilization Report Output to CMS (BCRO) minutes beginning at Startup and every time parameter BCRO is modified by the Change Parameter (CP) message and then every BCRO minutes from the time the CP message was entered.

A.5.5 Geographic Beacon Code Utilization (UG)

The Geographic Beacon Code Utilization message is used to provide ATM IPOP with the total number of adapted beacon codes for each destination region as well as the peak number of beacon codes used for each destination region during the period.

A.5.5.1 Message Format

The format of the Geographic Beacon Code Utilization message is as follows:

150a 00e 50a 50b 50c 50d (50b 50c 50d) … (50b 50c 50d) 149a

(50b 50c 50d) will be repeated for each destination region adapted.

Table A-XXXVI specifies the data required for the UG message.

Table A-XXXVI. Geographic Beacon Code Utilization Message (UG)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source ID	
151a	Field Header	
50a	Elapsed Time since last report (minutes)	
151a	Field Header	
50b	Destination Region Identifier	dd Field 50b is repeated for each region, up to 50 regions in one UG message.
151a	Field Header	
50c	Peak number of geographic primary beacon codes and the total number of adapted primary codes for the region	dddd/dddd Field 50c is repeated for each region, up to 50 regions in one UG message.
151a	Field Header	
50d	Peak number of geographic secondary beacon codes and the total number of adapted secondary codes for the region	dddd/dddd Field 50d is repeated for each region, up to 50 regions in one UG message.
151a	Field Header	
149a	End of Message	

A.5.5.2 Message Content

The UG message contains the source, the elapsed time since last report, and, for each destination region adapted, the peak number of geographic primary codes used during the period/total number of primary codes adapted and the peak number of geographic secondary codes used during the period/total number of secondary codes adapted.

A.5.5.3 Message Transmission Eligibility

A UG message is sent to ATM IPOP every parameter BCRO minutes beginning at Startup and every time parameter BCRO is modified by the Change Parameter (CP) message and then every BCRO minutes from the time the CP message was entered.

A.5.6 General Information (GH)

The General Information message provides general information/free text remarks to ATM client applications. ERAM sends a GH message to a specific ATM client application or to all ATM client applications via ATM IPOP, as indicated by destination address routing.

A.5.6.1 Message Format

The data/fields that are required for the General Information message are:

150a 00e 11c 149a

Table A-XXXVII shows the data required by the ATM General Information message.

Table A-XXXVII. General Information (GH) Message

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source ID	
151a	Field Header	
11c	Remarks	Remarks code will always be a clear weather symbol. The general information text will follow the clear weather symbol.
151a	Field Header	
149a	End of Message	

A.5.6.2 Message Content

The General Information message includes source and free text remarks and routing information to one or to all ATM IPOPs.

A.5.6.3 Message Transmission Eligibility

A General Information (GH) message is sent from ERAM to ATM IPOP when a General Information message (GI) is entered into ERAM, from an eligible input device, with an ATM IPOP or ATM Application destination address in Field 16 of the GI message. A General Information (GH) message is also sent to each ATM client application when a GI message is entered into ERAM at an adapted workstation with a routing field of ALL.

A.5.7 Traffic Count Adjustment (AK)

The Traffic Count Adjustment message may be used to adjust (increment or decrement) one of the following traffic counts:

- ACDD (Air Carrier Domestic Departures)
- ATDD (Air Taxi Domestic Departures)
- GADD (General Aviation Domestic Departures)
- MIDD (Military Domestic Departures)
- ACDO (Air Carrier Domestic Overs)
- ATDO (Air Taxi Domestic Overs)
- GADO (General Aviation Domestic Overs)
- MIDO (Military Domestic Overs)
- ACOD (Air Carrier Oceanic Departures)
- ATOD (Air Taxi Oceanic Departures)
- GAOD (General Aviation Oceanic Departures)
- MIOD (Military Oceanic Departures)
- ACOO (Air Carrier Oceanic Overs)
- ATOO (Air Taxi Oceanic Overs)
- GAOO (General Aviation Oceanic Overs)
- MIOO (Military Oceanic Overs)
- VFRC (VFR Traffic Count).

A.5.7.1 Message Format

The data/fields that are required for the Traffic Count Adjustment message are:

150a 00e (02a) (02d) (167a) 337a (337a).....(337a) 332a 331a [327a OR 330a] 149a

Table A-XXXVIII shows the data required by the Traffic Count Adjustment message.

Table A-XXXVIII. Traffic Count Adjustment Message (AK)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source ID	
151a	Field Header	
(02a)	Flight Identification	
151a	Field Header	
(02d)	Computer Identification	
151a	Field Header	
(167a)	Site Specific Plan Identifier	Field is Not in Host message
151a	Field Header	

Table A-XXXVIII. Traffic Count Adjustment Message (AK)

Field Ref. No.	Data Item	Notes
337a	Traffic Count Adjustment Data	aaaa - alphabetic subcategory contraction + - directs incrementation - - directs decrementation ddd - value to be applied The first four characters of the data field must be alphabetic and one of the following contractions: ACDD (Air Carrier Domestic Departures) ATDD (Air Taxi Domestic Departures) GADD (General Aviation Domestic Departures) MIDD (Military Domestic Departures) ACDO (Air Carrier Domestic Overs) ATDO (Air Taxi Domestic Overs) GADO (General Aviation Domestic Overs) MIDO (Military Domestic Overs) ACOD (Air Carrier Oceanic Departures) ATOD (Air Taxi Oceanic Departures) GAOD (General Aviation Oceanic Departures) MIOD (Military Oceanic Departures) ACOO (Air Carrier Oceanic Overs) ATOO (Air Taxi Oceanic Overs) GAOO (General Aviation Oceanic Overs) MIOO (Military Oceanic Overs) VFRC (VFR Traffic Count) There can be one to eight occurrences of Field 337a
151a	Field Header	
332a	Entering Facility	
151a	Field Header	
331a	Position	L where L = R or D or A or S R = R-position console D = D-position console A = A-position console S = AT Specialist

Table A-XXXVIII. Traffic Count Adjustment Message (AK)

Field Ref. No.	Data Item	Notes
151a	Field Header	
327a	Sector Number	Field 327a is used for Position = R/D/A.
or		
330a	Entering Position	Field 330a is used for Position = AT Specialist.
151a	Field Header	
149a	End of Message	

A.5.7.2 Message Content

The Traffic Count Adjustment message contains the Source ID, the optional Flight ID, the optional Computer ID, the optional Site Specific Plan Identifier, the Traffic Count Adjustment data, the Entering Facility, and either the Entering Sector or the Entering Position.

A.5.7.3 Message Transmission Eligibility

A CMS Traffic Count Adjustment (AK) message is sent from ERAM to ATM IPOP when a valid TC (Traffic Count Adjustment) message is entered into ERAM.

A.5.8 Instrument Approach Count Adjustment (AC)

The instrument approach count message may be used to adjust (increment or decrement) one of the following instrument approach counts:

- AC (air carrier)
- AT (air taxi)
- GA (general aviation)
- MI (military). Message Format

The data/fields that are required for the Instrument Approach Count Adjustment message are:

150a 00e (02a) (02d) (167a) 13.3 [36h or 338a (338a).....(338a)] 332a 331a [327a or 330a] 149a

Table A-XXXIX shows the data required by the Instrument Approach Count Adjustment message.

Table A-XXXIX. Instrument Approach Count Adjustment (AC)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source ID	
151a	Field Header	
(02a)	Flight Identification	
151a	Field Header	
(02d)	Computer Identification	
151a	Field Header	
(167a)	Site Specific Plan Identifier	Field is Not in Host message
151a	Field Header	
13.3	Airport Identifier	
151a	Field Header	
36h	Instrument Approach Count Action Indicator	LL(L)(L) where LL(L)(L) = AUTO or ON or OFF There must be a Field 36h or Field 338a but not both.
151a	Field Header	
338a	Instrument Approach Count Adjustment Data	LL - alphabetic subcategory contraction + - directs incrementation - - directs decrementation dd - value to be applied The first two characters of the data field must be alphabetic and one of the following contractions: AC (air carrier) AT (air taxi) GA (general aviation) MI (military). There can be one to four occurrences of Field 338a.
151a	Field Header	
332a	Entering Facility	
151a	Field Header	

Table A-XXXIX. Instrument Approach Count Adjustment (AC)

Field Ref. No.	Data Item	Notes
331a	Position	L where L = R or D or A or S R = R-position console D = D-position console A = A-position console S = AT Specialist
151a	Field Header	
327a	Sector Number	Field 327a is used for Position = R/D/A.
or		
330a	Entering Position	Field 330a is used for Position = AT Specialist.
151a	Field Header	
149a	End of Message	

A.5.8.1 Message Content

The Instrument Approach Count Adjustment message contains the Source ID, the optional Flight ID, the optional Computer ID, the optional Site Specific Plan Identifier, the Airport Identifier, an optional Instrument Approach Count Action Indicator, Instrument Approach Count Adjustment Data (optional), the Entering Facility, and either the Entering Sector or the Entering Position.

A.5.8.2 Message Transmission Eligibility

An Instrument Approach Count Adjustment (AC) message is sent from ERAM to ATM IPOP when a valid Instrument Approach Count (IC) message is entered into ERAM except an IC message without Field 36 or 46.

A.5.9 Sign In/Sign Out Information (SY)

The Sign In/Sign Out Information (SY) message is sent to the ATM IPOP each time a sign in or sign out occurs, or when a reconstitution request is received.

A.5.9.1 Message Format

The data/fields that are required for the Sign In/Sign Out Information message are:

150a 00e 317a (318a) 319a 320a 321a 322a 323a [324a and/or 325a] 329a 326a 327a 328a 149a

Table A-XL shows the data required by the Sign In/Sign Out Information message.

Table A-XL. Sign In/Sign Out Information (SY)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source ID	
151a	Field Header	
317a	Controller Initials	LL(a)
151a	Field Header	
(318a)	Non-operational User Initials	LL(a)
151a	Field Header	
319a	Crew Number	d where d = 0-9
151a	Field Header	
320a	Area	d where d = 0-9
151a	Field Header	
321a	Message Type Indicator	L where L = I for Sign In message L = O for Sign Out message.
151a	Field Header	
322a	Role	L where L = O or T O = operational; T = training
151a	Field Header	
323a	Tracker Indicator	L where L = Y or N Y = Handoff Controller; N = Not Handoff Controller
151a	Field Header	

Table A-XL. Sign In/Sign Out Information (SY)

Field Ref. No.	Data Item	Notes
324a	Sign In Date and Time	dddddddddddd where dddddddddddd = yyyymmddhhmm yyyy = year mm = month and ranges from 01-12 dd = day of month and ranges from 01-31 hh = hour and ranges from 00-23 mm = minute and ranges from 00-59 (Either Sign In Date and Time or Sign Out Date and Time or both must be provided.)
and/or		
151a	Field Header	
325a	Sign Out Date and Time	dddddddddddd where dddddddddddd = yyyymmddhhmm yyyy = year mm = month and ranges from 01-12 dd = day of month and ranges from 01-31 hh = hour and ranges from 00-23 mm = minute and ranges from 00-59 (Either Sign In Date and Time or Sign Out Date and Time or both must be provided.)
151a	Field Header	
329a	Local UTC Offset	±dd where ±dd = ±hh where hh can range from 00 to 23 and represents the number of hours that local midnight occurs relative to UTC midnight.
151a	Field Header	

Table A-XL. Sign In/Sign Out Information (SY)

Field Ref. No.	Data Item	Notes
326a	Position	L where L = R or D or A or N R = R-position console D = D-position console A = A-position console N = Pseudo position
151a	Field Header	
327a	Sector Number	
151a	Field Header	
328a	Recording Reason	d = 0 (Sign In/Sign Out entered from a Sector Position), 1 (Sign In/Sign Out (less than two time fields) entered from an AT Specialist Position), 2 (Sign Out due to a resectorization), 3 (Forced Sign Out due to another Sign In), 4 (Automatically Signed Back In), 5 (Sign In/Sign Out due to a Sign In with two time fields from an AT Specialist Position).
151a	Field Header	
149a	End of Message	

A.5.9.2 Message Content

The Sign In/Sign Out Information message contains the source, controller initials, optional non-operational user initials, crew number, area, message type indicator, role, tracker indicator, sign in date and time or sign out date and time, local UTC offset, position, sector number and recording reason.

A.5.9.3 Message Transmission Eligibility

A Sign In/Sign Out Information (SY) message is sent from ERAM to ATM IPOP when the corresponding sign in/sign out command is entered, upon entry of a Resector (CS) message that causes an automatic Sign Out and upon Reconstitution of an ATM IPOP for each controller currently signed in to the system.

A.5.10 Unsuccessful Information Transmission (UI)

The Unsuccessful Information Transmission (UI) message is sent by ERAM when transmission of flight data to a remote facility is unsuccessful either due to a transmission error or because transmission of the flight data to the remote facility is inhibited. ERAM will send the UI message to the ATM IPOP when first or second order flight data messages are not sent to an adjacent NAS, ARTS, ATOP, or Non-U.S. Automated Facility, when flight strips are not successfully printed at a Tower or Approach Control, or when a Flight Plan Message is not sent to a Non-US Manual ARTCC.

A.5.10.1 Message Format

The format for the Unsuccessful Information Transmission message is:

150a 00e 02a (02d) 167a 16b 29d 149a

Table A-XLI shows the data required for the Unsuccessful Information Transmission message.

Table A-XLI. Unsuccessful Information Transmission Message (UI)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source	
151a	Field Header	
02a	Flight Identification	
151a	Field Header	
(02d)	Computer Identification	
151a	Field Header	
167a	Site Specific Plan Identifier	Field is Not in Host message
151a	Field Header	
16b	Output Routing	
151a	Field Header	
29d	FAV	
151a	Field Header	
149a	End of Message	

A.5.10.2 Message Content

The Unsuccessful Information Transmission message contains the source, flight ID, optional computer identification, Site Specific Plan Identifier, facility identifier, and FAV of the interfacility message that was unsuccessfully transmitted.

A.5.10.3 Message Transmission Eligibility

The Unsuccessful Information Transmission (UI) message is transmitted from ERAM to the ATM IPOP when transmission of flight data to a remote facility is unsuccessful. The UI message is sent when the transmission of flight data is unsuccessful due to a transmission error or because transmission of the flight data is inhibited. The remote facility may be an adjacent NAS, ATOP, ARTS, Non-US Manual ARTCC or adjacent Non-U.S. Automated Facility. If there is no coordination sector for an active flight plan or no departure sector for a proposed flight plan, ERAM will not transmit a UI message to the ATM IPOP. ERAM will transmit the UI message as part of system initialization of an ATM IPOP.

A.6 Display Status Data Message Class

There are two messages in this message class: Interim Altitude Status Information (HE) message and Hold Status Information (HO) message.

A.6.1 Interim Altitude Status Information (HE)

The Interim Altitude Status Information message provides interim altitude status information on all active aircraft to ATM IPOP during the initialization process.

A.6.1.1 Message Format

The message format for the Interim Altitude Status Information message is as follows:

150a 00e 02a 02d 167a 76b 149a

Table A-XLII shows the data required for the Interim Altitude Status Information message.

Table A-XLII. Interim Altitude Status Information Message (HE)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source ID	
151a	Field Header	
02a	Flight Identification	
151a	Field Header	
02d	Computer Identification	
151a	Field Header	
167a	Site Specific Plan Identifier	Field is Not in Host message

Table A-XLII. Interim Altitude Status Information Message (HE)

Field Ref. No.	Data Item	Notes
151a	Field Header	
76b	Interim Altitude	
151a	Field Header	
149a	End of Message	

A.6.1.2 Message Content

The Interim Altitude Status Information message includes source, flight identification, computer identification, Site Specific Plan Identifier and interim altitude information.

A.6.1.3 Message Transmission Eligibility

ERAM sends an Interim Altitude Status Information Message to an ATM IPOP whenever ERAM initializes the ATM IPOP and Interim Altitude information is still in effect. The Interim Altitude Status Information message is only sent as part of the initialization sequence.

A.6.2 Hold Status Information (HO)

The Hold Status Information message provides hold information (holding fix, and estimated fix departure time for definite-duration holds) on all active aircraft to an ATM IPOP during the initialization process.

A.6.2.1 Message Format

The message format for the Hold Status Information message is as follows:

150a 00e 02a 02d 167a 21a (21d) 149a

Table A-XLIII shows the data required for the Hold Status Information message.

Table A-XLIII. Hold Status Information Message (HO)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source ID	
151a	Field Header	
02a	Flight Identification	
151a	Field Header	

Table A-XLIII. Hold Status Information Message (HO)

Field Ref. No.	Data Item	Notes
02d	Computer Identification	
151a	Field Header	
167a	Site Specific Plan Identifier	Field is Not in Host message
151a	Field Header	
21a	Fix	
151a	Field Header	
(21d)	Time	UTC time
151a	Field Header	
149a	End of Message	

A.6.2.2 Message Content

The Hold Status Information message includes source, flight identification, computer identification, Site Specific Plan Identifier, fix, and (optionally) holding fix departure time information.

A.6.2.3 Message Transmission Eligibility

ERAM sends a Hold Status Information message to an ATM IPOP whenever ERAM initializes the ATM IPOP and ERAM Hold information is still in effect. The Hold Status Information message is only sent as part of the initialization sequence.

A.7 Communication Messages

The seven messages in this class are as follows: Interface Reply (IL), Interface Test (IT), Information Reject (IR), Information Accept (IA), ERAM Status (HS), Reconstitution Information (RN), and Health Check (CK).

A.7.1 Interface Reply (IL)

ERAM sends an IL message via an ATM IPOP to an ATM system in response to a valid Interface Test (IT) message sent from the ATM system.

A.7.1.1 Message Format

The format for the IL message is as follows:

150a 00e 25b 11c 149a

Table A-XLIV shows the data required for the Interface Reply message.

Table A-XLIV. Interface Reply Message (IL)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source	
151a	Field Header	
25b	Field Reference Number Referent Message Descriptor	dddd Where dddd = sequence number from source IT message
151a	Field Header	
11c	Remarks	Remarks code will always be a clear weather symbol followed by alphanumerics in the Remarks field of the corresponding (IT) message.
151a	Field Header	
149a	End of Message	

A.7.1.2 Message Content

An IL message sent to an ATM system contains source and information on the valid receipt of the IT sent from the ATM system to ERAM.

A.7.1.3 Message Transmission Eligibility

The IL message is transmitted from ERAM to an ATM system in response to the receipt of a valid IT message from the ATM system. The IT message is free from all detectable errors when it reaches ERAM if IL is to be sent to the ATM system.

A.7.2 Interface Test (IT)

The Interface Test (IT) message is used to test ERAM to ATM system interface. ERAM sends IT messages to the ATM client application system via an ATM IPOP. The ATM client application system responds with an Interface Reply (IL) message via the ATM IPOP.

A.7.2.1 Message Format

The format of the Interface Test (IT) message follows:

150a 00e 11c 149a

Table A-XLV shows the data required for the Interface Test message.

Table A-XLV. Interface Test Message (IT)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source	
151a	Field Header	
11c	Remarks	Remarks code will always be a clear weather symbol followed by a 2 character identifier of the entering position followed by a space and 4-20 alphanumeric characters.
151a	Field Header	
149a	End of Message	

A.7.2.2 Message Content

The IT message contains source, and output routing information that will allow testing of the interface between an ATM client application system and ERAM. The IT message also includes a remarks field.

A.7.2.3 Message Transmission Eligibility

An Interface Test (IT) message is transmitted when a Test (TR) message addressed to an ATM client application system is successfully processed by ERAM.

A.7.2.4 Processing After Acceptance

An acceptable IT message results in an Interface Reply (IL) message being returned to ERAM.

An unacceptable IT message results in an Information Reject (IR) message being returned to ERAM and an error message being routed to an adapted workstation.

A.7.3 Information Reject (IR)

ERAM sends an IR message via an ATM IPOP to notify originating ATM system of the rejection of a message received by ERAM that fails logic checking, which consists of syntactic and semantic validations performed on the message as described in Section A.7.3.4.

A.7.3.1 Message Format

The fields that comprise this message are:

150a 00e 152a (25b) (145a) 11b (11b) 149a

Table A-XLVI shows the data required for the IR message.

Table A-XLVI. Information Reject Message (IR)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source	
151a	Field Header	
152a	Block Transmission Header Number	
151a	Field Header	
(25b)	Referent Message Descriptor	
151a	Field Header	
(145a)	Field Reference Number / Format ID in Error	ddda Where ddda = fixed length of the field number in error, right justified with leading blanks.
151a	Field Header	
11b	Error Message Text	1 – 12 Alphanumerics (See A.7.3.4.7)
151a	Field Header	
(11b)	Error Message Text in Error	1 – 25 Alphanumerics (See A.7.3.4.7)
151a	Field Header	
149a	End of Message	

A.7.3.2 Message Content

The IR message contains the source and identifies the message that was unable to be processed.

A.7.3.3 Message Transmission Eligibility

ERAM transmits an IR message whenever a message is received that is unable to be processed from an ATM IPOP.

A.7.3.4 Software Acceptability (ERAM Messages) Format Checks

Format checks determine that the number of required and optional fields are present and are in the required sequence.

The computer program expects that the next field to be processed is one of a predetermined number of choices for that message type. Each of these choices has a specified format. If the field being processed has any format discrepancy, a rejection message is generated.

A.7.3.4.1 Source Identification (Field 00)

Field 00 contains time and sequence number. This field is required on messages from the ATM IPOP.

The time of Field 00 must fall in the range 000000-235959 where the first two digits represent hours and fall in the range of 00 to 23, the next two digits represent minutes and fall in the range of 00 to 59, and the last two digits represent seconds and fall in the range of 00 to 59. Otherwise, an IR message is returned to ATM IPOP.

The sequence number of Field 00 must fall in the range 0000-9999. Otherwise, an IR message is returned to ATM IPOP.

A.7.3.4.2 ATM Application Block Transmission Header (Field 152)

For ATM Application Interface Messages, Field 152 contains the Block Transmission Header (BTH). Field 152 precedes all message inputs from ATM applications. Field 152 contains four bytes of binary data. The first two bytes contain the message size including Field 152. The second two bytes contain the sequence number of the message. The sequence number is incremented each time a message is sent. Zero will be the first sequence number used. After sending a message with a sequence number of 65535, the next sequence number will be zero. If a message contains an invalid BTH an error message will be sent to the adapted workstation(s).

The CMS Block Transmission Protocol (CBTP) size must be at least 53 characters. Otherwise, an error message is output to an adapted workstation and an IR message is returned to the entering device.

The CMS Block Transmission Protocol (CBTP) size must be no more than 1182 characters. Otherwise, an error message is output to an adapted workstation and an IR message is returned to the entering device.

The difference between the CMS Block Transmission Protocol (CBTP) size and the input message size must be equal to 4. Otherwise, an error message is output to an adapted workstation and an IR message is returned to the entering device.

A.7.3.4.3 ATM Application Message Header (Field 150)

For ATM Application Interface Messages, Field 150 contains the message header. Field 150 follows the block transmission header (Field 152) for all message inputs from ATM applications. The format of Field 150 is:

8 alphanumeric characters	Destination Address
8 alphanumeric characters	Source Address
2 bytes binary data	Message Size including Field 150
2 alphanumeric characters	Message Type

If an input message contains erroneous data, an error message is output to an adapted workstation. Additionally, input messages other than Interface Reply (IL) message and Information Reject (IR) message result in an Information Reject (IR) message being returned to the entering device.

Input messages other than Interface Test (IT) message, Interface Reply (IL) message and Reconstitution Information (RN) message received from the ATM IPOP will be discarded without notification to the sending device or to any local device if ATM IPOP is not up.

The Message Type must be a valid message type. Otherwise, an error message is returned

The Source Address must be a valid source address. Otherwise, an error message is returned.

The Destination Address must be a valid destination. Otherwise, an error message is returned.

The input message size must be at least 49 characters. Otherwise, an error message is returned.

The input message size must be no more than 1178 characters. Otherwise, an error message is returned.

A.7.3.4.4 ATM Application Field Header (Field 151)

For ATM Application Interface Messages, Field 51 contains the field header input field. The format of Field 151 is:

- 2 bytes binary data — Field Size excluding Field 151
- 2 bytes binary data — Field Reference Number
- 1 alphanumeric — Field Format

The Field Header must be error free. Otherwise, an error message is output to an adapted workstation and an IR message is returned to the entering device.

The format of the data following the Field Header must be consistent with the format of the Field Reference Number specified in Field 151. Otherwise, an error message is output to an adapted workstation and an IR message is returned to the entering device.

A.7.3.4.5 Logic Checks

For a limited number of fields, normally expected ranges of values are adapted. If an input value is outside the expected range, an error message is generated.

The remaining program checks are various logic checks that increase the probability that entered data contain meaningful and unambiguous information.

A.7.3.4.6 General Legality Checks

General acceptance checks that apply to all messages are identified below:

A message field must be present when it is not optional.

Each field must have the proper format.

ATM Application Interface Message fields must be separated by a field header (Field 151). The field header will precede each field except the block transmission header (Field 152) and message header (Field 150).

If a message contains fewer than the required number of fields for a message type, a rejection message is returned.

A.7.3.4.7 IR Message Field 11b Reject Message Text from ERAM to ATM IPOP

Table A-XLVII shows the possible "error text message" for Field 11b received in the Information Reject (IR) Message from the ERAM. The first column of the table displays the "Field Reference Number" of the possible field in error. The second column is the possible message sent from ATM IPOP to ERAM that is possibly in error. The third column is a list of possible errors that can appear as text in Field 11b of the IR message.

Table A-XLVII. Field 11b Reject Message Text from ERAM to ATM IPOP

Field Reference Number	Interface Messages (ATM IPOP→ERAM)	Response Message text for IR Message Field 11b (ERAM→ATM IPOP)
00 Source Identification	CI GH ID IE IF IL IM IO IR IT IX PA RN	INVALID TIME - cofie FORMAT - cofie
02 Flight Identification	ID IE IM IO PA	BAD AID/CID - cofie INVALID AIRCRAFT - cofie FLT NOT ELIGIBLE - cofie FLIGHT ACTIVE - cofie TENTATIVE FP STORAGE - cofie
11 Remarks	GH IL IR IT	FORMAT - cofie
13 Location Identifier	IF IM IX	AIRPORT NOT ADAPTED - cofie NOT STORED - cofie DELAY DATA NOT STORED - cofie
16 Output Routing	GH	INCORRECT ROUTING FORMAT - cofie
25 Field Reference Number Referant Message Descriptor	IL IR	FORMAT - cofie
36 Action Indicator	IF	FORMAT - cofie
68 Fix/Time	IE IM PA	FORMAT - cofie
82 FAD Flow Calculation Times	IF	INVALID TIME - cofie NOT IN ASCENDING ORDER - cofie INVALID TIME INCREMENT - cofie THREE ZEROS REQUIRED - cofie
86 Metering Times	IM	INVALID TIME - cofie
87 Airport Configuration Name	IX	FORMAT - cofie

Table A-XLVII. Field 11b Reject Message Text from ERAM to ATM IPOP

Field Reference Number	Interface Messages (ATM IPOP→ERAM)	Response Message text for IR Message Field 11b (ERAM→ATM IPOP)
88 Metering Vertex Acceptance Rate/Arrival Delay	IX	FORMAT - cofie
91 Meter/outer fix Delay	IM	FORMAT - cofie
92 Est. Departure Clearance Time OR Cancellation Indicator	ID	INVALID TIME - cofie ALREADY IN EFFECT - cofie FORMAT - cofie NO EDCT STORED - cofie
137 Action Indicator	IM PA	FORMAT - cofie
143 FAV	IM	FAV NOT ADAPTED - cofie
144 Reconstitution state	RN	INVALID RECONSTITUTION STATE - cofie INVALID RECONSTITUTION ORDER - cofie
145 Field Reference Number / Format ID in Error	IR	FORMAT - cofie
146 Client System Address	CI	NOT ADAPTED - cofie
147 Client System Status and Communication Eligibility	CI	FORMAT - cofie
149 End of Message EOM)	CI GH ID IE IF IL IM IO IR IT IX PA RN	FORMAT - cofie

Table A-XLVII. Field 11b Reject Message Text from ERAM to ATM IPOP

Field Reference Number	Interface Messages (ATM IPOP→ERAM)	Response Message text for IR Message Field 11b (ERAM→ATM IPOP)
150 ATM Application Message Header	CI GH ID IE IF IL IM IO IR IT IX PA RN	INVALID SOURCE - cofie INVALID DESTINATION - cofie SIZE LESS THAN MIN SIZE GRTR THAN MAX INVALID MESSAGE TYPE - cofie ILLEGAL SOURCE - cofie FUNCTION TIED OFF
151 ATM Application Field Header	CI GH ID IE IF IL IM IO IR IT IX PA RN	INVALID Field HEADER - cofie FORMAT - cofie
152 ATM Application Block Transmission Header	IR	SIZE GRTR THAN MAX SIZE LESS THAN MIN ERRONEOUS BYTE COUNT
167 Site Specific Plan Identifier	ID IE IM IO PA	FORMAT - cofie
333 Source Sector Routing	IR	FORMAT - cofie INCORRECT ROUTING - cofie
343 Speed Advisory Flight Phase	PA	FORMAT - cofie
344 Speed Advisory Value	PA	FORMAT - cofie

A.7.4 Information Accept (IA)

ERAM, when required, sends an IA message to acknowledge receipt of a valid message. The destination address of an IA message should be set to the originating source address of the received message.

A.7.4.1 Message Format

The format of the IA message is as follows:

150a 00e 25b 149a

Table A-XLVIII shows the data required for the Information Accept message.

Table A-XLVIII. Information Accept Message (IA)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source	
151a	Field Header	
25b	Referent message descriptor	dddd Where: dddd = sequence number
151a	Field Header	
149a	End of Message	

A.7.4.2 Message Content

The IA message contains the source and message descriptor of a valid message received from ATM IPOPs.

A.7.4.3 Message Transmission Eligibility

The IA message is sent from ERAM when a valid message has been received from ATM IPOPs without transmission, format or logic errors.

A.7.5 ERAM Status Information (HS)

The ERAM Status Information message is sent to an ATM IPOP when an ERAM status change occurs.

A.7.5.1 Message Format

The format for the ERAM Status Information message is as follows:

150a 00e 140a 140b 140c 140d 140e 168a 169a 149a

Table A-XLIX shows the data required for the ERAM Status Information message.

Table A-XLIX. ERAM Status Information Message (HS)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source	
151a	Field Header	
140a	Status change indicator	3 characters LLa where: INA = inactive ON2 = operational using live inputs
151a	Field Header	
140b	Status indicator	3 characters LLL = PSN where: PSN = planned shutdown not active
151a	Field Header	
140c	Status change indicator	3 characters LLL where: SSW = channel switch SSO = PAS/SAS switch SSN= channel switch or PAS/SAS switch not in effect
151a	Field Header	
140d	Status change indicator	3 characters LLL where LLL = DOF for TMAD off = DON for TMAD on
151a	Field Header	
140e	Status indicator	2 characters LL where LL = ON for RVSM is on
151a	Field Header	
168a	System Type Identification	4 characters LLLL where LLLL = ERAM Field is not in Host message
151a	Field Header	
169a	CMS Version Number	4 alphanumeric characters Field is not in Host message
151a	Field Header	
149a	End of Message	

A.7.5.2 Message Content

The HS message contains the source, a status change indicator to identify the ERAM status change, system type identifier (ERAM), and CMS Version Number.

A.7.5.3 Message Transmission Eligibility

The HS message is sent as part of system initialization. The HS message is sent by ERAM to an ATM IPOP to indicate a change in ERAM status to include:

- TMAD On/Off
- Operational on channel in Active Mode
- Operational on channel in Test Mode
- Channel Switch
- PAS/SAS Switch

A.7.6 Reconstitution Information (RN)

The Reconstitution Information message is sent by ERAM when ERAM detects a need to reconstitute an ATM IPOP database (HRR), when ERAM is ready to begin sending reconstitution data (HRS) and when ERAM detects that reconstitution is complete (HRC).

A.7.6.1 Message Format

The format for the Reconstitution Information message is:

150a 00e 144a 149a

Table A-L shows the data required for the Reconstitution Information message.

Table A-L. Reconstitution Information Message (RN)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source	
151a	Field Header	

Table A-L. Reconstitution Information Message (RN)

Field Ref. No.	Data Item	Notes
144a	Reconstitution state	LLL Where: LLL = HRR for ERAM has detected need to reconstitute application database; LLL = HRS for ERAM is ready to send reconstitution data to application; LLL = HRC for ERAM has completed reconstitution
151a	Field Header	
149a	End of Message	

A.7.6.2 Message Content

The Reconstitution Information message contains the source and reconstitution state indicator.

A.7.6.3 Message Transmission Eligibility

The Reconstitution Information (RN) message is transmitted from ERAM during the initialization process of an ATM IPOP. The RN message is sent when the interface is enabled. The RN message is sent when IFPA PAS/SAS switch or channel switch takes place. The RN message is sent when ERAM has received an RN message from the ATM IPOP with a status indicator = ARR. ERAM sends an RN message when all of the reconstitution data has been sent.

A.7.7 Health Check (CK)

The Health Check (CK) message is sent by ERAM to notify the ATM IPOPs that the communication line between ERAM and the ATM IPOPs is operational.

A.7.7.1 Message Format

The format for the Health Check message is:

150a 00e 149a

Table A-LI shows the data required for the Health Check message.

Table A-LI. Health Check Message (CK)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source	
151a	Field Header	
149a	End of Message	

A.7.7.2 Message Content

The Health Check message contains the source field.

A.7.7.3 Message Transmission Eligibility

ERAM transmits a Health Check message every 6 seconds. The Health Check message is a one-way message from ERAM and does not require a response from an ATM IPOP.

Appendix B. ATM IPOP TO ERAM

This appendix defines each ATM IPOP to ERAM message, specifying the message format, message content, and transmission eligibility. The message format contains the reference numbers (such as 01, 02, 12) of fields that comprise the message; for each field, field elements (such as a, b, c) are also defined. When the field element is numeric, a period is used to separate the reference number and the field element (e.g., 13.5 represents reference number 13 field element 5). Optional fields are enclosed in parentheses (e.g., (02)); an "or" condition between fields or field elements is indicated by brackets (e.g., [34a or 34b]). Where fields are repeatable within a message, the field(s) that are repeatable are shown two times with three periods between them to indicate that the groups of fields are repeatable several times (e.g., 68c 68c ... (68c) shows that the Field 68c must appear in the message at least two times, but optionally can be repeated multiple times). The number of times that the field(s) are repeatable is provided in the Message Format section for each message. Refer to Appendix C for a detailed definition of the field elements that apply to each message.

Message Headers (Field 150a) are required at the beginning of every message. Field Headers (Field 151a) are required before each and every field; note that field headers are not shown in the message formats (because of the length of the messages), but are shown in the accompanying tables for each message. Field 151a uses a numerical representation to identify the associated message's field number. Since non-ICAO field numbers do not represent the same information as the corresponding ICAO field numbers (e.g., ERAM Field 08, Altitude vs. ICAO Field 08, Flight Rules) a method is needed to distinguish the two sets of fields. In order to differentiate between ERAM Field numbers and ICAO field numbers, all ICAO Field numbers identified in Field 151a are represented by adding 900 (decimal) to the ICAO Field numbers. In the previous example, ERAM Field 08 is represented in Field 151a as 08, whereas ICAO Field 08 is represented in Field 151a as 908.

Data fields (except Fields 167a, 170a, 173a, 316a, and 342a use the EBCDIC format (see Appendix D). Fields 167a, 170a, 173a, and 342a contain binary data. Message headers (150a) and Field headers (151a) contain both EBCDIC and binary data. Field 316a uses the ASCII format.

All messages to ERAM that include Flight Identification (Field 02) will require AID and either CID or SSPID. This will preclude flight identification duplication messages or amendments to the wrong flight or leg of a flight. Table B-I indicates which messages are sent to ERAM by which ATM Systems. ATM client applications send their messages via an ATM IPOP.

Table B-I. Message Matrix From ATM Systems to ERAM

Message Name	Message Type	HADDS	TMA	TFMS	DSP
Flight Plan Readout Request	IO	X	X		
Meter Reference Point List	IM		X		
Airport Configuration Information Header	IX		X		
Delete Aircraft	IE		X		
General Information	GH		X	X	
Flow Control Advisory Information	IF			X	

Table B-I. Message Matrix From ATM Systems to ERAM

Message Name	Message Type	HADDS	TMA	TFMS	DSP
Estimated Departure Clearance Time Information	ID			X	
Interface Reply	IL	X	X	X	
Interface Test	IT		X	X	
Information Reject	IR	X	X		
Client Status Information	CI	X			
Reconstitution Information	RN	X			

B.1 Flight Plan Readout Request (IO)

The IO message is sent to ERAM from an ATM IPOP to request missing flight plan or converted route data. When an ATM client application receives a Track data (TH) message for which it has no flight plan in its database, it can request the missing flight data from the ATM IPOP. If the ATM IPOP to which the ATM client is registered cannot supply the corresponding flight plan, it generates an IO message to ERAM.

B.1.1 Message Format

The fields which comprise the Flight Plan Readout Request (IO) message is as follows:

150a 00e 02a [02d or 167a] 149a

Table B-II shows the data required for the IO message.

Table B-II. Flight Plan Readout Request Message (IO)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source	
151a	Field Header	
02a	Flight Identification	
151a	Field Header	
02d	Computer Identification	
(or)		
167a	Site Specific Plan Identifier	

Table B-II. Flight Plan Readout Request Message (IO)

Field Ref. No.	Data Item	Notes
151a	Field Header	
149a	End of Message	

B.1.2 Message Content

The IO message contains the source, flight identification, computer identification or Site Specific Plan Identifier of the aircraft for which the ATM IPOP is requesting flight plan and/or converted route data.

B.1.3 Message Transmission Eligibility

The Flight Readout Request message is sent to ERAM by an ATM IPOP to supply flight plan data when a flight plan cannot be located in the ATM IPOP's database as requested by an ATM client application.

B.1.4 Processing After Acceptance

An acceptable IO message results in an Information Accept (IA) message, a Flight Plan Information (FH) message, and a Converted Route Information (HX) message being returned to the ATM IPOP with the Destination Address set to the Source Address of the IO message. In the case where the IO message is for a Tentative Flight, no HX message is returned and a Tentative Flight Plan Information (NP) message will be returned instead.

An unacceptable IO message results in an Information Reject (IR) message being returned to the ATM IPOP with the Destination Address set to the Source Address of the IO message and an error message being routed to an adapted workstation.

B.2 Meter Reference Point List (IM)

The Meter Reference Point List (IM) message is sent to ERAM from TMA via an ATM IPOP to provide metering information for the Meter Reference Point List.

B.2.1 Message Format

The fields which comprise the Meter Reference Point List message are:

> **150a 00e 13.5 68f 143b 02a [02d or 167a] 86b 91a (137a) (137b) 137c (137d) (137e) (137f (68g)) 149a**

Table B-III shows the data required for the IM message.

Table B-III. Meter Reference Point List Message (IM)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source	
151a	Field Header	
13.5	Location Identifier	Used to specify TMA airport alone or for an airport combination
151a	Field Header	
68f	MRP Name	MRP can be a CSP name or a non-CSP metering arc name.
151a	Field Header	
143b	FAV	
151a	Field Header	
02a	Flight Identification	
151a	Field Header	
02d	Computer Identification	
(or)		
167a	Site Specific Plan Identifier	
151a	Field Header	
86b	MRP Time Field	MRP Crossing Time
151a	Field Header	
91a	MRP Delay Time	MRP Delay Time
151a	Field Header	
(137a)	Action Indicator (Frozen)	a where: a = 1 or 0 1 = Turns on Frozen Flight Indicator 0 = Turns off Frozen Flight Indicator
151a	Field Header	
(137b)	Action Indicator (Suppress / Unsuppress)	a where: a = S or U Suppress or Unsuppress
151a	Field Header	

Table B-III. Meter Reference Point List Message (IM)

Field Ref. No.	Data Item	Notes
137c	Action Indicator (RPL / Inplace)	a where: a = R or I Resequence or Inplace
151a	Field Header	
(137d)	Action Indicator (Hold)	a where: a = H
151a	Field Header	
(137e)	Action Indicator (Heavy Jet)	a where: a = +
151a	Field Header	
(137f)	Action Indicator (MRP Type)	a = E or A or M, where: a = E – ERFMP (En Route Flow Management Point) CSP A – AFMP (Arrival Flow Management Point) CSP M –Non-CSP metering arc, used for display control purposes and/or proportioning delay to an associated CSP (ERFMP or AFMP).
151a	Field Header	
(68g)	CSP Name	CSP (ERFMP or AFMP) name – only present if 137f is a non-CSP metering arc, to indicate which CSP the non-CSP metering arc is associated with.
151a	Field Header	
149a	End of Message	

B.2.2 Message Content

The IM message contains the source, airport identifier, MRP name, FAV for the MRP, flight identification, computer identification or Site Specific Plan Identifier, metering time, meter delay time, and action indicators.

B.2.3 Message Transmission Eligibility

An IM message is transmitted for each aircraft in Center airspace, which is associated with a MRP. An IM message will be transmitted whenever calculated MRP crossing times or MRP delay times result in new displayable values.

B.2.4 Processing After Acceptance

An acceptable IM message results in an Information Accept (IA) message being returned to ATM IPOP with the Destination Address set to the Source Address of the IM message.

An unacceptable IM message results in an Information Reject (IR) message being returned to the ATM IPOP with the Destination Address set to the Source Address of the IM message and an error message being routed to an adapted workstation.

B.3 Proposed Speed Advisory (PA)

The PA message is used to send proposed speed advisories to ERAM.

B.3.1 Message Format

The fields which comprise the Proposed Speed Advisory message are:

150a 00e 02a [02d or 167a] 68g 137g (343a [344a or 344b]) (343a [344a or 344b]) 149a

Field 137g is defined as an Action Indictor, with possible values shown in Table B-IV below.

When 137g has a value of A, fields 343 and 344 will be included. A speed advisory will always have a cruise speed, but may not always have a descent speed.

150a 00e 02a [02d or 167a] 68g 137g 343a [344a or 344b] (343a [344a or 344b]) 149a

When 137g has a value of N, T or D, fields 343 and 344 will be absent:

150a 00e 02a [02d or 167a] 68g 137g 149a

Table B-IV shows the data required for the PA message.

Table B-IV. Proposed Speed Advisory (PA)

Field Ref No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source	
151a	Field Header	
02a	Flight Identification	
151a	Field Header	
02d	Computer Identification	
(or)		
167a	Site Specific Plan Identifier	

Table B-IV. Proposed Speed Advisory (PA)

Field Ref No.	Data Item	Notes
151a	Field Header	
68g	CSP Name	CSP (ERFMP or AFMP) name
151a	Field Header	
137g	Action Indicator (Speed Advisory Status)	a = N or T or A or D where: N – No Speed Advisory Available T – No Speed Advisory Required A – Speed Advisory Available D - Delete
151a	Field Header	
(343a)	Speed Advisory Flight Phase	a = C or D, where: C - Cruise D - Descent Only present if the supplying TBFM has been updated to support Ground-based Interval Management (GIM-S) and the Speed Advisory Status action indicator is “A”. If present, it must be accompanied with a Speed Advisory Value (field 344). There can be up to 2 pairs of fields 343 and 344, representing speed advisories for the cruise and descent phases. If only one pair of 343, 344 fields is present, it must be for the cruise phase. If 343, 344 fields are provided for both the cruise and descent phases, the order of the phases does not matter.
151a	Field Header	
(344a)	Speed Advisory Value - Mach	Speed expressed as Mach speed. Only present if the supplying TBFM has been updated to support Ground-based Interval Management (GIM-S) and the Speed Advisory Status action indicator is “A”. If present, must be accompanied with the Speed Advisory Flight Phase field 343a. When used in the PA message, the value represents a proposed speed advisory. Cruise speed can be specified as either Mach or CAS. Descent speed can only be specified as CAS.
(or)		

Table B-IV. Proposed Speed Advisory (PA)

Field Ref No.	Data Item	Notes
(344b)	Speed Advisory Value - CAS	Speed expressed as calibrated airspeed. Only present if the supplying TBFM has been updated to support Ground-based Interval Management (GIM-S) and the Speed Advisory Status action indicator is “A”. If present, must be accompanied with the Speed Advisory Flight Phase field 343a. When used in the PA message, the value represents a proposed speed advisory. Cruise speed can be specified as either Mach or CAS. Descent speed can only be specified as CAS.
151a	Field Header	
149a	End of Message	

B.3.2 Message Content

The PA message contains the source, flight identification, computer identification or Site Specific Plan Identifier, constraint satisfaction point (CSP) name, speed advisory status, and speed advisory information if available.

B.3.3 Message Transmission Eligibility

A PA message is transmitted by TBFM for an aircraft flying to a CSP to indicate whether a proposed speed advisory is needed and available. It is also transmitted when TBFM detects a change in the speed advisory status or value, or when a proposed speed advisory should be deleted because the aircraft has crossed the CSP or the metering for the CSP is turned off. Speed advisories are generated as an aid to controllers to facilitate the timely arrival of aircraft to their scheduled metering points.

B.3.4 Processing After Acceptance

An acceptable PA message, or a PA message received while the ERAM GIM-S function is tied off, results in an Information Accept (IA) message being returned to ATM IPOP with the Destination Address set to the Source Address of the PA message.

An unacceptable PA message results in an Information Reject (IR) message being returned to ATM IPOP with the Destination Address set to the Source Address of the PA message and an error message being routed to an adapted workstation.

B.4 Airport Configuration Information Header (IX)

The Airport Configuration Information Header message is sent to ERAM from TMA via an ATM IPOP to provide information on changes in airport runway configuration or arrival rate.

B.4.1 Message Format

The fields which comprise the Airport Configuration Information Header message is as follows:

150a 00e 13.5 87a 88a 149a

Table B-V shows the data required for the IX message.

Table B-V. Airport Configuration Information Header Message (IX)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source	
151a	Field Header	
13.5	Airport Identifier	Specifies TMA airport Format = aaa
151a	Field Header	
87a	Airport Configuration	
151a	Field Header	
88a	Vertex Arrival Rate	
151a	Field Header	
149a	End of Message	

B.4.2 Message Content

The IX message provides source and Meter Fix, Outer Fix, and Arc metering list header data for adapted airports. This information includes the airport identifier, configuration name and arrival rate.

B.4.3 Message Transmission Eligibility

A new IX message is received by ERAM from TMA via an ATM IPOP whenever either the airport configuration name or the arrival rate or both are changed.

B.4.4 Processing After Acceptance

An acceptable IX message results in an Information Accept (IA) message being returned to the ATM IPOP with the Destination Address set to the message Source Address of the IX message.

An unacceptable IX message results in an Information Reject (IR) message being returned to the ATM IPOP with the Destination Address set to the Source Address of the IX message and an error message being routed to an adapted workstation.

B.5 Delete Aircraft (IE)

The Delete Aircraft (IE) message is sent to ERAM from TMA via an ATM IPOP when an aircraft is deleted from the Meter Reference Point List.

B.5.1 Message Format

The fields which comprise the Delete Aircraft message are:

150a 00e 68f 02a [02d or 167a] 149a

Table B-VI shows the data required for the IE message.

Table B-VI. Delete Aircraft Message (IE)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source	
151a	Field Header	
68f	Fix (MRP name)	
151a	Field Header	
02a	Flight Identification	
151a	Field Header	
02d	Computer Identification	
(or)		
167a	Site Specific Plan Identifier	
151a	Field Header	
149a	End of Message	

B.5.2 Message Content

The IE message includes the source, MRP name, flight identification, computer identification or Site Specific Plan Identifier of the entry to be deleted from the MRP lists.

B.5.3 Message Transmission Eligibility

A new IE message will be sent to ERAM from TMA whenever an aircraft is to be deleted from the MRP list. Upon receipt of the IE message ERAM deletes the aircraft from the MRP list.

B.5.4 Processing After Acceptance

An acceptable IE message results in an Information Accept (IA) message being returned to the ATM IPOP with the Destination Address set to the Source Address of the IE message.

An unacceptable IE message results in an Information Reject (IR) message being returned to the ATM IPOP with the Destination Address set to the Source Address of the IE message and an error message being routed to an adapted workstation.

B.6 General Information (GH)

The General Information message is used to enter information desired for output at specified locations or positions.

B.6.1 Message Format

The General Information message contains the following fields:

150a 00e [16d and/or 16f] 11c 149a

Table B-VII shows the data required for the GH message.

Table B-VII. General Information (GH) Message

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source	
151a	Field Header	
16d	Output Routing	
(and/or)		
(151a)	Field Header	

Table B-VII. General Information (GH) Message

Field Ref. No.	Data Item	Notes
16f	Output Routing	aaaL(aaa) Flight Service Station Military Base Operations, Approach Control/Tower where (aaa) is optional printer name for Approach Control
151a	Field Header	
11c	Remarks	Remarks code will always be a clear weather symbol. The general information text will follow the clear weather symbol.
151a	Field Header	
149a	End of Message	

B.6.2 Message Content

The GH message contains the source, output routing field or destination(s) (broadcast, location or position) and the message (in the remarks field) which is used to relay general information to ERAM.

B.6.3 Message Transmission Eligibility

The GH message will be sent to ERAM when the General information message is manually entered into an application system. GH messages will not be generated by any automation system or application system. Upon receipt of a GH message ERAM routes and displays the information at the appropriate position.

B.6.4 Processing After Acceptance

An acceptable GH message results in an Information Accept (IA) message being returned to the ATM IPOP with the Destination Address set to the Source Address of the GH message.

An unacceptable GH message results in an Information Reject (IR) message being returned to the ATM IPOP with the Destination Address set to the Source Address of the GH message and an error message being routed to an adapted workstation.

B.7 Flow Control Advisory Information (IF)

The Flow Control Advisory Information (IF) message is sent to ERAM by the Traffic Flow Management System (TFMS) via an ATM IPOP to implement a ground delay program. The IF message activates FAD flow processing for a destination airport and results in the assignment of EDCTs for proposed flights and PDTs for active flights to the destination airport.

B.7.1 Message Format

The format of the Flow Control Advisory Information message is as follows:

150a 00e 13.3 36a or [82c (82d) 82b] 149a

Fields 36 and 82 of the IF message are mutually exclusive: the message includes either Field 36 to turn off the FAD flow processing or one Field 82, to activate the FAD flow processing.

Table B-VIII shows the data required for the IF message.

Table B-VIII. Flow Control Advisory Information Message (IF)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source ID	
151a	Field Header	
13.3	Location Identifier	
151a	Field Header	
36a	Action Indicator	LLL Where: LLL = OFF
(or)		
82c	Flow Control Calculation Start Time	dddd where dddd=start time (HHMM) The first two digits must not exceed 23. Field 82c must be in increments of 15 minutes starting with 00, 15, 30, or 45.
151a	Field Header	
(82d)	Flow Control Calculation End Time	dddd where dddd = optional end time (HHMM) The first two digits must not exceed 23. The time in Field 82d, if entered, must be higher than the time in Field 82c. Field 82d, if entered, must be in increments of 15 minutes starting with 14, 29, 44, or 59.
151a	Field Header	
82b	Flow control delay	

Table B-VIII. Flow Control Advisory Information Message (IF)

Field Ref. No.	Data Item	Notes
151a	Field Header	
149a	End of Message	

B.7.2 Message Content

The IF message contains the source and airport identifier and either the applicable delay time period(s) and delay value or an action indicator to turn off the delay program.

B.7.3 Message Transmission Eligibility

The IF message is sent by the TFMS via an ATM IPOP to implement or turn off a FAD flow delay program for a designated destination airport. EDCTs are provided on center departure and Flight Data Entry Printout (FDEP) proposal strips, and PDTs are provided on center en route strips. These EDCTs and PDTs will be calculated for all flight plans destined to a specific airport, or PDTs may be received in Field 07 of a flight plan or amendment message from an adjacent ARTCC. Upon receipt of an IF message ERAM activates FAD flow processing for the destination airport and result in the assignment of EDCTs for proposed flights and PDTs for active flights to the destination airport.

B.7.4 Processing After Acceptance

An acceptable IF message results in an Information Accept (IA) message being returned to the ATM IPOP with Destination Address set to the Source Address of the IF message.

An unacceptable IF message results in an Information Reject (IR) message being returned to the ATM IPOP with the Destination Address set to the Source Address of the IF message and an error message being routed to an adapted workstation.

B.8 Estimated Departure Clearance Time Information (ID)

The ID message will be sent to ERAM by the Traffic Flow Management System (TFMS) via an ATM IPOP to assign an estimated departure clearance time (EDCT) to a proposed flight going to a destination airport requiring delays; the EDCT assigns a ground delay to a specific aircraft or cancels the EDCT delay prior to departure.

B.8.1 Message Format

The message format for the Estimated Departure Clearance Time Information message is as follows:

150a 00e 02a [02d or 167a] [92a or 92b] 149a

Table B-IX shows the data required for the ID message.

Table B-IX. Estimated Departure Clearance Time Information Message (ID)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source	
151a	Field Header	
02a	Flight Identification	
151a	Field Header	
02d	Computer Identification	
(or)		
167a	Site Specific Plan Identifier	
151a	Field Header	
92a	EDCT	dddd = assigned departure time where dddd=start time (HHMM). The first two digits must not exceed 23. The last two digits must not exceed 59.
Or		
92b	Cancellation Indicator	one character L where L = C for cancellation Field is not in Host message
151a	Field Header	
149a	End of Message	

B.8.2 Message Content

The ID message contains the source, flight identification, computer identification or Site Specific Plan Identifier and either the estimated departure clearance time (EDCT) assigned or an indication of cancellation of the existing EDCT.

B.8.3 Message Transmission Eligibility

The ID message will be sent by the TFMS to request delay of a specific proposed aircraft departure when a ground delay program is in effect for a controlled airport and the specific aircraft will be arriving during the controlled time interval. Upon receipt of a successfully processed ID message, ERAM sends an ET message to ATM IPOP.

B.8.4 Processing After Acceptance

An acceptable ID message results in an Information Accept (IA) message being sent to the ATM IPOP with the Destination Address set to the Source Address of the ID message. In addition, ERAM should generate an Expected Departure Time Information (ET) message with information it received from the accepted ID message and send it to the ATM IPOP for general distribution.

An unacceptable ID message results in an Information Reject (IR) message being returned to the ATM IPOP with the Destination Address set to the Source Address of the ID message and an error message being routed to an adapted workstation.

B.9 Interface Reply (IL)

The IL message will be sent to ERAM to acknowledge the receipt of a valid Interface Test (IT) message from ERAM.

B.9.1 Message Format

The fields which comprise the Interface Reply message are:

150a 00e 25b 11c 149a

Table B-X shows the data required for the IL message.

Table B-X. Interface Reply Message (IL)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source ID	
151a	Field Header	
25b	Referent Message Source	dddd Where: dddd = sequence number
151a	Field Header	
11c	Remarks	Remarks code will always be a clear weather symbol followed by alphanumerics in the Remarks field of the corresponding (IT) message.
151a	Field Header	
149a	End of Message	

B.9.2 Message Content

The IL message contains the message source and the remarks from the interface test message received by the ATM System. The IL message is only sent when the message is error free.

B.9.3 Message Transmission Eligibility

The Interface Reply (IL) message will be sent from an ATM system to ERAM via an ATM IPOP when the application receives a valid Interface Test (IT) message from ERAM. Upon receipt of the IL message ERAM translates the IL message to a DT message.

B.9.4 Processing After Acceptance

An acceptable IL message results in the message being routed to the position that entered the Test command.

An unacceptable IL message results in an error message being routed to an adapted workstation.

B.10 Interface Test (IT)

The IT message is used to test the interface. An operator will send the IT message to ERAM over this interface.

B.10.1 Message Format

The fields which comprise the Interface Test message are:

150a 00e 11c 149a

Table B-XI shows the data required for the IT message.

Table B-XI. Interface Test message (IT)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source ID	
151a	Field Header	
11c	Remarks	Remarks code will always be a clear weather symbol followed by 6-22 additional EBCDIC characters.

Table B-XI. Interface Test message (IT)

Field Ref. No.	Data Item	Notes
151a	Field Header	
149a	End of Message	

B.10.2 Message Content

The IT message contains the source and ERAM identifier in the output routing field and remarks.

B.10.3 Message Transmission Eligibility

An IT message will be transmitted to ERAM only when an operator enters a valid IT message from a valid ATM IPOP source. ERAM responds with an Interface Reply (IL) message.

B.10.4 Processing After Acceptance

An acceptable IT message results in an Interface Reply (IL) message being returned to the ATM IPOP with the Destination Address set to the Source Address of the IT message.

An unacceptable IT message results in an Information Reject (IR) message being returned to the ATM IPOP with the Destination Address set to the Source Address of the IT message and an error message being routed to an adapted workstation.

B.11 Information Reject (IR)

The IR message will be sent from an ATM system to notify ERAM of the rejection of a message received by the ATM system that fails logic checking.

B.11.1 Message Format

The fields which comprise the Information Reject message are:

150a 00e 152a (25b) ([134a or 333a]) (145a) 11b (11b) 149a

Table B-XII shows the data required for the IR message.

Table B-XII. Information Reject Message (IR)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source	
151a	Field Header	
152a	Block Transmission Header Number	
151a	Field Header	
(25b)	Referent Message Descriptor	
151a	Field Header	
(134a)	Source Sector Routing	Ldd, Field 134a and Field 333a cannot both be present in an IR message.
(333a)	Source Specialist Routing	LLd
151a	Field Header	
(145a)	Field Reference Number / Format ID in Error	ddda Where ddda = fixed length of the field number in error, right justified with leading blanks.
151a	Field Header	
11b	Error Message Text	1-44 Alphanumerics (See B.10.5)
151a	Field Header	
(11b)	Error Message Text in Error	1–44 Alphanumerics (See B.10.5)
151a	Field Header	
149a	End of Message	

B.11.2 Message Content

The IR message contains the error message text and does one or more of the following: Provide the Block Transmission Header Number, Referent Message Descriptor, Source Sector or Specialist Routing, Field Reference Number in error, and message text in error.

B.11.3 Message Transmission Eligibility

An ATM system will transmit an IR message whenever a message is received that is unable to be processed by ATM IPOP. An IR message received by ERAM results in a reject message being routed to an adaptable position.

B.11.4 Processing After Acceptance

An acceptable IR message results in an error message being routed to an adapted workstation or a rejection being routed to the entering position requesting the Manual Swap Request (MW) message, Resequencing Request (SQ) message, Traffic Count Adjustment (TC) message, or Instrument Approach Adjustment (IC) message.

An unacceptable IR message results in an error message being routed to an adapted workstation.

B.11.5 IR Message Field 11b Reject Message Text from ATM IPOP to ERAM

Table B-XIII shows the possible “error text message” for Field 11b received in the Information Reject (IR) Message from the ATM IPOP. The first column of the table displays the “Field Reference Number” of the possible field in error. The second column is the possible message sent from ERAM to ATM IPOP that is possibly in error. The third column is a list of possible errors that can appear as text in Field 11b of the IR message.

Table B-XIII. Field 11b Reject Message Text from ATM IPOP to ERAM

Field Reference Number	Interface Messages (ERAM→ATM IPOP)	Response Message Text for IR Message Field 11b (ATM IPOP → ERAM)
00 Source Identification	AC AH AK BA CK CL DH ET FH GH HA HB HC HD HE HF HH HO HP HR HS HT HU HV HX HZ IA IH IL IR IT LH NI NL NP NU OH PH PT RE RH RN SH SU SY TH UB UG UI	BAD MSG SEQN - cofie BAD FLD DATA - cofie BAD FLD SIZ - cofie BAD FLD FMT - cofie PARSE ERROR - cofie
02 Flight Identification	AC AH AK BA CL DH ET FH HB HC HD HE HF HH HO HP HT HU HV HX IH LH NI NL NP NU OH PH PT RE RH TH UI	AID/CID INV - cofie BAD ACID ID - cofie BAD CID DATA - cofie BAD CID VAL - cofie INVALID ACID - cofie INVALID DPT - cofie INVALID DST - cofie NO IO REPLY - cofie UNKNOWN CID - cofie
03 Aircraft Data	AH DH FH HU NP NU	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
04 Beacon Code	AH BA FH HU NP NU RE	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
05 Speed	AH FH HU NP NU TH	BAD G SPEED - cofie BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
06 Coordination Fix	AH FH HP HU	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie

Table B-XIII. Field 11b Reject Message Text from ATM IPOP to ERAM

Field Reference Number	Interface Messages (ERAM→ATM IPOP)	Response Message Text for IR Message Field 11b (ATM IPOP → ERAM)
07 Coordination Time	AH DH FH HP HU	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
08 Assigned Altitude	AH FH HU NP NU TH	BAD ALT LEN - cofie BAD ALT FMT - cofie BAD ALT VAL - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
09 Requested Altitude (proposed)	AH FH	BAD ALT LEN - cofie BAD ALT FMT - cofie BAD ALT VAL - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
10 Route	AH FH HU	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
11 Remarks	AH FH GH HU IL IR IT	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
13 Location Identifier	AC HA	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
16 Output Routing	GH HT UI	BAD DST ADDR BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie

Table B-XIII. Field 11b Reject Message Text from ATM IPOP to ERAM

Field Reference Number	Interface Messages (ERAM→ATM IPOP)	Response Message Text for IR Message Field 11b (ATM IPOP → ERAM)
18 Progress Report Data	PH	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR – cofie
21 Hold Data	HH HO	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
23 Track Position	TH	BAD TRACK P - cofie BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
25 Field Reference Number Referent Message Descriptor	IA IL IR	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
26 Departure Point	BA CL DH HV IH RE	INVALID DPT - cofie BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
27 Destination	BA CL DH HV IH RE	INVALID DST - cofie BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR – cofie
28 Estimated Time of Arrival (ETA) or Arrival Time	DH HV	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie

Table B-XIII. Field 11b Reject Message Text from ATM IPOP to ERAM

Field Reference Number	Interface Messages (ERAM→ATM IPOP)	Response Message Text for IR Message Field 11b (ATM IPOP → ERAM)
29 Airspace Assignment	SH UI	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
34 Altimeter Data	HA	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR – cofie
35 Altimeter Data Entrance Time	HA	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
36 Action Indicator	AC HR	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR – cofie
47 Beacon Code Utilization Count	UB	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR – cofie
50 Geographic Beacon Code	UG	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
54 Reported Altitude	TH NP NU	BAD ALT LEN - cofie BAD ALT FMT - cofie BAD ALT VAL - cofie BAD FLD DATA - cofie PARSE ERROR – cofie
68 Fix/Time	FH AH HU HX	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie

Table B-XIII. Field 11b Reject Message Text from ATM IPOP to ERAM

Field Reference Number	Interface Messages (ERAM→ATM IPOP)	Response Message Text for IR Message Field 11b (ATM IPOP → ERAM)
76 Interim Altitude	HE LH NP NU	BAD ALT LEN - cofie BAD ALT FMT - cofie BAD ALT VAL - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
92 Est. Departure Clearance Time	ET	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
134 Source Sector Routing	HB HC HT	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR – cofie
135 Route Status Elements	HR	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR – cofie
137 Action Indicator	HD	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR – cofie
138 Controlling Facility/Sector	OH PT TH	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR – cofie
139 Receiving Facility/Sector	OH PT TH	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
140 Status Change Indicator	HS	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR – cofie

Table B-XIII. Field 11b Reject Message Text from ATM IPOP to ERAM

Field Reference Number	Interface Messages (ERAM→ATM IPOP)	Response Message Text for IR Message Field 11b (ATM IPOP → ERAM)
141 Adapted Route Indicator	AH FH HU	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR – cofie
142 Preferential Route Alphanumerics	AH FH HU	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
143 FAV	AH FH HD HU	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR – cofie
144 Reconstitution state	RN	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR – cofie
145 Field Reference Number / Format ID in Error	IR	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR – cofie
146 Client System Address	CI	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR – cofie
147 Client System Status and Communication Eligibility	CI	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
149 End of Message (EOM)	AC AH AK BA CK CL DH ET FH GH HA HB HC HD HE HF HH HO HP HR HS HT HU HV HX HZ IA IH IL IR IT LH NI NL NP NU OH PH PT RE RH RN SH SU SY TH UB UG UI	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR – cofie

Table B-XIII. Field 11b Reject Message Text from ATM IPOP to ERAM

Field Reference Number	Interface Messages (ERAM→ATM IPOP)	Response Message Text for IR Message Field 11b (ATM IPOP → ERAM)
150 ATM Application Message Header	AC AH AK BA CK CL DH ET FH GH HA HB HC HD HE HF HH HO HP HR HS HT HU HV HX HZ IA IH IL IR IT LH NI NL NP NU OH PH PT RE RH RN SH SU SY TH UB UG UI	BAD MSG LEN BAD MSG SIZ BAD MSG TYPE - cofie BAD DST ADDR - cofie BAD SRC ADDR - cofie
151 ATM Application Field Header	AC AH AK BA CK CL DH ET FH GH HA HB HC HD HE HF HH HO HP HR HS HT HU HV HX HZ IA IH IL IR IT LH NI NL NP NU OH PH PT RE RH RN SH SU SY TH UB UG UI	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
152 ATM Application Block Transmission Header	IR	BAD MSG LEN BAD MSG SIZ BAD BLK SIZ
153 Coast Indicator	TH	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
154 ARTS TZ Data Items	HZ	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie BAD HOST ID - cofie BAD ARTS ID - cofie BAD TRACK P - cofie BAD 154A LEN - cofie BAD ACID ID - cofie BAD CID VAL - cofie BAD G SPEED - cofie BAD ALT LEN - cofie BAD ALT FMT - cofie BAD ALT VAL - cofie AID/CID INV - cofie

Table B-XIII. Field 11b Reject Message Text from ATM IPOP to ERAM

Field Reference Number	Interface Messages (ERAM→ATM IPOP)	Response Message Text for IR Message Field 11b (ATM IPOP → ERAM)
155 FDB Fourth Line Heading, Speed and Free Form Text	HF	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
161 SAA ID	SU	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
162 SAA Activation Type	SU	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
163 SAA Schedule Type	SU	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
164 SAA Scheduled Activation/Deactivation Date & Time	SU	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
165 SAA Altitude Range	SU	BAD ALT LEN - cofie BAD ALT FMT - cofie BAD ALT VAL - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
166 SAA Schedule ID	SU	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
167 Site Specific Plan Identifier	AC AH AK BA CL DH ET FH HB HC HD HE HF HH HO HP HT HU HV HX IH LH NI NL NP NU OH PH PT RE RH TH UI	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie

Table B-XIII. Field 11b Reject Message Text from ATM IPOP to ERAM

Field Reference Number	Interface Messages (ERAM→ATM IPOP)	Response Message Text for IR Message Field 11b (ATM IPOP → ERAM)
168 System Type Identification	HS	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
169 CMS Version Number	HS	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
170 Time of Track Data	TH	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
171 Target Position	TH	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
172 Target Altitude	TH	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
173 Time of Target Data	TH	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
174 Target ADS-B Position	TH	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
175 Target ADS-B Altitude	TH	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie

Table B-XIII. Field 11b Reject Message Text from ATM IPOP to ERAM

Field Reference Number	Interface Messages (ERAM→ATM IPOP)	Response Message Text for IR Message Field 11b (ATM IPOP → ERAM)
176 Target ADS-B Velocity	TH	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
177 Target ADS-B Time	TH	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
316 Global Unique Flight ID	BA FH NP RE	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
317 Controller Initials	SY	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
318 Non-operational User Initials	SY	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
319 Crew Number	SY	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
320 Area	SY	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
321 Message Type Indicator (Sign In / Sign Out message)	SY	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie

Table B-XIII. Field 11b Reject Message Text from ATM IPOP to ERAM

Field Reference Number	Interface Messages (ERAM→ATM IPOP)	Response Message Text for IR Message Field 11b (ATM IPOP → ERAM)
322 Role	SY	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
323 Tracker Indicator	SY	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
324 Sign In Date and Time	SY	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
325 Sign Out Date and Time	SY	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
326 Position	SY	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
327 Sector Number	AC AK SY	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
328 Recording Reason	SY	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
329 Local UTC Offset	SY	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie

Table B-XIII. Field 11b Reject Message Text from ATM IPOP to ERAM

Field Reference Number	Interface Messages (ERAM→ATM IPOP)	Response Message Text for IR Message Field 11b (ATM IPOP → ERAM)
330 Entering Position	AC AK	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
331 Position	AC AK	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
332 Entering Facility	AC AK	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
333 Source Sector Routing	IR	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
334 Accepting Facility	OH	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
335 Accepting Sector	OH	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
336 Handoff Event Indicator	OH	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
337 Traffic Count Adjustment Data	AK	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie

Table B-XIII. Field 11b Reject Message Text from ATM IPOP to ERAM

Field Reference Number	Interface Messages (ERAM→ATM IPOP)	Response Message Text for IR Message Field 11b (ATM IPOP → ERAM)
338 Instrument Approach Count Adjustment Data	AC	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
339 Tentative Flight Plan Merge Status	NL	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
341 Merged Flight Plan ID	NL	BAD CID VAL - cofie BAD CID DATA - cofie UNKNOWN CID - cofie BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
342 Merged Flight Plan ID	NL	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
343 Speed Advisory Flight Phase	FH AH HU	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
344 Speed Advisory Value	FH AH HU	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
908 ICAO Flight Rules and Type of Flight	AH FH HU	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie

Table B-XIII. Field 11b Reject Message Text from ATM IPOP to ERAM

Field Reference Number	Interface Messages (ERAM→ATM IPOP)	Response Message Text for IR Message Field 11b (ATM IPOP → ERAM)
909 ICAO Number, Type of A/C and Special A/C Indicator (Wake Turbulence Cat.)	AH FH HU	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
910 ICAO Equipment	AH FH HU	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
916 ICAO Arrival Point, Total Elapsed Time, Alt Arrival Points	AH FH HU	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
918 ICAO Other Information	AH FH HU	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie
999 ICAO Adapted Field 918 Indicators (CMS Output Only)	AH FH HU	BAD FLD SIZ - cofie BAD FLD FMT - cofie BAD FLD DATA - cofie PARSE ERROR - cofie

B.12 Client Status Information (CI)

The CI message is generated by an ATM IPOP when a status change occurs to an ATM client application that is eligible to generate ERAM input messages (i.e., two-way ATM client applications).

B.12.1 Message Format

The fields, which comprise the Client Status Information message, are:

150a 00e 146a 147a 149a

Table B-XIV shows the data required for the (CI) message.

Table B-XIV. Client Status Information Message (CI)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source	
151a	Field Header	
146a	Client System Address	Source System Identifier: aaaaaaaa (where first four bytes identify the application and last four bytes identify the node)
151a	Field Header	
147a	Client System Status and Communication Eligibility	LL where first L = C (Connected) or D(Disconnected) second L = O (One way communication) or T(Two way communications)
151a	Field Header	
149a	End of message	

B.12.2 Message Content

The Client Status Information message contains the source, ATM client system address, which uniquely identifies an ATM client application, and its status change as detected by an ATM IPOP (connected or disconnected), and communications eligibility (one-way or two-way).

B.12.3 Message Transmission Eligibility

The CI message will be sent to ERAM from an ATM IPOP when a status change occurs to an ATM client application that is able to generate ERAM input messages (i.e., two-way ATM client applications). An acceptable CI message received by ERAM (includes ERAM checking that the client that sent the CI is a valid two way client) results in a client status message being sent to an adapted position. If a CI message is received from ATM IPOP with a Field 147a of D (disconnected) for the first character or a Field 147a of O (one-way communications) for the second character and the Client System Address references a two-way ATM IPOP client that is displaying MRP Lists, then ERAM deletes all MRP Lists after an adaptable time period.

B.12.4 Processing After Acceptance

An acceptable CI message results in an Information Accept (IA) message being returned to the ATM IPOP with the Destination Address set to the Source Address of the CI message.

An unacceptable CI message results in an Information Reject (IR) message being returned to the ATM IPOP with the Destination Address set to the Source Address of the CI message and an error message being routed to an adapted workstation.

B.13 Reconstitution Information (RN)

The Reconstitution Information message will be sent to ERAM from an ATM IPOP to either request a reconstitution of database from ERAM or signal that it is ready to receive reconstitution data. Upon receipt, ERAM will either respond with another RN indicating it is ready to send reconstitution data or send to the ATM IPOP the set of messages containing all ERAM data normally received by the ATM IPOP.

B.13.1 Message Format

The fields which comprise the Reconstitution Information message are:

150a 00e 144a 149a

Table B-XV shows the format for the RN message.

Table B-XV. Reconstitution Information Message (RN)

Field Ref. No.	Data Item	Notes
150a	Message Header	
151a	Field Header	
00e	Source	
151a	Field Header	

Table B-XV. Reconstitution Information Message (RN)

Field Ref. No.	Data Item	Notes
144a	Reconstitution state	LLL Where: LLL = ARR for application requests reconstitution of database; LLL = ARD for application is ready to receive reconstitution data from ERAM
151a	Field Header	
149a	End of Message	

B.13.2 Message Content

The Reconstitution Information message contains the source identification and reconstitution state fields.

B.13.3 Message Transmission Eligibility

A Reconstitution Information message will be sent from an ATM IPOP to request a system reconstitution after completion of an IPOP system restart, or after an RN message (with reconstitution state = HRR) has been received from ERAM. An RN message will also be sent from an ATM IPOP after receiving an RN message (with reconstitution state = HRS) from ERAM when the ATM IPOP is ready to receive reconstitution data from ERAM. Upon receipt, ERAM either responds with another RN indicating it is ready to send reconstitution data or sends to the ATM IPOP the set of messages as defined in Sections 3.2.1.3.2 and 3.2.1.3.3.

B.13.4 Processing After Acceptance

An acceptable RN message results in an Information Accept (IA) message being returned to the ATM IPOP with the Destination Address set to the Source Address of the RN message.

An unacceptable RN message results in an Information Reject (IR) message being returned to the ATM IPOP with the Destination Address set to the Source Address of the RN message and an error message being routed to an adapted workstation.

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Appendix C. Common Appendix Data

This section contains three tables to be used generically which describe various details of messages and message fields for this ICD and the NADIN (NAS-IC-82424301), FDIO (NAS-IC-82018242-01), Serial (NAS-IC-82328234), and DSP (NAS-IC-82422409-01) ICDs.

Table C-I provides a list of all messages used on the external interfaces, which interfaces use the messages and in which direction the messages are sent. Arranged alphabetically by message type, each row details the name of the message, the message ID (if any), the direction in which the message is sent, and the device/interfaces which use the message (e.g., FDIO).

Table C-II provides a list of all message fields used on the external interfaces, which interfaces use the field and the messages which use the specified field. Arranged numerically by field number, each row details the field number, the name of the field and a list of messages which use the specified field (arranged by device/interface).

Table C-III (referred to as the Common Appendix) provides a list of all message fields used in the external interfaces along with comprehensive formatting and usage information. Arranged numerically by field number, each row provides detailed information regarding the defined field elements for each field, the format(s) for each field element, composition, a description of message use, examples and the length of each field.

C.1 List of Message

Table C-I. List of Messages

Message Name	Message ID	ATM IPOP	FDIO	Serial ARTS	Serial ATOP	NADIN Airspace Users	NADIN Non-US Facilities	DSP
Logic Check Override	/OK		FDIO→ERAM Only allowed from San Juan Enroute Sector					
Instrument Approach Count Adjustment	AC	ERAM→IPOP						
Accept	ACCEPT		ERAM→FDIO					
Acknowledge	ACK					ERAM→NADIN	ERAM→NADIN	
Flight Amendment Information	AH	ERAM→IPOP						
Traffic Count Adjustment	AK	ERAM→IPOP						
Amendment	AM		FDIO→ERAM	ERAM→ARTS	ERAM←→ATOP	NADIN→ERAM	NADIN→ERAM	DSP→ERAM
Altimeter Request	AR							DSP→ERAM
Altimeter Setting	AS		FDIO→ERAM					DSP→ERAM
Beacon Code Reassignment Information	BA	ERAM→IPOP						
Beacon Code Utilization Report Request	BU							DSP→ERAM
Change (ICAO)	CHG					NADIN→ERAM		

Table C-I. List of Messages

Message Name	Message ID	ATM IPOP	FDIO	Serial ARTS	Serial ATOP	NADIN Airspace Users	NADIN Non-US Facilities	DSP
Client Status Information	CI	IPOP→ERAM						
Health Check	CK	ERAM→IPOP						
Cancellation Information	CL	ERAM→IPOP						
Cancellation (ICAO)	CNL					NADIN→ERAM		
Resector	CS		FDIO→ERAM Only allowed from San Juan Enroute Sector					
Remove Strip (to ARTS III)	CX			ERAM→ARTS				
Message Cancellation Group	CXX		FDIO→ERAM					
Message Accepted	DA			ERAM←→ARTS	ERAM←→ATOP			
Departure (ICAO)	DEP					NADIN→ERAM		
Departure Information	DH	ERAM→IPOP						
Delay (ICAO)	DLA					NADIN→ERAM		
Departure	DM		FDIO→ERAM	ARTS → ERAM				DSP→ERAM
Discrete Code Request	DQ		FDIO→ERAM Only allowed from San Juan Enroute Sector					

Table C-I. List of Messages

Message Name	Message ID	ATM IPOP	FDIO	Serial ARTS	Serial ATOP	NADIN Airspace Users	NADIN Non-US Facilities	DSP
Message Rejected	DR			ERAM←→ARTS	ERAM←→ATOP			
Data Test	DT			ERAM←→ARTS	ERAM←→ATOP			
Message Retransmit	DX			ERAM←→ARTS	ERAM←→ATOP			
Expected Departure Time Information	ET	ERAM→IPOP						
Flight Plan Information	FH	ERAM→IPOP						
Flight Plan	FP		FDIO→ERAM	ERAM←→ARTS	ERAM←→ATOP	NADIN→ERAM	NADIN→ERAM	DSP→ERAM
Flight Plan format	FP-ICM						ERAM→NADIN	
Filed Flight Plan (ICAO)	FPL					NADIN→ERAM		
Flight Plan Readout Request	FR		FDIO→ERAM					DSP→ERAM
Flight Strip format	FSP		ERAM→FDIO					
General Information	GH	ERAM←→IPOP						
General Information	GI		FDIO←→ERAM		ERAM←→ATOP	ERAM→NADIN	ERAM→NADIN	
Altimeter Setting Information	HA	ERAM→IPOP						
Manual Swap Information	HB	ERAM→IPOP						

Table C-I. List of Messages

Message Name	Message ID	ATM IPOP	FDIO	Serial ARTS	Serial ATOP	NADIN Airspace Users	NADIN Non-US Facilities	DSP
Resequence Information	HC	ERAM→IPOP						
Metering List Display Suppress Information	HD	ERAM→IPOP						
Interim Altitude Status Information	HE	ERAM→IPOP						
FDB Fourth Line Information	HF	ERAM→IPOP						
Hold Information	HH	ERAM→IPOP						
Hold	HM		FDIO→ERAM		ERAM←→ATOP			
Hold Status Information	HO	ERAM→IPOP						
Position Update Information	HP	ERAM→IPOP						
Route Status Information	HR	ERAM→IPOP						
ERAM Status Information	HS	ERAM→IPOP						
Point Out Information	HT	ERAM→IPOP						
Flight Plan Update Information	HU	ERAM→IPOP						
Flight Arrival Information	HV	ERAM→IPOP						

Table C-I. List of Messages

Message Name	Message ID	ATM IPOP	FDIO	Serial ARTS	Serial ATOP	NADIN Airspace Users	NADIN Non-US Facilities	DSP
Converted Route Information	HX	ERAM→IPOP						
ARTS TZ Information	HZ	ERAM→IPOP						
Information Accept	IA	ERAM→IPOP						
Estimated Departure Clearance Time Information	ID	IPOP→ERAM						
Delete Aircraft	IE	IPOP→ERAM						
Flow Control Advisory Information	IF	IPOP→ERAM						
Aircraft ID Amend Information	IH	ERAM→IPOP						
Interface Reply	IL	ERAM←→IPOP						
Meter Reference Point List	IM	IPOP→ERAM						
Flight Plan Readout Request	IO	IPOP→ERAM						
Information Reject	IR	ERAM←→IPOP						
Interface Test	IT	ERAM←→IPOP						
Airport Configuration Information Header	IX	IPOP→ERAM						

Table C-I. List of Messages

Message Name	Message ID	ATM IPOP	FDIO	Serial ARTS	Serial ATOP	NADIN Airspace Users	NADIN Non-US Facilities	DSP
Interim Altitude Information	LH	ERAM→IPOP						
Tentative Aircraft Identification Amendment Information	NI	ERAM→IPOP						
Tentative Flight Plan Removal	NL	ERAM→IPOP						
Tentative Flight Plan Information	NP	ERAM→IPOP						
Tentative Flight Plan Amendment Information	NU	ERAM→IPOP						
Handoff Status	OH	ERAM→IPOP						
Proposed Speed Advisory	PA	IPOP→ERAM						
Progress Report Information	PH	ERAM→IPOP						
Progress Report	PR		FDIO→ERAM					
Inbound Point Out Information	PT	ERAM→IPOP						
Roger	R					ERAM→NADIN	ERAM→NADIN	
Restore ARTS III Base	RB		FDIO→ERAM					

Table C-I. List of Messages

Message Name	Message ID	ATM IPOP	FDIO	Serial ARTS	Serial ATOP	NADIN Airspace Users	NADIN Non-US Facilities	DSP
Beacon Code Restricted Information	RE	ERAM→IPOP						
Reject	REJ					ERAM→NADIN		
Reject	REJECT		ERAM→FDIO			ERAM→NADIN	ERAM→NADIN	
Request Flight Plan Transfer	RF		FDIO→ERAM	ARTS → ERAM				
Drop Track Information	RH	ERAM→IPOP						
Request Route Conversion	RM		FDIO→ERAM					
Reconstitution Information	RN	ERAM←→IPOP						
Remove Strip	RS		FDIO→ERAM		ERAM←→ATOP	NADIN→ERAM	NADIN→ERAM	DSP→ERAM
ARTS NAS Cancellation	RX		FDIO→ERAM					
Sector Assignment Status Information	SH	ERAM→IPOP						
Stereo Flight Plan	SP		FDIO→ERAM			NADIN→ERAM		DSP→ERAM
Strip Request	SR		FDIO→ERAM					DSP→ERAM
Special Activities Airspace	SU	ERAM→IPOP						
Sign In/Sign Out Information	SY	ERAM→IPOP						

Table C-I. List of Messages

Message Name	Message ID	ATM IPOP	FDIO	Serial ARTS	Serial ATOP	NADIN Airspace Users	NADIN Non-US Facilities	DSP
Transfer Accept	TA			ERAM←→ARTS				
Terminate Beacon Code	TB			ARTS → ERAM				
Test Device	TD		FDIO→ERAM			NADIN→ERAM	NADIN→ERAM	
Track Information	TH	ERAM→IPOP						
Initiate Transfer	TI			ERAM←→ARTS				
Transfer Primary Radar Target	TP			ERAM→ARTS				
Test Message	TR			ERAM←→ARTS	ERAM←→ATOP			
Transfer Secondary Radar Target	TS			ERAM→ARTS				
Track Update	TU			ERAM←→ARTS				
Flow Control Track/Full Data Block Information	TZ			ARTS → ERAM				
Beacon Code Utilization Information	UB	ERAM→IPOP						
Geographic Beacon Code Utilization	UG	ERAM→IPOP						
Unsuccessful Information Transmission	UI	ERAM→IPOP						
Weather Request	WR		FDIO→ERAM					DSP→ERAM

Table C-I. List of Messages

Message Name	Message ID	ATM IPOP	FDIO	Serial ARTS	Serial ATOP	NADIN Airspace Users	NADIN Non-US Facilities	DSP
Weather	WX		FDIO→ERAM					
Aircraft Data Update			ERAM→FDIO					
Aircraft Identification Update			ERAM→FDIO					
Airspeed Update			ERAM→FDIO					
Altitude Update			ERAM→FDIO					
ARTS-to-ARTS Relay				ARTS←→ERAM ←→ARTS				
Beacon Code Update			ERAM→FDIO					
Center Operational			ERAM→FDIO				ERAM→NADIN	
Estimated Departure Clearance Time			ERAM→FDIO					
Indefinite Hold Update			ERAM→FDIO					
Non-uniform Time Update			ERAM→FDIO					
Proposed Departure Time Update			ERAM→FDIO					
Remarks Update			ERAM→FDIO					
Remove Strips Message			ERAM→FDIO					

Table C-I. List of Messages

Message Name	Message ID	ATM IPOP	FDIO	Serial ARTS	Serial ATOP	NADIN Airspace Users	NADIN Non-US Facilities	DSP
Route Amendment Correction			FDIO→ERAM					
Route Readout			ERAM→FDIO					
Test Device Diagnostic			ERAM→FDIO			ERAM→NADIN	ERAM→NADIN	
Uniform Time Update			ERAM→FDIO					
Verify Eligibility			ERAM→FDIO Only to San Juan Enroute Sector					

C.2 Cross Reference

Table C-II. Message Cross Reference

Field Ref. No.	Field Item	ATM IPOP Interface Messages	FDIO Messages	SERIAL Interface ARTS Messages	SERIAL Interface ATOP Messages	NADIN Interface AirSp User Messages	NADIN Interface Non-US Manual	DSP Messages
00	Source Identification	AC AH AK BA CI CK CL DH ET FH GH HA HB HC HD HE HF HH HO HP HR HS HT HU HV HX HZ IA ID IE IF IH IL IM IO IR IT IX LH NI NL NP NU OH PA PH PT RE RH RN SH SU SY TH UB UG UI		AM CX DA DM DR DT DX FP RF TA TB TI TP TR TS TU TZ	AM DA DR DT DX FP GI HM RS TR	AM FP RS SP TD	AM FP RS TD ICM-FP	
01	Message Type		AM AS DM FP FR GI HM PR RB RF RM RS RX SP SR TD WR WX Accept Reject	AM CX DA DM DR DT DX FP RF TA TB TI TP TR TS TU TZ	AM DA DR DT DX FP GI HM RS TR	AM FP RS SP TD	AM FP RS TD ICM-FP	AM AR AS BU DM FP FR RS SP SR WR
02	Flight Identification	AC AH AK BA CL DH ET FH HB HC HD HE HF HH HO HP HT HU HV HX ID IE IH IM IO LH NI NL NP NU OH PA PH PT RE RH TH UI	AM DM FP FR HM PR RF RM RS RX SP SR	AM CX DA DM FP RF TA TI TB TU TZ	AM DA FP HM RS	AM FP RS SP	AM FP RS ICM-FP	AM DM FP FR RS SP SR
03	Aircraft Data	AH DH FH HU NP NU	FP SP	FP	FP	FP SP	FP ICM-FP	FP SP
04	Beacon Code	AH BA FH HU NP NU RE	FP	FP TA	FP	FP	FP ICM-FP	FP
05	Speed	AH FH HU NP NU TH	FP SP	FP TZ	FP	FP SP	FP ICM-FP	FP SP

Table C-II. Message Cross Reference

Field Ref. No.	Field Item	ATM IPOP Interface Messages	FDIO Messages	SERIAL Interface ARTS Messages	SERIAL Interface ATOP Messages	NADIN Interface AirSp User Messages	NADIN Interface Non-US Manual	DSP Messages
06	Coordination Fix	AH FH HP HU	FP	FP	FP	FP	FP ICM-FP	FP
07	Coordination Time	AH DH FH HP HU	DM FP SP	DM FP	FP	FP SP	FP ICM-FP	DM FP SP
08	Assigned Altitude	AH FH HU NP NU TH	DM FP SP	FP TZ	FP	FP SP	FP ICM-FP	DM FP SP
09	Requested Altitude (proposed)	AH FH	FP SP	FP	FP	FP SP	FP ICM-FP	FP SP
10	Route	AH FH HU	FP SP	FP	FP	FP SP	FP ICM-FP	FP SP
11	Remarks	AH FH GH HU IL IR IT	FP SP GI	DT FP TR	FP DT GI TR	FP SP	FP ICM-FP	FP SP
12	Field Reference Number		AM FP FR	AM DR	AM FP	AM FP	AM FP	AM FP FR
13	Location Identifier	AC HA IF IM IX	AS RB RF SR WR WX	RF TI				AR AS SR WR
15	Message Cancellation Group		CXX					
16	Output Routing	GH HT UI	GI SR TD	TA TI TP TR TS TU	GI TR			SR
17	Amendment, Change, or ICAO Original Data		AM FP	AM	FP AM	AM FP	AM FP	AM FP
18	Progress Report Data	PH	PR					
21	Hold Data	HH HO	HM		HM			
23	Track Position	TH		TI TU TZ				

Table C-II. Message Cross Reference

Field Ref. No.	Field Item	ATM IPOP Interface Messages	FDIO Messages	SERIAL Interface ARTS Messages	SERIAL Interface ATOP Messages	NADIN Interface AirSp User Messages	NADIN Interface Non-US Manual	DSP Messages
24	Target Coordinates			TP				
24	Target Coordinates, Beacon Code and Mode C Altitude or North Mark Data			TS				
25	Field Reference Number Referent Message Descriptor	IA IL IR		DA DR DT DX	DA DR DT DX			
26	Departure Point	BA CL DH HV IH RE						DM
27	Destination	BA CL DH HV IH RE						
28	Estimated Time of Arrival (ETA) or Arrival Time	DH HV						
29	Airspace Assignment	SH UI						
30	Sector Change Field		CS					
34	Altimeter Data	HA	AS					AS
35	Altimeter Data Entrance Time	HA	AS WX					AS
36	Action Indicator	AC HR IF						
41	Established Beacon Code			TI				
42	Flight Data Selection		FR					FR

Table C-II. Message Cross Reference

Field Ref. No.	Field Item	ATM IPOP Interface Messages	FDIO Messages	SERIAL Interface ARTS Messages	SERIAL Interface ATOP Messages	NADIN Interface AirSp User Messages	NADIN Interface Non-US Manual	DSP Messages
45	Weather Data		WX					
47	Beacon Code Utilization Count	UB						
48	Accepting Sector			TA				
50	Geographic Beacon Code	UG						
52	Filed Aircraft ICAO Address (24 bit)			FP				
54	Reported Altitude	TH NP NU		TI				
60	Logic Check Override		/OK DQ					
67	Time							
68	Fix/Time	FH AH HU HX IE IM PA						
69	Report Identification							BU
71	Receiving Sector Number / Position /Location			DA				
76	Interim Altitude	HE LH NP NU						
82	FAD Flow Calculation Times	IF						
83	ADS-B Equipment Qualifiers			FP				

Table C-II. Message Cross Reference

Field Ref. No.	Field Item	ATM IPOP Interface Messages	FDIO Messages	SERIAL Interface ARTS Messages	SERIAL Interface ATOP Messages	NADIN Interface AirSp User Messages	NADIN Interface Non-US Manual	DSP Messages
86	Metering Times	IM						
87	Airport Configuration Name	IX						
88	Metering Vertex Acceptance Rate/Arrival Delay	IX						
91	Meter/outer fix Delay	IM						
92	Est. Departure Clearance Time OR Cancellation Indicator	ET ID						
104	Target Coordinates			TP TS				
104	Or North Mark Data			TS				
105	Beacon Code and Mode C Altitude			TS				
134	Source Sector Routing	HB HC HT						
135	Route Status Elements	HR						
137	Action Indicator	HD IM PA						
138	Controlling Facility/Sector	OH PT TH						

Table C-II. Message Cross Reference

Field Ref. No.	Field Item	ATM IPOP Interface Messages	FDIO Messages	SERIAL Interface ARTS Messages	SERIAL Interface ATOP Messages	NADIN Interface AirSp User Messages	NADIN Interface Non-US Manual	DSP Messages
139	Receiving Facility/Sector	OH PT TH						
140	Status Change Indicator	HS						
141	Adapted Route Indicator	AH FH HU						
142	Preferential Route Alphanumerics	AH FH HU						
143	FAV	AH FH HD HU IM						
144	Reconstitution state	RN						
145	Field Reference Number / Format ID in Error	IR						
146	Client System Address	CI						
147	Client System Status and Communication Eligibility	CI						
149	End of Message	AC AH AK BA CI CK CL DH ET FH GH HA HB HC HD HE HF HH HO HP HR HS HT HU HV HX HZ IA ID IE IF IH IL IM IO IR IT IX LH NI NP NL NU OH PH PT RE RH RN SH SU SY TH UB UG UI						

Table C-II. Message Cross Reference

Field Ref. No.	Field Item	ATM IPOP Interface Messages	FDIO Messages	SERIAL Interface ARTS Messages	SERIAL Interface ATOP Messages	NADIN Interface AirSp User Messages	NADIN Interface Non-US Manual	DSP Messages
150	Message Header	AC AH AK BA CI CK CL DH ET FH GH HA HB HC HD HE HF HH HO HP HR HS HT HU HV HX HZ IA ID IE IF IH IL IM IO IR IT IX LH NI NP NL NU OH PH PT RE RH RN SH SU SY TH UB UG UI						
151	Field Header	AC AH AK BA CI CK CL DH ET FH GH HA HB HC HD HE HF HH HO HP HR HS HT HU HV HX HZ IA ID IE IF IH IL IM IO IR IT IX LH NI NP NL NU OH PH PT RE RH RN SH SU SY TH UB UG UI						
152	Block Transmission Header Number	IR						
153	Coast Indicator	TH						
154	ARTS TZ Data Items	HZ						
155	FDB Fourth Line Heading, Speed and Free Form Text	HF						
161	SAA ID	SU						
162	SAA Activation Type	SU						

Table C-II. Message Cross Reference

Field Ref. No.	Field Item	ATM IPOP Interface Messages	FDIO Messages	SERIAL Interface ARTS Messages	SERIAL Interface ATOP Messages	NADIN Interface AirSp User Messages	NADIN Interface Non-US Manual	DSP Messages
163	SAA Schedule Type	SU						
164	SAA Scheduled Activation/Deactivation Date & Time	SU						
165	SAA Altitude	SU						
166	SAA Schedule ID	SU						
167	Site Specific Plan Identifier	AC AH AK BA CL DH ET FH HA HB HC HD HE HF HH HO HP HT HU HV HX HZ ID IE IH IM IO LH NI NP NL NU OH PA PH PT RE RH TH UI						
168	System Type Identification	HS						
169	CMS Version Number	HS						
170	Time of Track Data	TH						
171	Target Position	TH						
172	Target Altitude	TH						
173	Time of Target Data	TH						
174	Target ADS-B Position	TH						
175	Target ADS-B Altitude	TH						
176	Target ADS-B Velocity	TH						

Table C-II. Message Cross Reference

Field Ref. No.	Field Item	ATM IPOP Interface Messages	FDIO Messages	SERIAL Interface ARTS Messages	SERIAL Interface ATOP Messages	NADIN Interface AirSp User Messages	NADIN Interface Non-US Manual	DSP Messages
177	Target ADS-B Time	TH						
316	Global Unique Flight ID	BA FH NP RE						
317	Controller Initials	SY						
318	Non-operational User Initials	SY						
319	Crew Number	SY						
320	Area	SY						
321	Message Type Indicator (Sign In / Sign Out message)	SY						
322	Role	SY						
323	Tracker Indicator	SY						
324	Sign In Date and Time	SY						
325	Sign Out Date and Time	SY						
326	Position	SY						
327	Sector Number	AC AK SY						
328	Recording Reason	SY						
329	Local UTC Offset	SY						
330	Entering Position	AC AK						

Table C-II. Message Cross Reference

Field Ref. No.	Field Item	ATM IPOP Interface Messages	FDIO Messages	SERIAL Interface ARTS Messages	SERIAL Interface ATOP Messages	NADIN Interface AirSp User Messages	NADIN Interface Non-US Manual	DSP Messages
331	Position	AC AK						
332	Entering Facility	AC AK						
333	Source Sector Routing	IR						
334	Accepting Facility	OH						
335	Accepting Sector	OH						
336	Handoff Event Indicator	OH						
337	Traffic Count Adjustment Data	AK						
338	Instrument Approach Count Adjustment Data	AC						
339	Tentative Flight Plan Merge Status	NL						
341	Merged Flight Plan ID	NL						
342	Merged Flight Plan ID	NL						
343	Speed Advisory Flight Phase	FH AH HU PA						
344	Speed Advisory Value	FH AH HU PA						
908	Flight Rules and Type of Flight	AH FH HU						
909	Wake Turbulence Cat.	AH FH HU						

Table C-II. Message Cross Reference

Field Ref. No.	Field Item	ATM IPOP Interface Messages	FDIO Messages	SERIAL Interface ARTS Messages	SERIAL Interface ATOP Messages	NADIN Interface AirSp User Messages	NADIN Interface Non-US Manual	DSP Messages
910	Equipment	AH FH HU						
916	Alternate Arrival Point(s) (Aerodrome(s))	AH FH HU						
918	Other Information	AH FH HU						
999	Adapted Field 918 Indicators (CMS Output Only)	AH FH HU						
ICAO 03	ICAO Msg Type, Number, & Ref Data					FPL DEP CNL DLA CHG		
ICAO 07	ICAO Aircraft Identifier and Beacon Code (Mode A)					FPL DEP CNL DLA CHG		
ICAO 08	ICAO Flight Rules and Type of Flight					FPL		
ICAO 09	ICAO Number, Type of A/C and Special A/C Indicator (Wake Turbulence Cat.)					FPL		
ICAO 10	ICAO Equipment					FPL		
ICAO 13	ICAO Departure Point (Aerodrome) and Time					FPL DEP CNL DLA CHG		

Table C-II. Message Cross Reference

Field Ref. No.	Field Item	ATM IPOP Interface Messages	FDIO Messages	SERIAL Interface ARTS Messages	SERIAL Interface ATOP Messages	NADIN Interface AirSp User Messages	NADIN Interface Non-US Manual	DSP Messages
ICAO 15	ICAO Route					FPL		
ICAO 16	ICAO Arrival Point, Total Elap Time, Alt Arrival Points					FPL DEP CNL DLA CHG		
ICAO 18	ICAO Other Information					FPL DEP CNL DLA CHG		
ICAO 22	ICAO Amendment					CHG		
925		FH AH HU						

C.3 Common Appendix

C.3.1 Writing And Printing Conventions

In this Common Appendix, a few special writing and printing conventions are used to convey meanings concisely. The formats acceptable for each input message field are specified as sequences of letters, and/or digits, and/or special characters. The requirements are as follows:

1. Where only a letter is permissible, the symbol "L" is used.

2. Where only a digit (0-9) is permissible, the symbol "d" is used.

3. Where only a hexadecimal digit (0-9 or A-F) is permissible, the symbol "h" is used.

4. Where either a letter or a digit (i.e., an alphanumeric) is permissible, the symbol "a" is used.

5. Where any valid EBCDIC character (see Appendix D) is permissible, the symbol "c" is used.

6. Where a special character is required, only the special character used is permissible.

7. "Character," as used in text outside the formats, may be a letter, a digit, or a special character of the device type being discussed.

Parentheses enclosing an element(s) of the field specify that element is optional in the format.

Each field can have several different formats depending on the input/output source or for the purpose of the field being used.

The Common Appendix presents each field in a table format for describing each field. The definition of the table column titles are as follows:

- Field Ref No.—the field reference number of the field being discussed. When discussing all field elements, only the field number will be listed in the row. When discussing a field element or a combination of field elements in a row, the field number and field element identifications will be listed in the row.
- Field Number and Field Name—the field number, with the field name abbreviation and abbreviation definition, such as "02 AID Flight Identification" (which is Field 02 with a name abbreviation of AID meaning Flight Identification). The column also lists all of the element identifications being discussed for this row, such as a = aircraft identification, b = element separator, c = departure point, and p = override symbol.
- Field Format—the format requirements of the field being discussed for the row. Such as La(a)(a)(a)(a) which indicates the La is required for the field with "L" being a character and "a" being a letter or digit.
- Description—the description of the field being discussed for the row.

- Example—an example of the field being used along with a description of the example for the row. Such as “AAL060” Equals American Airlines Flight 60. Some of the Examples are very large requiring a full page. The Example full page will be after or before the row being discussed.
- No. of Bytes—the number of bytes minimum and maximum for the field in the row being discussed.

Several table entries can be used to describe a field. If the field requires more than one table entry for describing the field, the first table entry will describe the field totally for all different possible formats. Then the following table entries will describe each different format for the field with examples.

Each field can have several different field elements making up a field. Normally, a letter or a number identifies each element of a field. At times the different format field functions are identified with a letter or number. At times each field element letter or number is used several times depending on different message sources and commands. The letters and numbers are repeated to prevent cost of modifying existing code using the present letters for the ATM IPOP ICD. If a field format has more than one element letter or number, the field format may have a rectangle around one of the elements. i.e., - L$\boxed{\text{ddd}}$

An example of the table usage for Field 00 follows:

- Notice the Field Ref. No. of the first table entry has 00.
- Notice the Field Number and Field Name has sub-elements a,b,c,d, and e.
- Notice the Field Format has all of the possible Field 00 formats showing which elements with the element letter below the element.
- Notice the Description for the first entry has an overview of Field 00.
- Now view the second table entry for Field 00.
  - Notice the Field Ref. No. of the first table entry has 00 and the element letters “a c”.
  - Notice the Field Number and Field Name has sub-elements “a c”.
  - Notice the Field Format only has the format for the a and c elements.
  - For this table entry, the Field 00 a and c are discussed and will show the message and or source using this format.
  - Examples and byte size of the field are also listed for the table entry.

C.3.2 Common Appendix Table

This section contains the Common Appendix Tables. Figure C-1 below shows an example of how the Common Appendix is presented. Table C-III contains the Common Appendix Message Field Formats.

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
00	00 Source Identification a = addresser b= time c= message number d= addressee e= time and message number	L$\boxed{ddd}$ a c LLL$\boxed{dddd}$ddd a b c LLL$\boxed{dddd}$ddd$\boxed{LLL}$ a b c d dddddddddd e	Field 00 is the location (source) identifier of the entering facility. This field is required on all input messages from remote sources except Non-U.S. Automated Facilities via NADIN, FDEP, and Non-U.S. ATS (ICAO messages). Field 00 at times contains the source location identifier addresser of the entering facility and at times contains the location identifier of the facility being addressed. Sometimes the Field 00 contains the time that the message was originated. The Field 00 always contains the message sequence number of the sending facility.		
00 a,c	00 Source Identification a = addresser c= message number	L$\boxed{ddd}$ a c	ATOP to ERAM and ERAM to ATOP messages will have 1 letter (L) for the ARTCC identification of the facility sending the message followed by the message number (ddd). Message numbers are 000 to 999 and then start over.	F001 is Fort Worth ARTCC message number 001.	4

Figure C-1. Example of Common Appendix Table Usage

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
Field 00	00 Source Identification a= addresser b= time c= message number d= addressee e= time and message number	L$\boxed{ddd}$ **a c** LLL$\boxed{dddd}$ddd **a b c** LLL$\boxed{dddd}$ddd$\boxed{LLL}$ **a b c d** dddddddddd **e**	Field 00 is the location (source) identifier of the entering facility. This field is required on all input messages from remote sources except Non-U.S. Automated Facilities via NADIN, FDEP, and Non-U.S. ATS (ICAO messages). Field 00, at times contains the source location identifier addresser of the entering facility and at times contains the location identifier of the facility being addressed. Sometimes the Field 00 contains the time that the message was originated. The Field 00 always contains the message sequence number of the sending facility.		
00 a,c	00 Source Identification a= addresser c= message number	L$\boxed{ddd}$ **a c**	ATOP to ERAM and ERAM to ATOP messages will have 1 letter (L) for the ARTCC identification of the facility sending the message followed by the message number (ddd). Message numbers are 000 to 999 and then start over.	**F001** is Fort Worth ARTCC message number 001.	4

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
00 a,b,c	00 Source Identification a= addresser b= time c= message number	LLL$\boxed{\text{dddd}}$ddd **a b c**	ARTS facility message to ERAM and ERAM facility message to ARTS. LLL is the ARTS or ERAM identification. Next dddd is the UTC time (HHMM hours and minutes). The last ddd is the message number. Message numbers are 0 to 999 and then startover.	**DFA2359871** is from Dallas/Fort Worth ARTS (DFA). The message was sent at 2359 UTC and the message number is 871. **ZCF0001231** is from Fort Worth ARTCC ERAM (ZCF). The message was sent at 0001 UTC and the message number is 231.	10
00 a,b,c	00 Source Identification a = addresser b= time c= message number	LLL$\boxed{\text{dddd}}$ddd **a b c**	NADIN facility message to ERAM. LLL is the Service B identification. Next dddd is the UTC time (HHMM hours and minutes). The last ddd is the message number. Message numbers are 0 to 999 and then startover.	**FTW1359271** is from Fort Worth Service B. The message was sent at 1359 UTC and the message number is 271.	10
00 a,b,c,d	00 Source Identification a= addresser b= time c= message number d= addressee	LLL$\boxed{\text{dddd}}$ddd$\boxed{\text{LLL}}$ **a b c d**	ARTS facility message to ERAM for relay to another ARTS facility. The first LLL is the ARTS identification sending the message. Next dddd is the UTC time (HHMM hours and minutes). The last ddd is the message number. The last LLL is the ARTS facility identification for ERAM to relay the message. Message numbers are 0 to 999 and then startover.	**See Example Below of Field 00abcd.**	13

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
Note: The following is for information only, ERAM detects that the message from ARTS is a relay message and sends the message to the relay ARTS addressed in Field 00. No format or logic checking of the message is performed. **Example of Field 00abcd – ARTS III to ARTS III relay FP Message Usage:** The following example shows a FP message being relayed ARTS to ARTS (AAA to NNN) via ERAM. In an ARTS-to-ARTS Relay. **AAA1934747NNN FP 063N25RH 1 0431 NNN A1934 000 K36** The following example shows a FP message being relayed ARTS to ARTS (MMM to NNN) via ERAM. In an ARTS-to-ARTS Relay. **MMM1926076NNN FP 903N6904N 1 0425 RBV E1926 000 EWR**					
00 e	00 Source Identification e= time and message number	dddddddddd **e**	ATM IPOP message to ERAM, where dddddd (the first six digits) is UTC (hhmmss); dddd (the last four digits) is the sequence number of the message (range 0000-9999). The sequence number is initialized to 0000 when ATM IPOP is initialized. The sequence number is incremented each time a message is sent. It will be reset to 0000 after sending a message with sequence number 9999.	**2359359001** Message for ATM IPOP time 23:59:35 UTC with a message number 9001	10
Field 01	01 – Message Type a= LL message type	Two characters for function requested	Message Type Designator to describe the function requested.		
01 a	01 – Message Type a= message type	LL	Two Letter LL Application message type designator.	**FP, AM, WR, AS, FH, AH,** etc.	2

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
Field 02	02 AID Flight Identification a= aircraft identification b= element separator c= departure point d= Computer Identification (ERAM CID or NAS CID) f= discrete beacon code j= ARTS III Terminal Computer Identification (TCID) l=External Beacon Code p= override symbol	Different formats for Field 02 AID combinations from different sources as follows: Aircraft Identification ERAM Computer Identification (ECID) NAS CID for ATOP Discrete Beacon Code ARTS III Terminal Computer Identification (TCID) Departure Point Special override indicators: Asterisk * overrides ADR, ADAR Overcast ⊕ overrides equipment restricted ADR,ADAR	To identify the Aircraft Identification (AID) of the message being used. Several Flight Plans can be stored for one aircraft. The software must know the correct flight plan the message is referencing. **Note:** An AID that matches the first four characters of the preset On Line Certification (OLC) AID prefix will be accepted, but the stored system plan associated with that AID will not be forwarded to external facilities. **NOTE:** For certain messages resulting in updates to flight data, received from a San Juan Enroute Sector FDIO device, a logic check override ("/OK") may be appended to the end of Field 02. This is not a part of Field 2, but may be appended to it. Examples: UAL753/OK 646/OK		

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
02 a	02 AID Flight Identification a= aircraft identification	**Only For ERAM to ATM IPOP** La(a)(a)(a)(a)(a)	**For ATM IPOP** When the AID is only two characters, the first character must be a Letter and the second character must be a digit. The AID can be three to seven characters, the first character must be a Letter and the second to the seventh character can be a letter or a digit.	**Example for ATM IPOP** **Field 2 A= A1** **A1** Equals Air Force One **Field 2 A= AAL60** **AAL60** Equals American Airlines Flight 60	2–7
02 a, p	02 AID Flight Identification a= aircraft identification p= override symbol	M Ld(p) Laa(a)(a)(a)(a)(p)	When the AID is only one character, the character must be the Letter M When the AID is only two characters, the first character must be a Letter and the second character must be a digit. The AID can be three to seven characters, the first character must be a Letter and the second to the seventh character can be a letter or a digit. An optional special 1 character symbol asterisk (*) can follow to suppress ADRs, ADARs, OR the overcast (⊕) symbol can follow to suppress equipment restricted ADRs and ADARs	**M**= missing AID When printing MP Mission Flight Plan Strips, FP or SP Pending flight strips the AID will be blank **A1** Equals Air Force One **AAL60** Equals American Airlines Flight 60 **DM AAL601*** Departure Message with Field 02 suppressing the ADR or ADAR	1–8

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
02 a, b, c, p	02 AID Flight Identification a= aircraft identification b= element separator c= departure point p= override symbol	La(a)(a)(a)(a)(a)/aa(a)(a)(a)(a)(a)(a)(a)(a)(a)(a)(p) $\boxed{\text{La(a)(a)(a)(a)(a)}}$ / **a** **b** aa(a)(a)(a)(a)(a)(a)(a)(a)(a)(a)$\boxed{\text{(p)}}$ **c** **p**	An Aircraft Identification and the flights departure point can be used to identify a Flight Plan. The field length must be from 5−21 characters in the following format: The first element is the Aircraft Identifier (AID) 2 to7 characters. The third element, the departure point, must be separated from the first element by the element separator (/). The departure point must be 2 to 12 characters in length and must be in the format specified for fix elements An adapted fix identifies a geographic point and is a sequence of 2−12 characters in the format of a lat/long, a fix name, or a Fix Radial Distance (FRD). An optional special 1 character symbol asterisk (*) can follow to suppress ADRs, ADARs, or the overcast (⊕) symbol can follow to suppress equipment restricted ADRs and ADARs.	Example of Departure FIX Formats: **3500N/14000W** **KDFW** **H3Y180100** Example of Field 02 AID/Departure Fix: **AAL060/DFW** **ZEBRA22/3500N/14000W** **UAL801/IAD⊕**	5–21

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
02 d, p	02 AID Flight Identification d= ERAM Computer Identification (ECID) or NAS CID p= override symbol	**ERAM Computer Identification (ECID)** daa(p) ERAM DA for ARTS VFR FP LLL NAS CID for ATOP dda ERAM CID for ATM IPOP daa ERAM CID for ARTS daa	**ERAM CID (ECID) Format Rules as follows:** Element d is the computer-assigned identification. A ddL, dLd or dLL format will normally be used only when all numbers of the ddd format are in use. There are 2 preset prohibited alphas (the letters I and O and an optional locally adapted alpha. An optional special 1 character symbol asterisk (*) can follow to suppress ADRs, ADARs, OR the overcast (⊕) symbol can follow to suppress equipment restricted ADRs and ADARs. LLL=XXX is used as the ECID in the DA message in response to an ARTS VFR Flight Plan (FP) input. The daa ECID format will be used for first order ERAM to ARTS messages, and for secord order ARTS to ERAM messages. The optional (daa) ECID format will be used for ERAM to ATM IPOP messages and ATM IPOP to ERAM messages that contain a CID. ERAM must send ATOP a NAS CID dda format.	Example ECID Format usage: **RS 001** Remove Strip Message deleting flight plan assigned ECID 001 **DM 101⊕** Departure Message Suppressing the equipment restricted ADRs and ADARs. **ZCN1928905 DA XXX NNN1929366** DA message in Response to ARTS VFR FP input. Using XXX for the ECID. **Field 02d=9PP** **9PP is the ERAM ECID** See Example below of Field 02 – ARTS III TCID and ERAM ECID:	3–4

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
02 j	02 AID Flight Identification j= ARTS III Terminal Computer Identification (TCID)	aaa	An ARTS III Terminal Computer Identification (TCID) is 3 characters in length. The ARTS III TCID is used to communicate between the ERAM and ARTS III facility.	See Example below of ARTS III TCID Format usage:	3
02 l	02 AID Flight Identification l=External Beacon Code	/Edddd	Element l. is a unique identification which is only used in the Flight Plan Readout (FR) message to identify a flight plan by the External Beacon Code	/E5205	6

Example of ARTS III TCID Format usage:

In a DA message received from an ARTS III computer, Field 02 contains the ARTS III TCID of the flight plan stored in the ARTS III computer.

DFA1001010 DA 101 ZCF1001299

DFA ARTS III is DA (accepting) ERAM ZCF message "ZCF1001299" and is providing ZCF ERAM the DFA ARTS III TCID 101.

See Example below of Field 02 – ARTS III TCID and ERAM ECID:

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**

Example of Field 02 – ARTS III TCID and ERAM ECID:

The first order FP message from ERAM or ARTS contains the sending facilities CID as follows:

- ERAM FP to ARTS contains the ECID.
- ARTS FP to ERAM contains the TCID

The DA message accepting the first order message FP is as follows:

- ARTS DA response to the ERAM FP contains the ARTS TCID
- ERAM DA response to the ARTS FP contains XXX for the ECID

NOTE: The reason for the XXX ECID, is because ERAM will send a special FP back to the ARTS using Field 02dabj with the ERAM ECID and the ARTS TCID. When ERAM sends the special FP back to the ARTS, The ARTS DA response to the special ERAM FP contains the same ARTS TCID.

When a facility ARTS or ERAM initiates any of the following second order messages to address the other facilities Flight Plan database, the second order message will use the receiving facilities CID as follows:

- ARTS DM message to ERAM contains the ERAM ECID
- ARTS TI message to ERAM contains the ERAM ECID
- ARTS TU message to ERAM contains the ERAM ECID
- ARTS TA message to ERAM contains the ERAM ECID
- ARTS TB message to ERAM contains the ERAM ECID
- ERAM AM message to ARTS contains the ARTS TCID.
- ERAM TI message to ARTS contains the ARTS TCID.
- ERAM TU message to ARTS contains the ARTS TCID.
- ERAM TA message to ARTS contains the ARTS TCID.
- ERAM CX message to ARTS contains the ARTS TCID.

When a facility ARTS or ERAM accepts a message with a DA message, the acknowledging facility will use its own Flight Plan database CID. ARTS will use its Flight Plan database TCID for all DA messages. ERAM will use its Flight Plan database ECID for all DA messages.

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
Note: except for a received ARTS FP, then ERAM will use XXX as described above in place of the ECID. **PPP1913404MMM TI MMM 23J -003/0017 0104/-050 PPP1Y**					
02 d, a	02 AID Flight Identification d= ERAM Computer Identification (ECID) a= aircraft identification	daaLa(a)(a)(a)(a)(a) **d** **a**	The ERAM computer identification followed by the Aircraft Identification is used to identify a Flight Plan being sent to an ARTS III. The field length must be from 5−10 characters in the following format: The first element is the computer identification (ECID) that must be 3 characters in length. The second element is the Aircraft Identification (AID) that must be 2 to7 characters in length that follows the ECID without any element separators.	Example of Field 02 ECID with an AID: **ZCF1001601 FP 102AAL060** ZCF ERAM ECID 102 FP American Airlines flight 60 is being transmitted to DFA ARTS III from ZCF ERAM. DFA ARTS III will DA with DFA TCID. Now DFA ARTS III and ZCF ERAM will know they are modifying the correct flight plans.	5–10
02 j, a	02 AID Flight Identification j= ARTS III Terminal Computer Identification (TCID) a= aircraft identification	aaaLa(a)(a)(a)(a)(a) **j** **a**	The ARTS III Terminal Computer Identification (TCID) followed by the Aircraft Identification is used to identify a Flight Plan being sent to an ERAM. The field length must be from 5−10 characters in the following format: The first element is the Terminal Computer Identification (TCID) that must be three characters in length. The second element is the Aircraft Identification (AID) that must be 2 to7 characters in length that follows the	Example of Field 02ja TCID with an AID: **NNN1929366 FP 452N2900S** NNN TCID 452 FP general aviation flight N2000S is being transmitted to ZCN ERAM from NNN ARTS. See below for more Examples of Field 02dabj that explains the response for an ARTS III FP message Field 02ja:	5–10

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			TCID without any element separators. The format Field 02ja is used by the ARTS III to establish a VFR flight plan.		
02 d, a, b, j	02 AID Flight Identification d= ERAM Computer Identification (ECID) a= aircraft identification b= element separator j= ARTS III Terminal Computer Identification (TCID)	daaLa(a)(a)(a)(a)(a)/aaa **d a b j**	The ERAM Computer Identification (ECID) followed by the Aircraft Identification and the ARTS III Terminal Computer Identification (TCID) is used to identify a Flight Plan being sent to an ARTS III. The field length must be from 9-14 characters in the following format: The first element is the ERAM Computer Identification (ECID) that must be three characters in length. The second element is the Aircraft Identification (AID) that must be 2 to7 characters in length that follows the ECID without any element separators. The third element is a separator (/). The fourth element is the ARTS III Terminal Computer Identification (TCID). This format is used when an FP is being sent to the ARTS III facility that was the source of the VFR FP.	See below for Example of Field 02dabj, ECID with an AID and /TCID:	9–14

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**

Example of Field 02dabj – ARTS III to ERAM FP Message Scenario:

The first order FP message from ERAM or ARTS contains the sending facilities CID as follows:

- ERAM FP to ARTS contains the ECID.
- ARTS FP to ERAM contains the TCID

The DA message accepting the first order message FP is as follows:

- ARTS DA response to the ERAM FP contains the ARTS TCID
- ERAM DA response to the ARTS FP contains XXX for the ECID

  NOTE: The reason for the XXX ECID, is because ERAM will send a special FP back to the ARTS using Field 02dabj with the ERAM ECID and the ARTS TCID. When ERAM sends the special FP back to the ARTS, The ARTS DA response to the special ERAM FP contains the same ARTS TCID.

NNN1929366 FP **452**N2900S PA34/T 130 HTO P1929 VFR/025 HTO..ACK
ARTS NNN input of a FP message with Field 2 TCID of 452.

ZCN1928905 DA **XXX** NNN1929366
ERAM ZCN sent a DA with XXX for the ECID.

ZCN1929948 FP **522**N2900S/**452** HTOV/PA34 1767 BAY P1929 VFR
ERAM ZCN sent the FP message back to NNN ARTS with ECID 522 and TCID /452.

NNN1929407 DA **452** ZCN1929948
ARTS NNN sent DA with TCID **452**

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
02 a, b, d	02 AID Flight Identification a= aircraft identification b= element separator d= Computer Identification (NAS CID)	La(a)(a)(a)(a)(a)/dda **a b d**	An Aircraft Identification and the flight's NAS ATOP Computer Identification (CID) can be used to identify a Flight Plan. The field length must be from 6−11 characters in the following format: The first element is the Aircraft Identification (AID) 2 to7 characters. The second element is a separator (/). The third element is the ATOP CID that must be three characters in length.	See Example below of Field 02 AID with an NAS CID:	6–11

Example of Field 02 AID with a NAS CID:

Example of NAS CID usage between ERAM to ATOP and ATOP to ERAM:

This example shows an FP message from ERAM to ATOP:
N244 FP SSV066 A320/W 0537 0449 BACUS E1324 330 YYZ./.BACUS.R763.GTK. A554.SEKAR..MDPP/1533

This example shows an DA message from ATOP to ERAM with the ATOP NAS CID for the above FP message:
Z098 DA 707 N244

This example below shows a second order AM message from ERAM to ATOP using the ATOP CID received in the above DA message along with the flight identification SSV066/707:
N249 AM SSV066/707 05 M078 07 E1245

This example shows an DA message from ATOP to ERAM with the ATOP NAS CID:
Z100 DA 707 N249

This example shows an FP message from ATOP to ERAM:
Z102 FP DAL51 H/B772/Q 6634 M083 3205N/07616W E1949 370 LFPG./.BURTT..OLDEY.AR4.CH..IRQ..KATL

This example shows an DA message from ERAM to ATOP with the ERAM NAS CID for the above FP message:
N678 DA 436 Z102

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
This example below shows a second order AM message from ATOP to ERAM using the ERAM CID received in the above DA message along with the flight identification DAL51/436: **Z126 AM DAL51/436 08 370** This example shows an DA message from ERAM to ATOP with the ERAM NAS CID: **N702 DA 436 Z126**					
02 f, p	02 AID Flight Identification f= discrete beacon code p= override symbol	dddd(p)	An Aircraft Identification can be determined by referencing the discrete beacon code assigned to a Flight Plan. The Field 02 is 4 to 5 characters. An optional special 1 character symbol asterisk (*) can follow to suppress ADRs, ADARs, OR the overcast (⊕) symbol can follow to suppress equipment restricted ADRs and ADARs.	Example of using a discrete beacon code to identify a Flight Plan: **FR 1101** If discrete beacon code 1101 is assigned to a Flight Plan ~ A flight plan readout will be displayed back to the requesting source. **DM 3701*** Departure Message for code 3701 suppressing the ADR and ADAR	4–5
Field 03	03 TYP Aircraft Data a=number of aircraft and special aircraft indicator b=separator c=type of aircraft d=separator e=airborne equipment qualifier	ERAM (ATOP, FDIO, NADIN) ((d)(d)(L)/)La(a)(a)(/L) **a b c d e** ATM IPOP ((d)(d)(L)) La(a)(a) (L) **a c e** **Note**: See the following rows for several different ARTS / STARS	Field 03 provides the controller with critical flight data as follows: ERAM input from ATOP, FDIO and NADIN Field 03 stores the number of aircraft, special aircraft indicator, aircraft type and an airborne equipment qualifier. ATM IPOP and ERAM Field 03 stores the number of aircraft, special aircraft indicator, aircraft type and an airborne		

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
		formats for Field 03.	equipment qualifier.		
Field 03	03 TYP Aircraft Data Only for ARTS: Arrival or Overflight: h=number of aircraft i=optional separator j=optional altitude category /special aircraft indicator b=separator c=type of aircraft d=optional separator, if e is present e=optional airborne equipment qualifier Only for ARTS Proposal: f=ARTS departure airport g=optional separator h=optional number of aircraft j=optional altitude category / special aircraft indicator b= separator c=type of aircraft d=optional separator, if e is present	ERAM to ARTS Arrival or Overflight (d)d(/)(L)/La(a)(a)(/L) **h i j b c de** ERAM to ARTS Proposal aaa(a)(/)((d)d)(L)/ La(a)(a)(/L) **f g h j b c de** **Note**: Elements, g, h, and i are required, optional, or unused depending on the AFSI and ANAP parameter settings. See the following rows for several different ARTS/STARS formats for Field 03.	Field 03 provides the controller with critical flight data as follows: Parameters Airport Fix Size Increase (AFSI) and ARTS Number of Aircraft on Proposed flight plan switch (ANAP) require several different formats for ARTS Field 03. The following combinations of the AFSI and ANAP require separate rows below for describing the ARTS Field 03 format: • AFSI Off and ANAP Off • AFSI Off and ANAP On • AFSI On and ANAP Off • AFSI On and ANAP On ARTS Field 03 stores the departure airport, optional number of aircraft, optional Altitude Category / Special aircraft indicator, aircraft type and an optional airborne equipment qualifier.		

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
	e=optional airborne equipment qualifier				
Field 03	03 TYP Aircraft Data ARTS FP to ERAM a=optional number of aircraft and special aircraft indicator b=separator, if a is present c=type of aircraft d=separator e=airborne equipment qualifier STARS FP to ERAM a=optional special aircraft indicator b=separator, if a is present c=type of aircraft d=separator e=airborne equipment qualifier	FP to ERAM from ARTS / STARS ARTS to ERAM Proposal ((d)(d)(L)/)La(a)(a)(/L) **a b c de** STARS to ERAM Proposal (L/)La(a)(a)/L **a b c de**	Field 03 provides the controller with critical flight data as follows: ARTS Field 03 sends the optional number of aircraft, optional Special aircraft indicator, aircraft type and an optional airborne equipment qualifier. STARS Field 03 sends the optional Special aircraft indicator, aircraft type and an airborne equipment qualifier.		
03 c	03 TYP Aircraft Data c= type of aircraft	ERAM (ATOP, FDIO, NADIN) La(a)(a)	When the aircraft type is the only element displayed the number of characters is 2 to 4.	Example of the aircraft type is as follows: **F16** The Air Force F16 fighter.	2–4

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
03 a, b, c	03 TYP Aircraft Data a= number of aircraft and special aircraft indicator b= separator c= type of aircraft	ERAM (ATOP, FDIO, NADIN) (d)d/La(a)(a) **a b c**	When the number of aircraft and the aircraft type are displayed for the controller 4 to 7 characters will be displayed. The number of aircraft is 1 or two digits and the aircraft type is 2 to 4 characters.	Example of the number of aircraft and the aircraft type is as follows: **3/B52** Three Air Force B52s are flying in a formation with one flight plan.	4–7
03 a, b, c	03 TYP Aircraft Data a= number of aircraft and special aircraft indicator b= separator c= type of aircraft	ERAM (ATOP, FDIO, NADIN) L/La(a)(a) **ab c**	When the Special Aircraft Indicator is entered, it must immediately precede the element separator and the type of aircraft. The Special Aircraft Indicator must be a single letter. The aircraft type is 2 to 4 characters.	Example of aircraft type (TYP) with a Special Aircraft Indicator: **H/B744** Is a Heavy Jet Boeing 747-400	4–6
03 c, d, e	03 TYP Aircraft Data c= type of aircraft d= separator e= airborne equipment qualifier	ERAM (ATOP, FDIO, NADIN) La(a)(a)/L **c d e**	The aircraft type is 2 to 4 characters. When the airborne equipment qualifier element is entered as part of this field, the element must match an adapted equipment code.	Example of aircraft type (TYP) with an Airborne Equipment Qualifier: **B737/G** Is a Boeing 737-700 with Global Positioning System Equipment	4–6

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
03 a, b, c, d, e	03 TYP Aircraft Data a= number of aircraft and special aircraft indicator b= separator c= type of aircraft d= separator e= airborne equipment qualifier	ERAM (ATOP, FDIO, NADIN) (d)dL/La(a)(a)/L **a b c d e**	When the number of aircraft (1 to 2 digits), the Special Aircraft Indicator (1 letter), the aircraft type (2 to 4 characters) and the Airborne Equipment Qualifier (1 letter) are entered, the number of characters is 7 to 10.	Example of the number of aircraft, special aircraft indicator, the aircraft type and the airborne equipment qualifier is as follows: **3H/B52/A** Three Heavy Jet Air Force B52s equipped with DME and Mode C Altitude Reporting.	7–10
03 a, c, e	03 TYP ATM IPOP Aircraft Data a= number of aircraft and special aircraft indicator c= type of aircraft e= airborne equipment qualifier	ATM IPOP ((d)(d)(L)) La(a)(a) (L) **a c e** Field 03a as follows: L dd dL ddL Field 03c as follows: La Laa Laaa Field 03e as follows: a	ATM IPOP stores the following Aircraft Data: Optional Field 03a: The number of aircraft (1 to 2 digits), The Special Aircraft Indicator (1 letter), **Note**: If the number of aircraft (2 to 9) is used without the Special Aircraft Indicator, a leading zero is required (such as 02, 03). Required Field 03c: The aircraft type (2 to 4 characters). Optional Field 03e: The Airborne Equipment Qualifier (1 alphanumeric).	Example of the number of aircraft, special aircraft indicator, the aircraft type and the airborne equipment qualifier is as follows: **Field 03a = 3H** **Field 03c = B52** **Field 03e = A** Three Heavy Jet Air Force B52s equipped with DME and Mode C Altitude Reporting. Example for a flight of 2/F16/A: **Field 03a = 02** **Field 03c = F16** **Field 03e = A**	Field 03a 1–3 Field 03c 2–4 Field 03e 1
03 h, j, b, c, d,	03 TYP for ARTS III	ERAM to ARTS III	ARTS III Field 03 Active Arrival and Overflight Flight Plans contain the	Example of the number of aircraft, special aircraft	4–10

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
e	Aircraft Data When parameter AFSI is OFF for the ARTS h=number of aircraft j=optional altitude category / special aircraft indicator b=separator c=type of aircraft d=optional separator, if e is present e=optional airborne equipment qualifier	Arrival or Overflight (d)d(L)/La(a)(a)(/L) **h j b c de** ERAM to STARS Arrival or Overflight d(L)/La(a)(a) **h j b c**	following: One or two character-number of aircraft in flight, one character- Altitude Category/Special Aircraft Indicator if present, slash (/) separator and 2 to 4 character Aircraft Type, the first of which must be a letter, optional slash (/) separator and optional one letter airborne equipment qualifier. For active flights, if the ARTS is adapted to only receive one digit for the number of aircraft in Field 03, the altitude category/special aircraft indicator is present and the number of aircraft is greater than 9, the number of aircraft will be transmitted as the single digit '9'. For active flight plans, this field will also contain the following one-character altitude category/Special Aircraft indicators: V−VFR (not heavy jet) W−VFR (plus heavy jet) U−OTP (plus heavy jet) H−IFR (plus heavy jet) (no indicator)—IFR (not heavy jet) When Field 03 is transmitted it will only	indicator, the aircraft type and the airborne equipment qualifier for arrivals or overflights is as follows: **3H/B52** Three Heavy Jet Air Force B52s. **1/C560** IFR flight not heavy jet **1/SH33** IFR not heavy jet **1V/PA28** VFR not heavy jet **1H/B763/R** IFR Boeing heavy jet with an airborne equipment qualifier of "R" **1W/B744** VFR heavy jet	

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
			include the Field 03de airborne equipment qualifier if it is present in the flight plan and the ARTS facility is enabled for receiving the airborne equipment qualifier.		
03 h, i, j, b, c, d, e	03 TYP for ARTS III Aircraft Data When parameter AFSI is ON for the ARTS h=number of aircraft i=optional separator before j, if j is present j=optional altitude category / special aircraft indicator b=separator c=type of aircraft d=optional separator, if e is present e=optional airborne equipment qualifier	ERAM to ARTS III Arrival or Overflight (d)d(/L)/La(a)(a)(/L) **h ij b c de**	ARTS III Field 03 Active Arrival and Overflight Flight Plans contain the following: One or two character-number of aircraft in flight followed by an optional slash (/) separator and optional one character-Altitude Category/Special Aircraft Indicator, followed by a slash (/) separator, 2 to 4 character Aircraft Type, the first of which must be a letter, optional slash (/) separator and optional one letter airborne equipment qualifier. For active flights, if the ARTS is adapted to only receive one digit for the number of aircraft in Field 03, the altitude category/special aircraft indicator is present and the number of aircraft is greater than 9, the number of aircraft will be transmitted as the single digit '9'. For active flight plans, this field will also contain the following one-character altitude category/Special Aircraft indicators:	Example of the number of aircraft, special aircraft indicator, the aircraft type and the airborne equipment qualifier for arrivals or overflights is as follows: **3/H/B52** Three Heavy Jet Air Force B52s. **1/C560** IFR flight not heavy jet **1/SH33** IFR not heavy jet **1/V/PA28** VFR not heavy jet **1/V/PA28** VFR not heavy jet **1/H/B763/R** IFR Boeing heavy jet with an airborne equipment qualifier of "R"	4–11

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			V−VFR (not heavy jet) W−VFR (plus heavy jet) U−OTP (plus heavy jet) H−IFR (plus heavy jet) (no indicator)—IFR (not heavy jet) When Field 03 is transmitted it will only include the Field 03de airborne equipment qualifier if it is present in the flight plan and the ARTS facility is enabled for receiving the airborne equipment qualifier.	**1/W/B744** VFR heavy jet	
03 f, j, b, c, d, e	03 TYP for ARTS III Departure Point and Aircraft Data When parameter AFSI is OFF and ANAP is OFF for the ARTS f=ARTS departure airport j=optional altitude category / special aircraft indicator b=separator c=type of aircraft d=optional separator, if e is present e=optional airborne	ERAM to ARTS III Proposal aaa(L)/La(a)(a)(/L) **f j b c de** ERAM to STARS Proposal aaa(L)/La(a)(a) **f j b c**	ARTS III Field 03 Proposed Flight Plans contain the following: Three character-Location Identifier, one character Altitude Category/Special Aircraft Indicator if present, slash (/) separator and 2 to 4 character Aircraft Type, the first of which must be a letter, optional slash separator and optional one letter airborne equipment qualifier. **Departure Point.** For proposed flight plans, this field will contain the departure point (three character location identifier). For proposed flight plans, this field will also contain the following one-character altitude category/Special Aircraft indicators:	Example of the departure airport, special aircraft indicator, the aircraft type and the airborne equipment qualifier is as follows: **JFKH/A343** Air Bus Heavy jet departing JFK **EWRH/B772/R** Boeing Heavy jet departing EWR with an airborne equipment qualifier of "R" **PHLV/BE20** VFR departing PHL not heavy **LGA/H25B**	6–11

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
	equipment qualifier		V−VFR (not heavy jet) W−VFR (plus heavy jet) U−OTP (plus heavy jet) H−IFR (plus heavy jet) (no indicator)—IFR (not heavy jet) When Field 03 is transmitted it will only include the Field 03de airborne equipment qualifier if it is present in the flight plan and the ARTS facility is enabled for receiving the airborne equipment qualifier.	IFR departing LGA not heavy	
03 f, g, h, j, b, c, d, e	03 TYP for ARTS III Departure Point and Aircraft Data When parameter AFSI is OFF and ANAP is ON for the ARTS f=ARTS departure airport g=separator h=number of aircraft j=optional altitude category / special aircraft indicator b=separator c=type of aircraft d=optional separator, if e is present e=optional airborne equipment qualifier	ERAM to ARTS III Proposal aaa/(d)d(L)/La(a)(a)(/L) **f g h j b c de**	ARTS III Field 03 Proposed Flight Plans contain the following: Three character-Location Identifier and a slash (/) separator, one or two character-number of aircraft in flight plan, one character Altitude Category/Special Aircraft Indicator if present, slash (/) separator and 2 to 4 character Aircraft Type, the first of which must be a letter, optional slash separator and optional one letter airborne equipment qualifier. **Departure Point.** For proposed flight plans, this field will contain the departure point (three character location identifier). **Special Aircraft Indicator.** For proposed flight plans, this field will	Example of the departure airport, the number of aircraft, special aircraft indicator, the aircraft type and the airborne equipment qualifier is as follows: **ADW/13H/B52** Thirteen Heavy Jet Air Force B52s departing from Andrews AFB **JFK/1H/A343** Air Bus Heavy jet departing JFK **EWR/1H/B772/R** Boeing Heavy jet departing EWR with an airborne equipment qualifier of “R” **PHL/1V/BE20**	8–14

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			contain the number of aircraft and the following one-character altitude category/Special Aircraft indicators: V−VFR (not heavy jet) W−VFR (plus heavy jet) U−OTP (plus heavy jet) H−IFR (plus heavy jet) (no indicator)—IFR (not heavy jet) When Field 03 is transmitted it will only include the Field 03de airborne equipment qualifier if it is present in the flight plan and the ARTS facility is enabled for receiving the airborne equipment qualifier.	VFR departing PHL not heavy **LGA/1/H25B** IFR departing LGA not heavy	
03 f, g, j, b, c, d, e	03 TYP for ARTS III Departure Point and Aircraft Data When parameter AFSI is ON and ANAP is OFF for the ARTS f=ARTS departure airport g=optional separator before j, if j is present j=optional altitude category / special aircraft indicator b=separator c=type of aircraft	ERAM to ARTS III Proposal aaa(a)(/L)/La(a)(a)(/L) **f gj b c de**	ARTS III Field 03 Proposed Flight Plans contain the following: Three or four character-Location Identifier, followed by an optional slash (/) separator and an optional one character Altitude Category/Special Aircraft Indicator, followed by a slash (/) separator, 2 to 4 character Aircraft Type, the first of which must be a letter, optional slash (/) separator and optional one letter airborne equipment qualifier. **Departure Point.** For proposed flight plans, this field will contain the departure point (three or four character location identifier). For proposed flight plans, this field will also contain the	Example of the departure airport, special aircraft indicator, the aircraft type and the airborne equipment qualifier is as follows: **JFK/H/A343** Air Bus Heavy jet departing JFK **KEWR/H/B772/R** Boeing Heavy jet departing KEWR with an airborne equipment qualifier of "R" **PHL/V/BE20** VFR departing PHL not heavy **LGA/H25B** IFR departing LGA not heavy	6–13

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
	d=optional separator, if e is present e=optional airborne equipment qualifier		following one-character altitude category/Special Aircraft indicators: V−VFR (not heavy jet) W−VFR (plus heavy jet) U−OTP (plus heavy jet) H−IFR (plus heavy jet) (no indicator)—IFR (not heavy jet) When Field 03 is transmitted it will only include the Field 03de airborne equipment qualifier if it is present in the flight plan and the ARTS facility is enabled for receiving the airborne equipment qualifier.	**KLGA/H25B** IFR departing KLGA not heavy	
03 f, g, h, j, b, c, d, e	03 TYP for ARTS III Departure Point and Aircraft Data When parameter AFSI is ON and ANAP is ON for the ARTS f=ARTS departure airport g=separator h=number of aircraft j=optional altitude category / special aircraft indicator b=separator c=type of aircraft d=optional separator, if	ERAM to ARTS III Proposal aaa(a)/(d)d(L)/La(a)(a)(/L) **f g h j b c de**	ARTS III Field 03 Proposed Flight Plans contain the following: Three or four character-Location Identifier and a slash (/) separator, one or two character-number of aircraft in flight plan, one character Altitude Category/Special Aircraft Indicator if present, slash (/) separator followed by 2 to 4 character Aircraft Type, the first of which must be a letter, optional slash separator and optional one letter airborne equipment qualifier. **Departure Point.** For proposed flight plans, this field will contain the departure point (three or four character location identifier).	Example of the departure airport, the number of aircraft, special aircraft indicator, the aircraft type and the airborne equipment qualifier is as follows: **ADW/13H/B52** Thirteen Heavy Jet Air Force B52s departing from Andrews AFB **JFK/1H/A343** Air Bus Heavy jet departing JFK **KEWR/2H/B772/R** Two Boeing Heavy jets departing KEWR with an airborne equipment qualifier of	8–15

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
	e is present e=optional airborne equipment qualifier		**Special Aircraft Indicator.** For proposed flight plans, this field will contain the number of aircraft and the following one-character altitude category/Special Aircraft indicators: V−VFR (not heavy jet) W−VFR (plus heavy jet) U−OTP (plus heavy jet) H−IFR (plus heavy jet) (no indicator)—IFR (not heavy jet) When Field 03 is transmitted it will only include the Field 03de airborne equipment qualifier if it is present in the flight plan and the ARTS facility is enabled for receiving the airborne equipment qualifier.	"R" **PHL/1V/BE20** VFR departing PHL not heavy **KLGA/1/H25B** IFR departing KLGA not heavy	
03 a, b, c, d, e	03 TYP Aircraft Data ARTS FP to ERAM a=optional number of aircraft and special aircraft indicator b=separator, if a is present c=type of aircraft d=optional separator, if e is present e=optional airborne equipment qualifier	FP to ERAM from ARTS ARTS to ERAM Proposal ((d)(d)(L)/)La(a)(a)(/L) **a b c de**	Field 03 provides the controller with critical flight data as follows: ARTS Field 03 sends the optional number of aircraft, optional Special aircraft indicator, aircraft type and an optional airborne equipment qualifier. When the number of aircraft (1 to 2 digits), the Special Aircraft Indicator (1 letter), the aircraft type (2 to 4 characters) and the Airborne Equipment Qualifier (1 letter) are entered, the number of characters is 7 to 10.	Example of the number of aircraft, special aircraft indicator, the aircraft type and the airborne equipment qualifier is as follows: **3H/B52/A** Three Heavy Jet Air Force B52s equipped with DME and Mode C Altitude Reporting.	2–10

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
03 a, b, c, d, e	03 TYP Aircraft Data STARS FP to ERAM a=optional special aircraft indicator b=separator, if a is present c=type of aircraft d=separator e=airborne equipment qualifier	FP to ERAM from STARS STARS to ERAM Proposal (L/)La(a)(a)/L **ab c de**	Field 03 provides the controller with critical flight data as follows: STARS Field 03 sends the optional Special aircraft indicator, aircraft type and an airborne equipment qualifier. When the optional Special Aircraft Indicator (1 letter), the aircraft type (2 to 4 characters) and the Airborne Equipment Qualifier (1 letter) are entered, the number of characters is 4 to 8.	Example of the special aircraft indicator, the aircraft type and the airborne equipment qualifier is as follows: **H/B52/A** Heavy Jet Air Force B52 equipped with DME and Mode C Altitude Reporting.	4–8
Field 04	04 BCN Beacon Code a= beacon code b= external beacon code (when different) c= ARTS no beacon code	dddd **a** dddd **b** LLLL **c**	Field 04a and Field 04b Beacon Code (BCN) is 4 octal digits. Each digit cannot be greater than 7. When the last two digits of the 4 digits are zero, the beacon code is a non-discrete code. A discrete beacon code is any code not ending in 00. Field 04c LLLL is four characters “FFFF” for an ARTS III flight plan that does not have a beacon code assigned.		
04 a	04 BCN Beacon Code a= beacon code	dddd	Field 04 Beacon Code (BCN) is 4 octal digits. Each digit cannot be greater than 7. When the last two digits of the 4 digits are zero, the beacon code is a non-	Example of Beacon Codes: **1200** Non-discrete VFR Code	4

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
			discrete code. A discrete beacon code is any code not ending in 00. Field 04a is the assigned beacon code as stored in Field Reference Number 94 (BCN) of the ERAM Flight Plan (FP).	**2101** Discrete Beacon Code Assigned by ERAM	
04 b	04 BCN Beacon Code b= external beacon code (when different)	dddd **b**	Field 04b Beacon Code (BCN) is 4 octal digits. Each digit cannot be greater than 7. When the last two digits of the 4 digits are zero, the beacon code is a non-discrete code. A discrete beacon code is any code not ending in 00. Field 04b is the External Beacon Code as stored in Field Reference Number 94 (EBC) of the ERAM Flight Plan (FP). Field Number 04B will contain the requested beacon code when the flight plan is inbound from an adjacent Center or an adjacent Non-U.S. Automated Facility, the requested beacon code is different from the assigned beacon code, and the aircraft is not established on the assigned beacon code. Then, if the facility is adapted to receive Field (04b), Field 04b will be transmitted.	Example of Beacon Codes: **Field 4 A= 3443** **Field 4 B = 3434** ERAM has assigned the flight Beacon Code 3443 (Field 4A), but the adjacent center has assigned Beacon Code 3434(Field 4B).	4

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
04 c	04 BCN Beacon Code c= ARTS no beacon code	LLLL **c**	Field 04c LLLL will be “FFFF” for the ARTS FP that has no beacon code assigned.	Example of Beacon Codes: **FFFF** No beacon code assigned for the aircraft, ERAM sends to ARTS III as Field 04 of the ARTS III flight plan.	4
Field 05	05 SPD Aircraft Speed a= (d)(d)dd true airspeed in knots b= ddd ground speed c= Mach speed d= SC speed classified	(d)(d)dd **a** ddd **b** Mddd **c** SC **d**	Speed Field 05 is represented in several different formats as follows: True airspeed = (d)(d)dd Ground Speed=ddd used for the HZ, TH, TZ message. Mddd= Mach Speed SC= Speed Classified, the value used is in adaptation.		2–5
05 a	05 SPD Aircraft Speed a= true airspeed in knots	(d)(d)dd	True speed = (d)(d)dd format is used for most of the flight plan related input messages The true speed is in knots 2-4 characters that must be greater than 0 and cannot exceed 3700.	Example for True Airspeed **540** Aircraft true airspeed is 540 knots	2–4
05 b	05 SPD Aircraft Speed b= ground speed	ddd	Ground Speed=ddd is used for the ATM IPOP HZ and TH message and the ARTS III TZ message. If aircraft ground speed is not available	Example for Ground Speed for HZ, TH and TZ message **Field 5 B = 357**	3

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			Field 05b will be 3 zeros. The ground speed is 3 characters.	Ground Speed is 357 knots **Field 5 B = 000** Indicates Ground Speed is missing	
05 c	05 SPD Aircraft Speed c= mach speed	Mddd	Mddd= Mach Speed that cannot exceed M500. The mach speed is 4 characters.	Example for Mach Speed **M085** The Mach Speed is 0.85 Mach	4
05 d	05 SPD Aircraft Speed d= speed classified	SC	SC= Speed Classified, the value used by the automation is stored in adaptation.	Example for Speed Classified **SC** The adapted classified speed is not displayed on flight strips. The character string 'SC' is printed instead.	2
Field 06	06 FIX Coordination Fix a= flight plan coordination fix, the start point for processing a flight plan route (Any except ARTS) a= ARTS flight plan coordination fix, an inbound fix or an outbound fix for ARTS	**Coordination Fix format** **(Not including ARTS III, see below for ARTS III)** aa(a)(a)(a)(/)(a)(a)(a)(a)(a)(a) Fix formats include: aa(a)(a)(a), for fix name or aa(a)(a)(a)dddddd, for fix radial distance or	The coordination fix is the starting point to begin processing the flight plan route from one of the following points: • the departure airport, • the airfile fix or • the adjacent center inbound coordination fix For ARTS III flight plans the coordination fix Field 06 is used as the inbound coordination -fix or the outbound coordination fix or, for an ARTS internal flight, it can be the		

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
	airspace or the departure or destination airport	dddd(L)/(d)dddd(L), for lat/long **ARTS III** aaa(a)	departure or destination airport.		
06 a	06 FIX Coordination Fix a= flight plan coordination fix, the start point for processing a flight plan route (Any except ARTS)	**Coordination Fix format** **(Not including ARTS III, see below for ARTS III)** aa(a)(a)(a)(/)(a)(a)(a)(a)(a)(a) Fix formats include: aa(a)(a)(a), for fix name or aa(a)(a)(a)dddddd, for fix radial distance or dddd(L)/(d)dddd(L), for lat/long	The coordination fix is the starting point to begin processing the flight plan route from one of the following points: • the departure airport, • the airfile fix or • the adjacent center inbound coordination fix The coordination fix is a fix mutually agreed upon by the facilities concerned for the coordination of center control transfer. The fix is expressed in one of the conventions specified for fixes in Field 10.	Example of the different types of coordination fixes: **AB** **BUJ** **DFW** **KDFW** **ATOKA** **AB200010** **SHP090015** **ATOKA300040** **3500/04000** **3500N/04000W** **Note**: a delay time cannot be attached to the coordination fix.	2–12
06 a	06 FIX Coordination Fix a= ARTS flight plan coordination fix, an inbound fix or an outbound fix for ARTS airspace or the	**ARTS III** aaa(a)	For ARTS flight plans the coordination fix Field 06 is used as the inbound coordination fix or the outbound coordination fix. **Active flight plan** (arrival or overflight) –The Inbound Fix is Field 06. **Proposed flight plan exiting ARTS** –	See example below for the ARTS flight plan Field 06 coordination fix usage:	3 or 4

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes

	departure or destination airport		Field 06 is the outbound coordination Fix for the ARTS.
			
			Airport – Field 06 can be the departure or destination airport for an ARTS internal flight.
			
			If the airport name is 2 characters, Field 06 will be "0" (zero) followed by those 2 characters. For airport name 3 or more characters, the following applies.
			
			If parameter AFSI is OFF then
			
			If the airport name is 4 characters and starts with "K", Field 06 is the last three characters, otherwise Field 06 is the first 3 characters of the airport name.
			
			If parameter AFSI is ON then
			
			If parameter AKIS is ON then Field 06 is the first 4 characters of the airport name. If AKIS is OFF then if the airport name is 4 characters starting with "K", Field 06 is the last 3 characters else Field 06 is the first 4 characters.
			
			If the coordination fix is not an airport, the following applies.
			
			The coordination fix field contains the first three alphanumerics of the ARTS coordination fix		

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
			If the coordination fix is other than three characters, the following applies: 1. If it is a two character fix, a “0” (zero) precedes the two character fix identifier. 2. If the coordination fix has four or more characters, the first three characters will be used as the fix identifier.		

See example below for the ARTS flight plan Field 06 coordination fix usage:

The following is an arrival flight plan arriving JFK sent from ERAM ZCN to NNN ARTS, the inbound Field 06 coordination fix for the ARTS FP is **LEN**.

With parameter AFSI OFF:

ZCN1917178   FP 53GAAL34 1H/B747 6701 LEN A1932 390 JFK

With parameters AFSI ON and AKIS ON:

ZCN1917178   FP 53GAAL34 1/H/B747 6701 **LEN** A1932 390 KJFK

The following is a proposed flight plan departing PHL, sent from ZCN ERAM to PPP ARTS, the outbound Field 06 coordination fix for the ARTS FP is **OOD**.

ZCN1918894   FP 918PDT4073 PHL/DH8C 1557 **OOD** P1925 060

The following is an overflight flight plan for PPP ARTS, sent from ZCN ERAM to PPP ARTS, the inbound Field 06 coordination fix for the ARTS FP is **NHI**.

The outbound Field 10 route fix is SBJ.

ZCN1918895   FP 933CKL700 1/H25B 1321 **NHI** E1942 110 SBJ

The following is a flight fully contained in NNN ARTS from LGA to JFK sent from ERAM ZNY to NNN ARTS.

With paramter AFSI OFF:

ZNY1917178   FP 53GAAL34 LGAV/DH8C 1501 JFK P1952 VFR

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
With parameters AFSI ON and AKIS ON: ZNY1917178 FP 53GAAL34 KLGA/V/DH8C 1501 KJFK P1952 VFR					
Field 07	07 TIM Coordination Time a= type of time action indicator element b= UTC time or relative time element c= provide delay time element d= time in hours and minutes e= provide delay time in minutes	(L)(aadd)(/Lddd) **a b c** Ldddd **d** ddd **e**	Field 07 (TIM) coordination time is associated with Field 06 (FIX) the starting time and point for the flight plan (plus an optional delay time). The format can be 3 to 10 characters long.		
07 a, b	07 TIM Coordination Time a= type of time action indicator element b= UTC time or relative time element	Ldddd **a b** L= A, P, D, E, or F **a** dddd = UTC time **b**	Element a is the type of coordination time that is one character and has the following definitions: A = Active arrival flight plan for ARTS III only, aircraft is flying. P = Proposed flight plan preparing for departure. D = Flight plan has departed from the departure airport. E = Active flight plan, aircraft is flying. For ARTS III "E" indicates an overflight. F = Flush flight plan, adjacent HCS	Example of Time usage: **A0103** ARTS III Flight is arriving and is estimated to arrive at the coordination fix at 0103. **P0010** Flight is proposed to depart from an airport or arrive at an inbound coordination fix at 0010 UTC time. **D0103** Flight has departed from the	5

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			center that is performing a shutdown. The adjacent center activates the pending Proposed flight plans with a "F" Flush time and sends the flight plans to the adjacent ERAM. Flush times are only used HCS to ERAM. The receiving ERAM processes the "F" Flush time as a "P" Proposed time. ERAM database only uses P, D E and F. ARTS III database only uses P, E and A. NOTE: The coordination time indicator is not used for Departure Messages (DM), but ERAM treats the time as a "D" time. Element b (UTC time) is the dddd format, the first 2 digits must not be greater than 23 and the last 2 digits must not be greater than 59.	departure airport at 0103. **E2359** Flight is active and is estimated to arrive at the coordination fix at 2359. **F1815** Flight is pending and is being flushed by an adjacent HCS that is shutting down.	
07 a, b	07 TIM Coordination Time a= type of time action indicator element b= UTC time or relative time element	Relative Time Format LXXdd **a b** L= P, D, or E **a** XXdd = relative time	Field 07 element a is the type of coordination time that is one character and has the following definitions: P = Proposed flight plan preparing for departure. D = Flight plan has departed from the departure airport. E = Active flight plan, aircraft is flying.	Example of Coordination Time usage: **PXX00** A flight plan that has been input at UTC time of 2315 with a Field 07ab proposed time of PXX00, the proposed time stored with the flight plan will	5

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
		b	The coordination time Field 07 element b contains a time relative to the UTC current clock time. The time element b of Field 07 is 4 characters. The dd of the XXdd must not be greater than 99. The entered XXdd relative time is converted to UTC by adding the relative time in minutes (dd) to the current UTC time. If a time of DXX02 is entered, the calculated time of departure will equal the sum of the current time plus two minutes. This time will then replace the XX02. If a time of PXX61 is entered, the calculated proposed time of departure will equal the sum of the current time plus 61 minutes. This time will then replace the XX61. If a time of EXX30 is entered, the calculated estimated time to arrive at the coordination fix will equal the sum of the current time plus 30 minutes. This time will then replace the XX30.	be "P2315".	
07 b	07 TIM Coordination Time	For ARTS III/FDIO Departure Message dddd = UTC time	The coordination time Field 07 (TIM) contains a Universal Time or contains a time relative to the current clock time. The time element b of Field 07 is 4	Example of Coordination Time usage: **DM BN156 2359**	4

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
	b= UTC time or relative time element	or XXdd = relative time	characters. The format Field 07 dddd and XXdd (element b) is only allowed for Departure Messages (DM) from ARTS III / FDIO facilities. For the dddd format the first 2 digits must not be greater than 23 and the last 2 digits must not be greater than 59. The dd of the XXdd must not be greater than 99. The entered XXdd relative time is converted to UTC by adding the relative time in minutes (dd) to the current UTC time.	A Departure Message (DM) time of 2359 has been received for Braniff flight 156. **DM BN156 XX00** A Departure Message (DM) with a time of XX00 was received at UTC time of 2359 that was translated to UTC time of 2359 has been received for Braniff flight 156.	
07 a, b, c	07 TIM Coordination Time a= type of time action indicator element b= UTC time or relative time element c= provide delay time element	For ATOP FP and AM Messages Ldddd(/Lddd) **a b c**	Coordination time Field 07ab can have an optional element “c” (/Tddd) to Provide Time Delay for FAD Flow processing. The Field 07abc with the optional element “c” is 10 characters. This element contains the Provide Delay Time (PDT) in minutes for printing on en route center and flow control strips and is used to transfer PDT data intercenter with ATOP on qualified flight plans.	Example of Coordination Time usage: **E1230/T030** Coordination time is 1230 UTC with a 30 minute delay for FAD	10

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
07 d	07 TIM Coordination Time d= time in hours and minutes	Ldddd	Coordination time Field 07d time in hours and minutes is the same as element a and element b for Field 07. The Field 07 is 5 characters. L must =D, E, P, or F. For the dddd format the first 2 digits must not be greater than 23 and the last 2 digits must not be greater than 59. Coordination time format is for CMS output messages.	Example of Coordination Time usage: **Field 7 D= D1903** AH Message Field 7D, flight departed at 1903	5
07 e	07 TIM Coordination Time e= provide delay time in minutes	ddd	Coordination time Field 07 element e is an optional 3 character field and is used to provide a delay time in minutes (PDT) with the CMS output message	Example of Coordination Time usage: **E2250 field header 030** A CMS message is being output that contains a Field 07d time of E2250 followed by a field header followed by another Field 07e showing 030 minutes of delay.	3
Field 08	08 ALT Assigned Altitude a= altitude or flight level b= vfr-on-top c= vfr-on-top with altitude d= block of altitudes or	(d)dd **a** OTP **b** OTP/(d)dd **c**	Field 08 Assigned Altitude (ALT) is the assigned altitude for the flight to fly at. Field 08 is required for an active flight plan message (such as FP and SP). This field is 2−20 characters.		

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
	flight levels e= aircraft operating above a specified altitude f= altitude/fix/altitude g= vfr flight h= vfr flight with altitude	(d)ddB(d)dd **d** ABV/(d)dd **e** (d)dd/fix/(d)dd **f** VFR **g** VFR/(d)dd **h**			
08 a	08 ALT Assigned Altitude a=altitude or flight level	(d)dd or ddd	Field 08 Assigned Altitude (ALT) element a (d)dd format that represents an altitude in hundreds of feet or a Flight Level in hundreds of feet as follows: 90 = 9,000 feet 310 = 31,000 feet Flight Level 310 The Assigned Altitude field is 2 to 3 characters. ARTS III requires three characters (ddd) with a leading "0" when required, such as 090. If the aircraft altitude is not available Field 08a will be 3 zeros when ARTS sends the TZ message to ERAM.	Example of Assigned Altitude Field 08 usage: **340** Aircraft is flying at 34,000 feet ~ FL340 (Flight Level 340) ATM IPOP: **Field 8A = 90** Field 8A indicates the Aircraft is flying at 9,000 feet ARTS III: **070** Aircraft is flying at 7,000 feet	2–3

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
08 b	08 ALT Assigned Altitude b= vfr-on-top	OTP	Field 08 Assigned Altitude (ALT) element b format "OTP" represents an IFR flight operating above the clouds in VFR conditions. OTP is VFR-ON-Top. ERAM will send the adapted altitude parameter (ddd) instead of the "OTP" to ARTS III and place a special altitude indicator "U(if a Heavy Jet)" in Field 03.	Example of Assigned Altitude Field 08 usage: **OTP** Aircraft is flying VFR-ON-Top	3
08 c	08 ALT Assigned Altitude c= vfr-on-top with altitude	OTP/(d)dd	Field 08 Assigned Altitude (ALT) element c format "OTP/(d)dd" represents an IFR flight operating above the clouds in VFR conditions. OTP is VFR-ON-Top. The flight will be processed at the altitude specified with the (d)dd that represents an altitude in hundreds of feet or a Flight Level in hundreds of feet. The altitude is an abbreviation of the actual altitude or actual Flight Level as follows: 90 = 9,000 feet 250 = 25,000 feet Flight Level 250 The number of characters is 6 to 7. ERAM will only send ARTS III the reported altitude "ddd" and place a	Example of Assigned Altitude Field 08 usage: **OTP/250** Aircraft is flying VFR-ON-Top at 25,000 feet.	6–7 or 3 for ARTS

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
			special altitude indicator “U(if a Heavy Jet)” in Field 03.		
08 d	08 ALT Assigned Altitude d= block of altitudes or flight levels	(d)ddB(d)dd	Field 08 Assigned Altitude (ALT) element d format is the assigned block of altitudes for the flight to fly at. The 4 to 6 digits represents an altitude in hundreds of feet or a Flight Level in hundreds of feet as follows: 90 = 9,000 feet 310 = 31,000 feet Flight Level 310 The “B” of the Field 08 format (d)ddB(d)dd is an abbreviation for “Block of Altitudes”. The flight of one or more aircraft can be at any altitude inside of the Block of Altitudes. The lowest altitude must be listed first, such as 220B230.	Example of Assigned Altitude Field 08 usage: **250B260** Assigned Altitude Block of 250B260 ATM IPOP: **Field 8 D= 80B140** From TH message Field 8D 6 characters - aircraft altitude is 80B140	5–7
08 e	08 ALT Assigned Altitude e= aircraft operating above a specified altitude	ABV/(d)dd	Field 08 Assigned Altitude (ALT) element e format “ABV/(d)dd” represents an IFR flight operating Above (ABV) the(d)dd. The “ABV” is an abbreviation for “ABOVE”. The aircraft will be operating ABOVE the actual altitude or actual Flight Level as displayed. The two to three digits represents an altitude in hundreds of feet or a Flight	Example of Assigned Altitude Field 08 usage: **ABV/600** Aircraft is flying ABV above 60,000 feet.	6–7

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			Level in hundreds of feet as follows: 90 = 9,000 feet 600 = 60,000 feet Flight Level 600		
08 f	08 ALT Assigned Altitude f= altitude/fix/altitude	(d)dd/FIX/(d)dd FIX formats include the following Field 10 fix formats: aa(a)(a)(a) for fix name or aa(a)(a)(a)dddddd for fix radial distance or dddd(L)/(d)dddd(L) for lat/long	Field 08 Assigned Altitude (ALT) element f format is the assigned Altitude / FIX / Altitude for the flight to fly at. The aircraft will fly at the first (d)dd to the "FIX" and then will climb or descend to the second altitude listed after the "FIX". The digits represent an altitude in hundreds of feet or a Flight Level in hundreds of feet as follows: 90 = 9,000 feet 310 = 31,000 feet Flight Level 310 The "FIX" of the Field 08 format (d)dd/FIX/(d)dd is a fix name 2-12 characters. The format of the "FIX" is expressed in one of the conventions specified for fixes in Field 10. The fix between the two altitudes cannot be the departure or arrival point,	Example of Assigned Altitude Field 08 usage: **250/DAL/260** An Air Force F16 fighter will fly at altitude Flight Level 250 to the DAL fix and then climb to Flight Level 260 **240/DAL350010/220** An Air Force F16 fighter will fly at altitude Flight Level 240 to the DAL350010 fix radial distance fix and then descend to Flight Level 220	8–20
08 g	08 ALT Assigned Altitude	VFR	Field 08 Assigned Altitude (ALT) element g format "VFR" is an abbreviation for Visual Flight Rules.	Example of Assigned Altitude Field 08 usage:	3

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
	g = vfr flight		The FP will be processed at an adapted parameter altitude value. ERAM will send ARTS III three characters "VFR" and place a special altitude indicator "V(not a Heavy Jet)" or "W(if a Heavy Jet)" in Field 03.	**VFR** Aircraft is flying VFR	
08 h	08 ALT Assigned Altitude h = vfr flight with altitude	VFR/(d)dd	Field 08 Assigned Altitude (ALT) element h format "VFR/(d)dd" represents a VFR flight. The flight will be processed at the altitude specified with the (d)dd. The digits represent an altitude in hundreds of feet as follows: 95 = 9,500 feet 115 = 11,500 feet The number of characters is 6 to 7. ERAM will send ARTS III three characters "VFR" and place a special altitude indicator "V(not a Heavy Jet)" or "W(if a Heavy Jet)" in Field 03.	Example of Assigned Altitude Field 08 usage: **VFR/75** Aircraft is flying VFR at 7,500 feet ERAM to ATM IPOP: **Field 8 H = VFR/75**	6–7 or 3 for ARTS
Field 09	09 RAL Requested Altitude a = altitude or flight level b = vfr-on-top c = vfr-on-top with	(d)dd a OTP b OTP/(d)dd	Field 09 Requested Altitude (RAL) is the requested altitude for the flight to fly at. Field 09 is required for a proposed flight plan message (such as FP and SP). This field is 2−7 characters.		

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
	altitude d = aircraft operating above a specified altitude e = block of altitudes or flight levels f = vfr flight g = vfr flight with altitude	c ABV/(d)dd d (d)ddB(d)dd e VFR f VFR/(d)dd g			
09 a	09 RAL Requested Altitude a = altitude or flight level	(d)dd or ddd	Field 09 Requested Altitude (RAL) element a format that represents an altitude in hundreds of feet or a Flight Level in hundreds of feet as follows: 90 = 9,000 feet 310 = 31,000 feet Flight Level 310 The Requested Altitude field element a is 2 to 3 characters. ARTS III requires three characters (ddd) with a leading “0” when required, such as 090.	Example of Requested Altitude Field 09 usage: **340** Aircraft is Requesting 34,000 feet ~ FL340 (Flight Level 340) **70** Aircraft is requesting to fly at 7,000 feet **070** ERAM to ARTS III requires leading “0”.	2–3 or 3 for ARTS
09 b	09 RAL Requested Altitude b = vfr-on-top	OTP	Field 09 Requested Altitude (RAL) element b format “OTP” represents an IFR flight requesting to operate above the clouds in VFR conditions. OTP is VFR-ON-Top.	Example of Requested Altitude Field 09 usage: **OTP** Aircraft is requesting to fly	3

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			The FP will be processed at an adapted altitude value. ERAM will send the adapted altitude parameter (ddd) instead of the "OTP" to ARTS III and place a special altitude indicator "U(if a Heavy Jet)" in Field 03.	VFR-ON-Top.	
09 c	09 RAL Requested Altitude c = vfr-on-top with altitude	OTP/(d)dd	Field 09 Requested Altitude (RAL) element c format "OTP/(d)dd" represents an IFR flight operating above the clouds in VFR conditions. OTP is VFR-ON-Top. The flight will be processed at the requested altitude specified with the (d)dd. The requested altitude represents an altitude in hundreds of feet or a Flight Level in hundreds of feet as follows: 90 = 9,000 feet 310 = 31,000 feet Flight Level 310 The number of characters is 6 to 7. ERAM will only send ARTS III the reported altitude "ddd" and place a special altitude indicator "U(if a Heavy Jet)" in Field 03.	Example of Requested Altitude Field 09 usage: **OTP/250** Aircraft is requesting to fly VFR-ON-Top.	6–7 or 3 for ARTS
09 d	09 RAL	ABV/(d)dd	Field 09 Requested Altitude (RAL)	Example of Requested Altitude	6–7

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
	Requested Altitude d = aircraft operating above a specified altitude		element d format "ABV/(d)dd" represents an IFR flight operating Above (ABV) the(d)dd. The "ABV" is an abbreviation for "ABOVE" the actual altitude or actual Flight Level as displayed. The flight will be processed at the altitude specified with the (d)dd. The 2 to 3 digits represents an altitude in hundreds of feet or a Flight Level in hundreds of feet as follows: 90 = 9,000 feet 600 = 60,000 feet Flight Level 600	Field 09 usage: **ABV/600** Aircraft is requesting to fly ABV above 60,000 feet.	
09 e	09 RAL Requested Altitude e = block of altitudes or flight levels	(d)ddB(d)dd	Field 09 Requested Altitude (RAL) element e format is the Requested block of altitudes for the flight to fly at. The 5to 7 digits represents an altitude in hundreds of feet or a Flight Level in hundreds of feet as follows: 90 = 9,000 feet 310 = 31,000 feet Flight Level 310 The "B" of the Field 09 format (d)ddB(d)dd is an abbreviation for "Block of Altitudes". The flight of one or more aircraft can be at any altitude inside of the Block of Altitudes.	Example of Requested Altitude Field 09 usage: **250B260** An Air Force C135 refueling tanker is requesting to refuel another aircraft inside of a Requested Altitude Block of 250B260. AH message - requested altitude of the aircraft is: **Field 9 E= 90B100**	5–7

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
			The lowest altitude must be listed first, such as 220B230.		
09 f	09 RAL Requested Altitude f = vfr flight	VFR	Field 09 Requested Altitude (RAL) element f format “VFR” represents a Visual Flight Rules (VFR) flight. The FP will be processed at an adapted parameter altitude value. ERAM will send ARTS III three characters “VFR” and place a special altitude indicator “V(not a Heavy Jet)” or “W(if a Heavy Jet)” in Field 03.	Example of Requested Altitude Field 09 usage: **VFR** Aircraft is requesting to fly VFR. Strips are posted at an adapted altitude.	3
09 g	09 RAL Requested Altitude g = vfr flight with altitude	VFR/(d)dd	Field 09 Requested Altitude (RAL) element g format “VFR/(d)dd” represents a VFR flight. The flight will be processed at the altitude specified with the (d)dd. The digits represent an altitude in hundreds of feet as follows: 95 = 9,500 feet 115 = 11,500 feet ERAM will send ARTS III three characters “VFR” and place a special altitude indicator “V(not a Heavy Jet)” or “W(if a Heavy Jet)” in Field 03.	Example of Requested Altitude Field 09 usage: **VFR/75** Aircraft is requesting to fly VFR at 7,500 feet. **Field 9 G= VFR/35** FH message Field 9G aircraft is requesting an altitude of VFR/35.	6–7 or 3 for ARTS

Description of the Flight Plan (FP) Route Field – Field 10 RTE

Most flight plan messages contain a route field called Field 10. (The ARTS III Proposed flight plan does not contain a Field 10.) The purpose for the Route Field

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
10 is to show how the airplane will fly from the departure airport to the arrival airport. The route Field 10 filed by the pilot can be very complex considering some flights fly half way around the world, therefore the route field contains several elements and sub-elements to describe the pilots intentions as the flight progresses from the departure airport to the arrival airport. The format of Field 10 determines the type of ERAM processing that must occur for all users of the Air Traffic Control System. Special elements have to be placed in the correct format to obtain the desired output. The Common Appendix to describe the Field 10 starts at the first route element the departure point, then the second element, followed by the third element, followed possibly by an additional number of elements, and then to the destination point. **Note**: Field 10 can contain one element for a STEREO route and can contain a minimum of two elements containing the departure element followed by the destination element. Several different types of Routes are processed by different Air Traffic Control Systems and different computer systems as follows: FAA domestic en route systems for ERAM and ATOP Flight Plans (FP) are discussed as "Field 10a RTE. FAA domestic en route systems for ERAM to ATM IPOP Flight Plans (FH) are discussed as "Field 10a RTE, Field 10b RTE and Field 10c RTE. FAA domestic terminal systems ARTS and STARS Flight Plans (FP) are discussed as Field 10b RTE. ICAO International systems Flight Plans (FPL-for pending) and (CPL-for active) are discussed in ICAO 13a DEP, ICAO15c RTE and ICAO 16a DST in the fields for ICAO later in the Common Appendix. The next page shows how the route is made up of fixes and routes and demonstrates the FIX.ROUTE.FIX format for Field 10. It shows how you input null routes FIX..FIX and null implied fixes FIX.ROUTE..ROUTE.FIX. The entire Field 10 element formats and sub-elements with special route indicators are listed on the next page. Lists of route examples are displayed using the different elements. The following pages then explain each segment of the route starting with the departure point to the destination.					
Field 10	10 RTE ROUTE a = route of flight for ERAM, ATOP, FDIO and NADIN b = ARTS arrival airport or ARTS exit coordination fix a = Flight Plan Route for ERAM to ATM IPOP b = Local Intended Route	**Fix Format:** Fix/Airport Name = aa(a)(a)(a) Fix Radial Distance = aa(a)(a)(a)dddddd Lat/long = dddd(L)/(d)dddd(L) **Route Format:** Departure Procedure (DP) = aa(a)(a)(a)d Airway = aa(a)(a)(a)(a)(a)(a) Radial Route = aa(a)(a)(a)ddd Military Route =	**ERAM, ATOP, ATM IPOP, FDIO and NADIN** Field 10 must process elements of the route field in a fix-route-fix sequence to determine whether an element should be interpreted as a fix element or as a route element. Using the fix-route-fix sequence, ERAM will parse the route field into fix elements and route elements. The first element of the route field is the	See Example of Route of flight Field 10 RTE usage below:	

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
	for ERAM to ATM IPOP c = ATC Intended Route for ERAM to ATM IPOP	aa(a)(a)(a)(a)(a)(a) Standard Arrival Route(STAR)= aa(a)(a)(a)d Stereo Route = La(a)(a)(a)(a)(a)(a) **Suffixes for FIX** Auto Route Inhibit = * or ⊕ Estimated Time En Route = /dddd Estimated Time of Arrival = /dddd Delay Data = /D(d)d+dd **Special Route Indicators** Tailoring symbol = ./. Visual Flight Rule = VFR Defense Visual Flight Rules = DVFR Incomplete Route = XXX Instrument Flight Rules = IFR Reentry ((+Rd(d))(+Sd(d))) Plus Sign for Special Printing = +	first fix element and the second element of the route field is the first route element. Periods (".") delimit elements in the flight plan route and a fix or route element may be null (".."). When a fix element is followed by a null route element followed by a fix element (fix..fix), the sequence is called a direct route segment. When a route element is followed by a null fix element followed by route element (route..route), the junction fix is implied. **ARTS** Field 10b is for the ARTS arrival airport or the ARTS exit coordination fix.		

Example of Route of Flight Field 10 RTE usage:

FIX1.ROUTE1.FIX2
FIX1..FIX2
FIX1.ROUTE1..ROUTE2.FIX2
FIX1./.FIX2.ROUTE1.FIX3
FIX1./.FIX2..FIX3
FIX1.VFR.FIX2..FIX3
FIX1.ROUTE1.FIX2.VFR
FIX1.ROUTE1.FIX2.VFR.FIX3

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
FIX1.VFR.FIX2.ROUTE1.FIX3 FIX1.ROUTE1.FIX2.XXX FIXA.FIXA090..FIXB270.FIXB DFW.DP1.TXK.J42.JFK JFK.J42.TXK.STAR1.DFW FIX1..FIX2.XXX.J4A.DFW DYS.MILITARY.SHP/2310 AREAT38 SHP..CDS/D0+20..SHP BAD..+AEX..BAD BAD*..AEX..BAD* TIK..TUL.VFR.SWO.IFR.SWO.V14N.TIK					
10 a	10 RTE a = route of flight	**Field 10 RTE Fix Format:** Fix/Airport Name = aa(a)(a)(a) Fix Radial Distance = aa(a)(a)(a)dddddd Lat/long = dddd(L)/(d)dddd(L)	The Field 10 RTE field format is made up fix elements and route elements and the elements are separated by "." periods. The **first element** of the route field must be a fix element. The first fix element is normally the departure airport which can be 2-5 characters. However, the first element can be the starting airfile point for the flight plan in the format of any type of fix as follows: • Fix = aa(a)(a)(a) 2-5 characters, the fix could be a VOR, NDB, intersection, etc. Must be recognized as an adapted fix.	Example of Route of Flight Field 10 RTE usage: **DFW.J42.KJFK** **ATOKA.J20.SHV** **CDS100020..LTS** **7522/16345..ATOKA** **2430/8915..2435N/8915E**	2–12

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
			• Fix Radial Distance = aa(a)(a)(a)dddddd The named fix could be a DME, Tacan, VOR, NDB, intersection plus the Radial that can be 001 to 360 degrees followed by a distance that can be 001 to 999 nm. The fix portion must be recognized as an adapted fix. The fix radial distance is 8 to 11 Characters. • Lat/long = dddd(L)/(d)dddd(L) The fix can be any Latitude/Longitude The Lat/long fix is 9 to 12 characters.		
10 a	10 RTE a = route of flight	**Field 10 RTE Route Format:** Route Second Element Format: Departure Procedure (DP)= aa(a)(a)(a)d Airway= aa(a)(a)(a)(a)(a)(a) Radial Route= aa(a)(a)(a)ddd Military Route= aa(a)(a)(a)(a)(a)(a)	The Field 10 RTE field format is made up fix elements and route elements and the elements are separated by "." Periods. The Field 10 RTE logic is looking for a format of **FIX.ROUTE.FIX.** ERAM checks for the following **special second elements:** • ./. • .. null = direct route processing. • VFR. • .DVFR.	See Example of Route of flight Field 10 RTE usage below:	2–8

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			If none of the above are the second element, ERAM is expecting a recognized adapted route as the **second element,** (excluding the STAR routes). There are three broad categories of routes: (1) routes that are filed by users, (2) auto routes that are automatically applied by the system, and (3) ATC Preferred Routes (APRs) that are proposed by the system and manually applied by controllers. The following adapted types of routes can be filed by users: • Departure Procedure (DP) (Standard Instrument Departure (SID) Route) 3-6 Characters • Adapted Airways 2-8 Characters • Radial Routes 5-8 Characters • Military Routes 2-8 Characters		
Example of Route of Flight Field 10 RTE usage: **Departure (DP) Route Usage:** DFW.TXK1.TXK.J42.MEM MEM.MEM1.TXK.BUJ1.DFW **Airway Route Usage:** OKC.J6.LAX					

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
Radial Route Usage: TUL.TUL090..FYV270.FYV **Military Route Usage:** DYS.IR60.ACT..DYS					
10 a	10 RTE a = route of flight	**Field 10 RTE Route Format:** The Tailoring Symbol "./." Is a Special Second Element Format: Tailoring Symbol Format **./.**	The Field 10 RTE field format is made up fix elements and route elements and the elements are separated by "." Periods. The Field 10 RTE logic is looking for a format of **FIX.ROUTE.FIX.** ERAM checks for the following **special second elements:** • ./. • .. null = direct route processing • .VFR. • .DVFR. If the above **Special second element "./." Tailoring symbol** is found, the following processing will occur: The tailoring symbol indicates that some previous route in the flight plan has been tailored out (deleted), since it is not associated with the present segment for processing the route.	See Example of Route of flight Field 10 RTE usage below:	1

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			Route processing will now begin after the tailoring symbol with the third element of the route instead of the first element. The first element is always retained. The route processing is now expecting the following: FIX./.FIX.ROUTE.FIX		
Example of Route of Flight Field 10 RTE usage: Original Filed Flight Plan Route as Follows: LTS.LTS1.CDS..ABI.J4.JAN Flight Plan sent to ZCM ERAM from ZCF ERAM as Follows: The Field 06 Coordination FIX is **SHV** The Route Field 10 Tailored is **LTS./.ABI.J4.JAN**					
10 a	10 RTE a = route of flight	**Field 10 RTE Route Format:** The Null element ".." Is a Special Second Element Format: Null Symbol Format **..**	The Field 10 RTE field format is made up fix elements and route elements and the elements are separated by "." Periods. The Field 10 RTE logic is looking for a format of **FIX.ROUTE.FIX.** ERAM checks for the following **special second elements:** • ./.	See Example of Route of flight Field 10 RTE usage below:	0

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
			• .. null = direct route processing • .VFR. • .DVFR. If the above **Special second element ".." symbol** is found, the following processing will occur: The Null symbol ".." indicates that the route is missing as follows: FIXA..FIXB The ERAM converted route will consist of the two fixes filed as the endpoints of the direct route segment (FIXA and FIXB). Boundary crossings will be calculated based on a great circle path between the two fixes and candidate postings will be determined based upon direct route posting rules.		
Example of Route of Flight Field 10 RTE Direct Route Processing usage: BAD..AEX..BAD ABQ..AMA..OKC..LIT ABQ..AMA..TIK090015..TIK AEX..LIT..LRF					
10 a	10 RTE a = route of flight	**Field 10 RTE Route Format:** The element "VFR or DVFR" Is a	The Field 10 RTE field format is made up fix elements and route elements and the elements are separated by "."	See Example of Route of flight Field 10 RTE usage below:	3–4

<table>
<tr><th colspan="6">Table C-III. Common Appendix Message Field Formats</th></tr>
<tr><th>Field Ref. No.</th><th>Field Number and Field Name</th><th>Field Format</th><th>Description</th><th>Example</th><th>No. of Bytes</th></tr>
<tr><td></td><td></td><td>Special Second Element Format:
VFR
DVFR</td><td>Periods.
The Field 10 RTE logic is looking for a format of FIX.ROUTE.FIX.
ERAM checks for the following special second elements:
• ./.
• .. null = direct route processing
• .VFR.
• .DVFR.
If the above Special second element “VFR” or “DVFR” symbol is found, the following processing will occur:
The VFR or DVFR symbol indicates that the flight plan route conversion will start IFR service at the third Element of Field 10 that must be a FIX.
The flight plan is a composite flight plan starting at the FIXB after the VFR route element as follows:
FIXA.VFR.FIXB.ROUTE.FIXC</td><td></td><td></td></tr>
<tr><td colspan="6">Example of Route of Flight Field 10 RTE VFR and DVFR usage:
BAD.VFR.AEX..BAD
ABQ.DVFR.AMA..OKC..LIT
ABQ.VFR.AMA..OKC..TIK</td></tr>
</table>

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
AEX.VFR.LIT..LRF					

<table>
<tr><th colspan="6">Table C-III. Common Appendix Message Field Formats</th></tr>
<tr><th>Field Ref. No.</th><th>Field Number and Field Name</th><th>Field Format</th><th>Description</th><th>Example</th><th>No. of Bytes</th></tr>
<tr><td>10 a</td><td>10 RTE
a = route of flight</td><td>Field 10 RTE Route Format:
The VFR and DVFR is a Special Element Format for the second element and beyond the second element VFR , DVFR and IFR are possible for Composite Flight Plans:
VFR
DVFR
IFR - (format accepted)</td><td>The Field 10 RTE field format is made up fix elements and route elements and the elements are separated by "." Periods. The Field 10 RTE logic is looking for a format of FIX.ROUTE.FIX. ERAM checks for the following special elements beyond the second element:
• .. null = direct route processing or null = implied FIX between two routes.
• .XXX.
• .VFR.
• .DVFR
• .IFR.
If the above Special element "VFR" or "DVFR" and "IFR" symbols are found, the following processing will occur:
The flight plan is a composite flight plan starting at FIXA the flight is flying IFR to FIXB to FIXC and VFR to FIXD as follows:
FIXA..FIXB..FIXC.VFR.FIXD
The route can end with a route element VFR or DVFR as follows:</td><td>Example of Route of flight Field 10 RTE usage below:
Pilot filed flight plan:
DYS..DYS090015..ACT090015 .VFR
The above flight plan route ends with a route element VFR and proceeds VFR to a point unknown.</td><td>3–4</td></tr>
</table>

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
			FIXA..FIXB..FIXC.VFR FIXA..FIXB..FIXC.DVFR The special element IFR is format accepted and the element is stored but does not affect processing of the route.		
10 a	10 RTE a = route of flight	**Field 10 RTE Route Format:** Route Elements Format Beyond the Second Element: Implied FIX Between Two Routes Format: Null Symbol Format ..	The Field 10 RTE field format is made up fix elements and route elements and the elements are separated by "." Periods. The Field 10 RTE logic is looking for a format of **FIX.ROUTE.FIX.** **Beyond the second element** ERAM checks for the following **special elements:** • null = direct route processing or null = implied FIX between two routes. • .XXX. • .VFR. • .DVFR. • .IFR. If the Null ".." element is found between two routes as follows: FIXA.ROUTE1..ROUTE2.FIXB the following processing will occur: The two routes junction at an implied	Example of Route of Flight Field 10 RTE usage: **SPS.V77..V14.TUL** Implied FIX; Null Element	0

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			common FIX between the two routes. ERAM processing finds the implied FIX and stores in the flight route records (NOT the FP route).		
10 a	10 RTE a= route of flight	**Field 10 RTE Route Format:** The XXX is a Special Element Format beyond the second element: XXX	ERAM checks for the following **special elements beyond the second element:** • .. null = direct route processing or null = implied FIX between two routes. • .XXX. • .VFR. • .DVFR • .IFR. If the above **Special element "XXX" symbol** is found, the following processing will occur: The Special route element "XXX" is an Incomplete Route indicator. If ERAM finds a fix and route that do not connect or two routes that do not connect or a FIX or ROUTE not recognized and there exist at least one processable route segment, ERAM inserts "XXX" route segment after the last processable FIX. There are two categories for "XXX "routes:	See Example of Route of flight Field 10 RTE usage below:	3

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			1. "XXX" route that are applied by controllers/specialist position, 2. "XXX" route that are automatically applied by the ERAM system. The XXX can also be the last element of Field 10 as follows: FIX1.ROUTE1.FIX2.XXX ERAM route conversion ends with the fix FIX2 prior to the route element XXX.		

Example of Route of Flight Field 10 RTE XXX usage:

Flight departing Hong Kong (VHHH):
VHHH./.AMA.J58.SPS.XXX.BPR1.DFW

Note: BPR1 is not recognized.

Flight departing Taipei (RCTP):
RCTP./.TXO..SPS.XXX.BPP..KDFW

Note: BPP is not recognized.

REE..REE210050.XXX

The route ends with a route element XXX

Field 10 RTE can only end with the following route elements:
XXX
VFR
DVFR

All other Field 10 RTE ending with a route will receive a

10 RTE cofie Format Error
You must follow the format - FIX.ROUTE.FIX

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
10 a	10 RTE a= route of flight	**Field 10 RTE Route Format:** Route Elements Format Beyond the Second Element: Airway= aa(a)(a)(a)(a)(a)(a) Radial Route= aa(a)(a)(a)ddd Military Route= aa(a)(a)(a)(a)(a)(a) Standard Arrival Route(STAR)= aa(a)(a)(a)d	**Beyond the second element of Field 10 to the destination airport (FIXA./.FIXB.ROUTE1.FIXC),** ERAM processes the following recognized routes filed between the FIXs: • Adapted Airways 2-8 Characters Radial Routes 5-8 Character Military Routes 2-8 Characters Standard Arrival Route(STAR) 3-6 Characters	See Example of Route of flight Field 10 RTE usage below:	2–8

Example of Route of Flight Field 10 RTE Airway usage:

Airway usage:

JFK./.AMA.J6.LAX

Radial Usage:

OKC.V14S.TUL.TUL090..FYV270.FYV

Military Usage:

DYS..ABI.IR60.ACT..DYS

STAR Usage:

MEM.MEM1.TXK.BUJ1.DFW

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
10 a	10 RTE a= route of flight	**Field 10 RTE Route Format:** Special Military Route Elements Format Beyond the First Element: Route Format: Military Route = aa(a)(a)(a)(a)(a)(a) Special Route Indicators: Reentry ((+Rd(d))(+Sd(d))) Military Route with Reentry: aa(a)(a)(a)(a)(a)(a) (+Rd(d))) aa(a)(a)(a)(a)(a)(a) (+Sd(d))) aa(a)(a)(a)(a)(a)(a) ((+Rd(d))(+Sd(d)))	The Military routes can have a Special indicator to fly over a portion of the same FIXs more than one time as follows: FIXA.MilitaryRoute+R2.FIXB..FIXC The Military route will have a number of FIXs adapted as reentry FIXs. If the Reentry +Rd(d) is filed, ERAM will produce the extra FIXs the number of times specified. If the Reentry is not filed, ERAM will not insert the Reentry FIXs that are adapted while flying the route. FIXA.MilitaryRoute+R2+S1.FIXB..FIX C The same process applies to the "Sd(d) Reentry Special route element.	See Example of Route of flight Field 10 RTE usage below:	5–16
Example of Route of Flight Field 10 RTE **Special Route Indicators** usage: DYS..ABI.IR20+R2.BWD..DYS					
10 a	10 RTE a= route of flight	**Field 10 RTE Route Format:** Special STEREO Route Element Format Only One Route Element: Route Format: Stereo = La(a)(a)(a)(a)(a)(a)	When Field 10 RTE contains only **One Element, ERAM** will check for a special adapted stored **STEREO TAG** route name. If the STEREO TAG route name is found in adaptation, ERAM will substitute the stored route of flight for the STEREO TAG as the flight plans	See Example of STEREO Route of flight Field 10 RTE usage below:	2–8

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
			Field 10 RTE. When printing FDIO strips for a stereo flight plan, the first insertion in the route field is the stereo tag associated with this particular flight plan, followed by three dashes and the departure fix. There are no spaces prior to, between, or after the dashes. Although the stereo tag and the three dashes precede the route data, they are not considered a part of Field 10. The STEREO TAG with three "---" will be inserted before the stored route for Field 10 RTE for FDIO strips. The STEREO TAG can be filed with a Flight Plan (FP) or a STEREO Flight Plan (SP) message.		
Example of Route of Flight Field 10 RTE **STEREO Route** usage: AREAT38 **Note**: The AREAT38 is a military STEREO route for T38s that has the following route printed on the FDIO departure strip: AREAT38---REE AREA1/D0+25 REE					
10 a	10 RTE a= route of flight	**Field 10 RTE Route Format:** Special FIX Suffix Element Format: Fix Format: Fix Name = aa(a)(a)(a)	Field 10 RTE FIXs can have special optional control suffixes for each FIX as follows: The departure and arrival fix can have an asterisk or an overcast symbol attached to inhibit preferential routes for	See Example of Route of flight Field 10 RTE usage below:	1–7

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
		Fix Radial Distance = aa(a)(a)(a)dddddd Lat/long = dddd(L)/(d)dddd(L) Suffixes for FIX: Auto Route Inhibit = * or ⊕ Estimated Time En Route = /dddd Estimated Time of Arrival = /dddd Delay Data = /D(d)d+dd	departures and arrivals. The proposed Flight Plan can have the Estimated Time En Route =/dddd attached to the destination element. The active Flight Plan can have the Estimated Time of Arrival =/dddd attached to the destination element. Any of the FIXs between the departure point and the arrival point can have Delay Data = /D(d)d+dd attached to the FIX element. The number of additional characters for each element is 1 to 7.		

Example of Route of Flight Field 10 RTE **Suffixes for FIX** usage:

DFW*

Suppress ADR or ADAR departure routing "*"

DFW..TXK/D0+20..DFW

Delay 20 minutes at fix TXK

Proposed FP P1200

DFW.J42.JFK/0230

Estimated Time Enroute is 2 hours and 30 minutes

FP departed D1200

DFW.J42.JFK/1430

The Estimated Time of Arrival is 1430

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
10 a	10 RTE a = route of flight	**Field 10 RTE Route Format:** Special Element Prefix Format: Plus Sign for Special Printing + 	A special symbol for the elements of Field 10 RTE is provided for special printing on the controllers Flight Strips. The special printing is to advise the controller that a portion of the route of flight has been modified. The pilot possibly did not file the route highlighted. The special printing character is a "+" sign that prefixes any Field 10 RTE element. Two Special "+" Plus signs maybe filed for Field 10 RTE. The first "+" sign turns on the special printing and the second special "+" signs turns the special printing off. The number of characters is 1 to 2.	Example of Route of Flight Field 10 RTE usage: **MEM.J42.DAL.+J4.+ELP** Note: The J4 will be highlighted on the controller's flight strip. Note: Any Field 10 RTE Amendment will delete the Special "+" symbol.	1–2
10 b	10 RTE ROUTE When parameter AFSI is OFF for the ARTS b = ARTS arrival airport or ARTS exit coordination fix	**Field 10 RTE Route Format for ARTS:** aaa	ARTS Field 10 Route is a three character fix representing a location identifier of the destination for arrivals and the exit coordination fix for an overflight flight plan. Field 10 Route is not used for proposed departure flight plans. The ARTS Field 10b route element must be a three-character location identifier of the destination airport or the ARTS exit coordination fix for an	See example below for the ARTS flight plan Field 10 route usage:	0 or 3

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			overflight. If the destination point or exit coordination fix is a two-character fix, a “0” (zero) precedes the two character fix identifier. If the exit coordination fix has four or more characters, Field 10 uses the first three characters. If the destination airport name is 4 characters and starts with “K”, Field 10 uses the last three characters, otherwise Field 10 uses the first 3 characters of the airport name. Note: ARTS Field 10 and Field 06 in the Arrival FP and the Overflight FP provides the ARTS computer direction for the ARTS Controller Sector to route the flight information. Field 03 and Field 06 in the Proposed FP provides the ARTS computer direction for the ARTS Controller Sector to route the flight information.		

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
10 b	10 RTE ROUTE When parameter AFSI is ON for the ARTS b = ARTS arrival airport or ARTS exit coordination fix	**Field 10 RTE Route Format for ARTS:** aaa(a)	ARTS Field 10 Route is a three or four character fix representing a location identifier of the destination for arrivals and the exit coordination fix for an overflight flight plan. Field 10 Route is not used for proposed departure flight plans. The ARTS Field 10b route element is the location identifier of the destination airport or the ARTS exit coordination fix for an overflight. If the destination point or exit coordination fix is a two-character fix, a “0” (zero) precedes the two character fix identifier. If the exit coordination fix has four or more characters, Field 10 uses the first three characters. For an arrival flight, if parameter AKIS is ON then Field 10 uses the first 4 characters of the airport name. If AKIS is OFF then if the airport name is 4 characters starting with “K”, Field 10 uses the last 3 characters else Field 10 uses the first 4 characters. Note: ARTS Field 10 and Field 06 in the Arrival FP and the Overflight FP provides the ARTS computer direction for the ARTS Controller Sector to route the flight information.	See example below for the ARTS flight plan Field 10 route usage:	0 or 3 or 4

<table>
<tr><th colspan="6">Table C-III. Common Appendix Message Field Formats</th></tr>
<tr><th>Field Ref. No.</th><th>Field Number and Field Name</th><th>Field Format</th><th>Description</th><th>Example</th><th>No. of Bytes</th></tr>
<tr><td></td><td></td><td></td><td>Field 03 and Field 06 in the Proposed FP provides the ARTS computer direction for the ARTS Controller Sector to route the flight information.</td><td></td><td></td></tr>
<tr><td colspan="6">See example below for the ARTS flight plan Field 10 route usage:
The following is an arrival flight plan arriving JFK sent from ERAM ZCN to NNN ARTS, the arrival Field 10 destination airport for the ARTS FP is JFK.
With parameter AFSI OFF:
ZCN1917178 FP 53GAAL34 1H/B747 6701 LEN A1932 390 JFK
With parameters AFSI ON and AKIS ON:
ZCN1917178 FP 53GAAL34 1H/B747 6701 LEN A1932 390 KJFK
The following is a proposed flight plan departing PHL, sent from ZCN ERAM to PPP ARTS, the outbound Field 06 coordination fix for the ARTS FP is OOD.
NOTE: The Departing flight plan does not have a Field 10.
With either parameter AFSI or AKIS OFF:
ZCN1918894 FP 918PDT4073 PHL/DH8C 1557 OOD P1925 060
The following is an overflight flight plan for PPP ARTS, sent from ZCN ERAM to PPP ARTS, the inbound Field 06 coordination fix for the ARTS FP is NHI.
The outbound Field 10 route fix is SBJ.
ZCN1918895 FP 933CKL700 1/H25B 1321 NHI E1942 110 SBJ</td></tr>
<tr><td>10 a</td><td>10 RTE ROUTE
a = Flight Plan Route for ERAM to ATM IPOP</td><td>Field 10 RTE Route Format for ERAM to ATM IPOP:
The format is the same as Field 10a elements and delimiters described in Field 10a above.</td><td>ATM IPOP Field 10a Route is the Flight Plan Route for ERAM to ATM IPOP.
Flight Plan Route - The currently cleared flight plan route. The flight plan route does not include any unacknowledged auto routes. It is</td><td>See example above for the flight plan Field 10 route usage:</td><td>6–1000</td></tr>
</table>

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
			intended for clients that wish to know the currently cleared route. Field 10a will be included in the ATM IPOP FH, AH, and HU message.		
10 b	10 RTE ROUTE b = Local Intended Route for ERAM to ATM IPOP	**Field 10 RTE Route Format for ERAM to ATM IPOP:** Format is the same as Field 10a elements and delimiters described above.	ATM IPOP Field 10b Route is the Local Intended Route for ERAM to ATM IPOP. **Local Intended Route –** The flight plan route that is coordinated to penetrated facilities. It consists of the flight plan route with any expected-to-be-applied-by-the-controlling-center ADRs, ADARs, or AARs already applied. It is intended for the clients that wish to know the expected state of the flight plan when the current facility releases control of the flight. Field 10b contains the filed route (Field 10a) merged with any locally applicable adapted routes (preferential routes, transition fixes and A-line fixes) Optional Field 10b will be sent to ATM IPOP in the FH, AH and HU message, when Field 10b is not the same as Field 10a.	See example above for the flight plan Field 10 route usage:	6–1000

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
10 c	10 RTE ROUTE c = ATC Intended Route for ERAM to ATM IPOP	**Field 10 RTE Route Format for ERAM to ATM IPOP:** Optional Field 10c format is the same as Field 10a elements and delimiters described above.	ATM IPOP optional Field 10c Route is the ATC Intended Route for ERAM to ATM IPOP. **ATC Intended Route** – The current cleared flight plan route with any unacknowledged auto routes already applied. The ATC Intended Route includes to-be-applied AARs that are not to be notified in the current center. It is intended for clients that wish to know the currently expected route of the flight across contiguous ERAM airspace. Field 10c contains the filed route (Field 10a) merged with any adapted routes (preferential routes, transition fixes and A-line fixes) Optional Field 10c will be sent to ATM IPOP, when parameter Merged ATC Intended Route Switch (MARS) is ON and if either one of the following is true: • If Field 10b exists and Field 10c is not the same as Field 10b • If Field 10b does not exist and Field 10c is not the same as Field 10a.	See example above for the flight plan Field 10 route usage:	6–1000

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
Field 11	11 RMK REMARKS a = FP SP AM message b = GI TR DT IR message c = FH AH HU GH IT IL message	**Field 11 RMK Remarks Format:** Flight Plan Remarks Field 11 Has Two Elements as Follows: Overcast (⊕)Weather Symbol ⊕cccc… Clear (O) Weather Symbol Occcc… All other messages use the (O) Clear Weather symbol for Field 11, GI, IT, TR etc. Special Indicators at the end of Field 11 elements: "+" – Free Text data has been truncated for either Field 11 element. "* " - Inserted to indicate ICAO data beyond Field 11. "$ " – Inserted to indicate ICAO data beyond Field 11 in NADIN Airspace Users and Non-US Manual Facilities messages.	Field 11 is used for several different functions as follows: • Flight Plan Remarks Text. • General Information message Text • Computer Interface Testing Text • Message Reject Text		

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
11 a, c	11 RMK REMARKS a = FP SP AM message c = FH AH HU message	**Field 11 RMK Remarks Format:** Flight Plan Remarks Field 11 Has Two Elements as Follows: Overcast Weather (⊕)Symbol ⊕cccc… **a** or **c** Clear (O)Weather Symbol Occcc… **a** or **c** If intracenter remarks are present, then the overcast weather ⊕ symbol element must be the first Field 11 element. Special Indicators at the end of Field 11 elements: "+" – Free Text data has been truncated for either Field 11 element. "* " - Inserted to indicate ICAO data beyond Field 11.	Field 11 is used for several different functions. The flight plan Field 11a as two elements as follows: The first flight plan Field 11 element begins with the optional overcast weather (⊕)symbol known as the intracenter remarks followed by up to 20 text characters. If the limit is exceeded, the residual data is truncated and a plus (+) sign is suffixed to the last accepted character in the element. Intracenter remarks (⊕) is for the originating center and is not sent to the adjacent center. The overcast element is not sent with the HU message to ATM IPOP. The second flight plan Field 11 element begins with the optional clear weather (O) symbol known as the intercenter remarks followed by text characters. The length of the clear weather (O) symbol element is restricted by the input device and can be restricted for certain output devices. If the clear weather symbol is present, ERAM will treat everything after the clear weather symbol as part of the intercenter remarks until the end of the message or an "*" is encountered.	See Example of Remarks Field 11 a and 11 c RMK Usage below.	1–400

<table>
<tr><th colspan="6">Table C-III. Common Appendix Message Field Formats</th></tr>
<tr><th>Field Ref. No.</th><th>Field Number and Field Name</th><th>Field Format</th><th>Description</th><th>Example</th><th>No. of Bytes</th></tr>
<tr><td></td><td></td><td></td><td>If ICAO Fields 12 and 17 follow Field 11, Field 11 needs an (*) and space suffixed to the last character of Field 11. For NADIN Airspace Users and Non-US Manual Facilities, an ($) is used instead of (*) for the same purpose.</td><td></td><td></td></tr>
<tr><td colspan="6">Example of Remarks Field 11 a and 11 c RMK Usage below:
⊕REQ FL250 AFTER TXK
○AIR EVAC*
Field 11a from an ICAO FP message - Medical air evacuation and the flight plan has ICAO Field 12 17 following Field 11a indicated with the “*”.
The following will delete stored Field 11 elements:
AM 012 RMK ○
AM 012 RMK ⊕
The following deletes Field11
AM 012 RMK
The following is a FH message Field 11c is 40 bytes:
Field 11 C= ○AIR EVAC AMG/N0482F290 SQT/N0479F310 JOL+</td></tr>
<tr><td>11 b, c,</td><td>11 RMK
REMARKS
b = GI message
c = GH message</td><td>Field 11
Not Flight Plan Related Uses the Clear Weather Symbol
General Information Message (GI and GH)
Format:
○cccc…</td><td>Field 11 is used for several different functions.
The General Information (GI) Message is input to send a clear text message to a specified position. The length is limited by the input device
The General Information message provides general information/free text</td><td>Example of Remarks Field 11 RMK Usage:
Example input from FDIO OKCT:
GI 35 ○ RUNWAY 17R CLOSED AT OKC
Output to sector 35:</td><td>GI
1–400
GH
to
ATM
IPOP
1–41
GH</td></tr>
</table>

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
		b or **c**	remarks to ATM client applications. ERAM sends a GH message to a specific ATM client application or to all ATM client applications via ATM IPOP, as indicated by destination address routing. The Center-TRACON Automation System (CTAS) can input a General Information (GH) Message to a position in the ERAM facility. 11c GH Remarks code will always be a clear weather symbol. The general information text will follow the clear weather symbol.	**OKCT RUNWAY 17R CLOSED AT OKC**	to ERAM 1–400
11 b	11 RMK REMARKS b = TR DT message	**Field 11** **Not Flight Plan Related Uses the** **Clear Weather Symbol** Test (TR) Message Data Test (DT) message The Format for Field 11 is variable in length as follows: Minimum length=5 Maximum length=24 Occcc…	Field 11 is used for several different functions. Computer to computer interface testing is accomplished with a Test Message TR and a DT message using Field 11b as follows: ARTS III will send a TR message to assure the interface is OK to the ERAM. The ERAM upon receipt of the TR message from ARTS or another ERAM facility will respond with a DT message that contains the same Field 11 from the received TR message. ERAM will send a Heartbeat TR message to assure the interface is OK to	See Example of Remarks Field 11 b RMK Usage below.	5–24

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			ARTS, HSC, or ATOP facility. The facility will respond with a DT message that contains the same Field 11 Heartbeat TR message. If an ERAM specialist desires to check an interface line to an ARTS III, ERAM, etc, they can input a TR message addressed to that facility (even if inhibited, this assures communication is available before returning air traffic service to the facility). When a TR message is input by a specialist, the ERAM system will insert the specialist position number and a space inside of Field 11. Example: ERAM E1 inputs TR DFA ○TEST ERAM system inserts "E1 " after the ○ (clear weather symbol) as follows: ○E1 TEST ERAM Host and ATOP Heartbeat TR message OMONITOR ERAM ARTS Heartbeat TR message OZZ MONITOR Field 11b can be 5 to 24 characters (this		

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			includes the clear weather symbol O.		

Example of Remarks Field 11b RMK usage:

Input by MMM ARTS to ZCN ERAM:

MMM1913856 TR ZCN OTEST

Response for TR message by ZCN ERAM with a DT message:

ZCN1913337 DT MMM1913856 OTEST

ZCN ERAM E1 position inputs a TR message to MMM ARTS:

TR MMM OTEST

ZCN ERAM sends TR to MMM ARTS for E1 request as follows:

ZCN1913856 TR MMM OE1 TEST

Note: E1 and a space was inserted

Response for TR message by MMM ARTS with a DT message:

MMM1913337 DT ZCN1913856 OE1 TEST

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
11 b	11 RMK REMARKS b = IR message	**Field 11** **Not Flight Plan Related Uses the Clear Weather Symbol:** Field 11b: IR Error Message Text 1-44 ,cccc…, and one optional Field (11b): IR Error Message Text in Error or reference data	Field 11 is used for several different functions. The Information Reject (IR) Message is generated by ERAM in response to a message not meeting format checking. The message has one Field 11b and an optional Field 11b. 11b IR Error Message Text 1-44 EBCDIC characters	Example not available.	1–44

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
		1-44 cccc…	(11b) IR Error Message Text in Error 1-44 EBCDIC characters or reference data		
11 c	11 RMK REMARKS c = IT IL message	**Field 11** **Not Flight Plan Related Uses the Clear Weather Symbol** Interface Test (IT) Message sent from ERAM Interface Reply (IL) Message sent from ATM IPOP/system Format for Field 11: OE1 cccc… Interface Test (IT) Message sent from ATM system Interface Reply (IL) Message sent from ERAM Format for Field 11: Occcc…	Field 11 is used for several different functions. Computer to computer interface testing is accomplished with an Interface Test (IT) message – Remarks code sent from ERAM will always be a clear weather (O) symbol followed by a 2 character identifier of the entering position followed by a space and 4-20 EBCDIC characters. Remarks code sent from ATM system will always be a clear weather (O) symbol followed by 6-22 EBCDIC characters. The Interface Reply (IL) message is transmitted from ERAM to an ATM system or from an ATM system to ERAM in response to the receipt of a valid IT message. The IT message is free from all detectable errors when it reaches ERAM or ATM system if an IL is to be sent in response. IL message – Remarks code will always be a clear weather (O) symbol followed by EBCDIC characters in the Remarks field of the corresponding (IT) message.	Example of Remarks Field 11 RMK usage sent by ERAM: **IT …. OE1 TEST** IT interfacility TEST from ERAM. If acceptable, ATM system will return an IL message. If not acceptable, ATM system will return an interfacility IR message. The IL and IR will contain the IT Field 11. RMK usage sent by ATM system: **IT …. OZDC TEST** IT interfacility TEST from ATM system. If acceptable, ERAM will return an IL message. If not acceptable, ERAM will return an interfacility IR message. The IL and IR will contain the IT Field 11.	8–24 IT ERAM to ATM IPOP 8–24 IL ATM IPOP to ERAM 7–23 IT ATM IPOP to ERAM 7–23 IL ERAM to ATM IPOP

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
			If the IT message is not acceptable, ERAM or ATM system will respond with an Information Reject (IR) message.		
Field 12	12 Field Reference Number or Field Reference Abbreviation a = AM field number b = AM field abbreviation c = ICAO field/element abbreviation e = Flight Plan Readout ICAO reference number or ICAO field/element abbreviations	(d)d **a** LLL **b** LLL or L(L)(L)(L)/ **c** dd or LLL or L(L)(L)(L)/ **e**	Field 12 contains a Field Reference Number or Field Reference Abbreviation used to identify the type of data (if any) contained in the corresponding Field 17, or Field 12 is used without Field 17 when included in an FR message. Field 17 contains data to Amend stored data or provide ICAO Data. Field 12 is used for several different functions as follows: • Flight Plan (FP) Message to store original ICAO flight plan data • Amendment (AM) Message to modify stored Flight Plan data • Flight Plan Readout (FR) to display ICAO data. Field 12 must be in one of the following formats: 1. Field Reference Number - (d)d, containing a number between 02 and 11, or between 21 and 57, or up to the last optionally adapted Field 18 Indicator.		

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
			2. Field Abbreviation - LLL, containing one of the following: AID, TYP, BCN, SPD, FIX, TIM, ALT, RAL, RTE, and RMK 3. ICAO Field Abbreviation - LLL, containing one of the following: SAI, FLR, FLT, NUM, ACT, WAK, EQP, SRV, ALA, RNV, RNP, OTH, and ADB. 4. ICAO Field 18 Indicator – L(L)(L)(L)/, containing one of the following: EET/, RIF/, STS/, TYP/, NAV/, DEP/, CODE/, REG/, PER/, DEST/, SEL/, COM/, ALTN/, OPR/, DAT/, RALT/, PBN/, SUR/, DOF/, DLE/, ORGN/, TALT/, or one of the optionally adapted ICAO Field 18 acronyms followed by a "/".		
12 a.	12 Field Reference Number or Field Reference Abbreviation a = AM field number	(d)d	An Amendment Message (AM) is used to amend stored flight plan ERAM data. Amendment Message (AM) Field 12 is used to identify the type of data (if any) contained in the corresponding Field 17. Used to reference a field number and the leading zero is optional. When used in an amendment message, this field must contain one of the decimal numbers between (and including) 01 and 11, or between 21 and 46, or up to the last	Example of Field 12 usage: **AM DL450 2 DL470** Delta flight 450 amended to Delta flight 470 **Note**: 2 represents Field 2 (aircraft identification) for the ERAM flight plan database. The following optional leading "0" (02)is also acceptable:	1–2

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
			optionally adapted Field 918 Indicator. ARTS requires a leading "0" for Field 12, such as 03. Field 12a, the Field Reference Number, only appears in a DR to an FP message received from an ARTS facility. When present, it contains a 2-digit logical field number identifying the field in error of the FP. If an error is found that is not due to a logic error in an entered field, the digits 99 will be placed in the field reference number.	**AM DL450 02 DL470** Leading "0" required for ARTS. **<u>ERAM DR Reject message for ARTS FP:</u>** ZCN1927247 DR 08 BBB1928726 **Note:** DR is for Field 08 format error	
12 b.	12 Field Reference Number or Field Reference Abbreviation b = AM field abbreviation	LLL	An Amendment Message (AM) is used to amend stored flight plan ERAM data. Amendment Message (AM) Field 12 is used to identify the type of data (if any) contained in the corresponding Field 17. ***When used in an amendment message to amend stored ERAM flight plan data, this field may contain a legal abbreviation for the referent Field 12 as follows:*** Field 12 Abbreviation. Any of the following: AID, TYP, BCN, SPD, FIX, TIM, ALT, RAL, RTE, or RMK. AID = Field 02 Flight Identification TYP = Field 03 Aircraft Data BCN = Field 04 Beacon Code	Example of Field 12 usage: **AM DL450 AID DL470** Delta flight 450 amended to Delta flight 470 **Note**: AID represents Field 2 (aircraft identification (AID)) for the ERAM flight plan database.	3

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			SPD = Field 05 Speed FIX = Field 06 Coordination Fix TIM = Field 07 Coordination Time ALT = Field 08 Assigned Altitude RAL = Field 09 Requested Altitude RTE =Field 10 Route RMK =Field 11 Remarks		
12 c.	12 Field Reference Number or Field Reference Abbreviation c = ICAO field/element abbreviation	LLL	ICAO Field 12 Field Element abbreviations SAI =Field 22 03a Special Aircraft Indicator NOTE: Not valid in the FP command FLR =Field 26 08a Flight Rules FLT =Field 28 08b Type of Flight NUM =Field 21 09a Number of Aircraft ACT =Field 23 09bType of Aircraft WAK =Field 27 09c Wake Turbulence Category EQP =Field 24 10a Radio Communication, Navigation and Approach AID Equipment SRV =Field 25 10b Surveillance Equipment ALA =Field 29 16c Alternate Aerodromes	Example of Field 12 usage: **AM 604 WAK H** Amends type of aircraft to a “H” heavy aircraft	3

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			OTH =Field 30 18a Other Information RNP (no field number) Required Navigation Performance RNV (no field number) Area Navigation capability ADB (no field number) ADS-B Equipment Qualifiers		
12 c.	12 Field Reference Number or Field Reference Abbreviation c = ICAO field/element abbreviation	L(L)(L)(L)/	In the following Field 12 abbreviations represent one of the ICAO Field 18 elements. EET/ =Field 31 FIR Boundary Designators and Time Over Such Points RIF/ =Field 32 Route Details to Revised Destination REG/ =Field 33 Aircraft Registration Markings SEL/ =Field 34 SELCAL Code OPR/ =Field 35 Name of the Operator STS/ =Field 36 Reason for special handling TYP/ =Field 37 Type(s) of aircraft, preceded if Necessary by Number(s) of aircraft, if ZZZZ is filed as the aircraft type. PER/ =Field 38 Aircraft performance	Example of Field 12 usage: **AM 012 OTH EET/CAP0745 XYZ0830** **AM 01A EET/ EET/EINN0204** **RIF/DTA HEC KLAX** **RIF/ESP G94 CLA APPH** **RIF/LEMD** **STS/HOSP** **STS/ONE ENG INOP** **COM/UHF** only **DAT/S** for satellite data link **DAT/H** for HF data link **DAT/V** for VHF data link **DAT/M** for SSR Mode S data link	2–5

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
			data COM/ =Field 39 Significant data related to Communication equipment DAT/ =Field 40 Data Link Capability Data Significant data related to data link Capability, using one or more of the Letters S, H, V and M NAV/ =Field 41 Navigation Equipment Significant Data DEP/ =Field 42 Departure Aerodrome or the ATS Unit for Supplementary Flight Plan Data. Name of departure Aerodrome, if ZZZZ is filed as the Departure airport, or the ICAO four-letter Location indicator of the location of the ATS unit from which supplementary Flight plan data can be obtained, if AFIL (airfile) is the departure airport.		
12 c.	12 Field Reference Number or Field Reference Abbreviation c = ICAO field/element abbreviation	L(L)(L)(L)/	Continuation - In the following Field 12 abbreviations represent one of the ICAO Field 18 elements. DEST/ =Field 43 Destination Aerodrome Name of destination aerodrome, if ZZZZ is the filed destination airport. ALTN/ =Field 44 Destination Alternate Aerodrome(s)Name of destination	Example of Field 12 usage: **DEST/KDFW** CODE/**F00001** is the lowest aircraft address contained in the specific block administered by ICAO.	2–5

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
			Alternate aerodrome(s), if ZZZZ is the filed alternate destination airport. RALT/ =Field 45 Name of en-route alternate Aerodrome(s). CODE/ =Field 46 Aircraft address (expressed in the form of an alphanumerical code of Six hexadecimal characters. SUR/ =Field 47 Surveillance capabilities. DLE/ =Field 48 En Route delay or holding points. TALT/ =Field 49 Takeoff alternate aerodrome. DOF/ =Field 50 Date of Flight. ORGN/ = Field 52 Originator's AFTN PBN/ =Field 57 Indication of RNAV or RNP capability. L(L)(L)(L)/ = Adapted ICAO Field 18 Indicator(s). The Field number is two digits, dd, as adapted. Adapted ICAO Field 18 Indicators are optional and can be repeated up to an adapted maximum.		

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
Field 13	13 Location Identifier .3 = Altimeter Reporting Station Identifier .3 = Weather Reporting Station .3 = Airport Identifier .4 = Fix Identifier .5 = Adapted Metering Airport .13a = ARTS position initiating Handoff .13b = ERAM position initiating Handoff .14 = ARTS III Facility Identifier for RB .15 = ARTS or Non-U.S. Automated Facility Identifier	aa(a)(a)(a) **.3** aa(a)(a)(a)(/)(a)(a)(a)(a)(a)(a) **.4** ccc **.5** LLL(dL) **.13a** LLLdd **.13b** LLL **.14** LLL or L **.15**	Field 13 will vary in format and meaning, depending on the type of the command. Field 13 contains a location identifier used to identify the strip location or the facility location of a routed message.		
13 .3	13 Location Identifier .3 = Altimeter Reporting Station Identifier	aa(a)(a)(a)	Used in the AR, HA and AS commands to specify an adapted altimeter reporting station	Example of Field 13.3 usage: **Field 13 3 = H5B** **Field 34 B = M** Field 13.3 is H5B Altimeter reporting station and Field 34B says the report is missing “M”.	2–5

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
				Houston HA Message: **Field 35 A = 1305** The 1305 is the time of the observation report. **Field 13 3 = AUS** Station is AUS for Austin, Texas **Field 34 A = 990** 2990 is the barometric pressure	
13 .3	13 Location Identifier .3 = Weather Reporting Station	aa(a)(a)(a)	Used in the WR command to request a display of stored weather data for the specified, adapted reporting stations. Used in the WX command to enter weather observation data for the selected adapted reporting stations.	Example of Field 13.3 usage: Field 13 3 = **AUS** **Following is the AUS weather report:** WX 1312 **AUS** O071312Z 19008KT 9SM FEW008 SCT020 BKN030 26/24 **A2985** AUS is the weather reporting station. The AUS altimeter (A2985) reporting station is extracted by ERAM from the AUS weather report.	2–5
13.3	13 Location Identifier .3 = Airport Identifier	aa(a)(a)(a)	Used in the AC and IF command to identify the airport name.	Example of Field 13.3 usage: Field 13 3 = **MLC** Field 13 3 = **DFW**	2–5

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
13 .4	13 Location Identifier .4 = Fix Identifier	Fix only: aa(a)(a)(a) Fix Radial Distance: aa(a)(a)(a)ddd1ddd2 Lat/Long: dddd(L1)/(d)dddd(L2)	Used in the SR command to specify a strip requested by the fix posting. The fix must be associated with the route as defined in ERAM_IFPA_SRS_210.15, Section 3.2.4.	Example of Field 13.4 usage: **SGR** **DAL030020** **3500N/1400W**	2–12
13 .5	13 Location Identifier .5 = Adapted Metering Airport	ccc	3 characters Adapted Metering Airport Identifier. Used in the metering messages to specify a metered airport.	Example of Field 13.5 usage: IM Message: **Field 13 5 = IAH** IAH is the metered airport reported with the IM message	3
13 .13a	13 Location Identifier .13a = ARTS position initiating Handoff	LLL(dL)	Used in the TI message for HNH handoffs to non-host centers and contains the three letter transferring ARTS identifier and optional position identifier. Used in the TI message for internal ARTS to center handoffs and contains the three letter transferring ARTS identifier and position identifier.	Example of Field 13.13a usage: **DFA** **DFA1A** **AAA1B**	3–5
13 .13b	13 Location Identifier .13b = ERAM position initiating Handoff	LLLdd	Used in the TI message for ERAM to ARTS handoffs and contains the three letter transferring center identifier and sector number.	Example of Field 13.13b usage: **ZCA01**	5
13 .14	13 Location Identifier .14 = ARTS III Facility Identifier for RB	LLL	Used in the RB commands to specify ARTS III facility.	Example of Field 13.14 usage: Input from FDIO: **RB DFA**	3

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
				Transfers ARTS DFA database from ERAM to the DFA ARTS	
13 .15	13 Location Identifier .15 = ARTS or Non-U.S. Automated Facility Identifier	LLL or L	Used in the RF command to specify ARTS facility or adjacent Non-U.S. Automated Facility Identifier. The format L is an abbreviated facility identifier.	See Example of Field 13.15 Usage Below:	1–3

Example of Field 13.15 - RF Message Usage:

NNN1934754 RF 6603 NNN

NNN ARTS inputs RF message to New York Center ERAM requesting the ARTS flight plan information for beacon code 6603.

ZCN1933267 DA 66R NNN1934754

New York center ERAM ZCN accepts the request with the DA message.

Note: The ZCN DA message contains ERAM CID for the flight and Field 00 from the NNN ARTS RF message (NNN1934754)

ZCN1933268 FP 66REJA605 TEB/C56X 6603 BAY P1830 170

New York center ERAM ZCN sends the ARTS NNN flight plan information to NNN ARTS.

Note: The ERAM CID is 66R with a call sign id of EJA605, departing TEB, aircraft type is C56X, beacon code is 6603, flying towards a fix called BAY, proposed at P1830, requesting an altitude of 170. **Note** 2: The flight is running one hour late, see the Field 00 for ZCN is a time of 1933 and the flight is proposed at 1830.

NNN1934756 DA 490 ZCN1933268

NNN ARTS accepts the ZCN1933268 message with a Data Accept (DA) message.

Note: After the DA, the NNN TCID is 490.

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
Field 15	15 Message Cancellation Group	CXX	The cancellation code is legal only when entered as a response to a Verify Eligibility message or a Route Readout	CXX	

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			message.		
Field 16	16 Output Routing **UI MESSAGE** b. Coordination Indicator **GI/GH MESSAGE** b = Application Facility Short Name d = Sector Number d = AT Specialist Position Identifier f = FDIO Remote Position **GI MESSAGE** f = Adjacent ERAM or ATOP Center, Supervisory A AT Specialist f = Adjacent ERAM or ATOP Center, Watch Supervisor AT Specialist. f = Adjacent ERAM or ATOP Center, Systems Engineer AT Specialist	The following is the different formats for the positions or facilities being output to: UI MESSAGE aaa **b** GI MESSAGE aaa **b** dd **d** Ld **d** aaaL(aaa) **f** LLLS **f** LLLW **f** LLLE **f** L **f**	Field 16 will vary in format and meaning, depending on the type of command. For the format and the definition of the varying formats, Field 16 is divided according to the message commands as follows: • UI MESSAGE • GI /GH MESSAGE • GI MESSAGE • SR MESSAGE • TD MESSAGE • TI MESSAGE • TI/TU/TA MESSAGE • TR (DT) MESSAGE • TP/TS MESSAGE • HT MESSAGE		

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
	f= Broadcast Indicator				
16	16 Output Routing **SR MESSAGE** f = Sector Number f = FDIO Remote Position **TD MESSAGE** f = NADIN Adapted Facility Identifier f = FDIO Remote Position **TI MESSAGE** f = Handoff to ERAM or Adjacent ERAM Center and Sector Number **TI/TU/TA MESSAGE** f = ERAM to ARTS Identifier and Position within that ARTS **TR (DT)MESSAGE** f = Adjacent ATOP or ARTS III Facility **TP/TS MESSAGE** f = Transfer primary and secondary radar **HT MESSAGE**	The following is the different formats for the positions or facilities being output to: SR MESSAGE dd **f** aaaL(aaa) **f** TD MESSAGE aaa **f** aaaL(aaa) **f** TI MESSAGE L(dd) **f** TI/TU/TA MESSAGE LLL(dL) **f** TR (DT) MESSAGE LLL **f** TP/TS MESSAGE LLL **f**	Field 16 will vary in format and meaning, depending on the type of command. For the format and the definition of the varying formats, Field 16 is divided according to the message commands as follows: • UI MESSAGE • GI /GH MESSAGE • GI MESSAGE • SR MESSAGE • TD MESSAGE • TI MESSAGE • TI/TU/TA MESSAGE • TR (DT) MESSAGE • TP/TS MESSAGE • HT MESSAGE		

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
	g= Point Out Adjacent ERAM Center and Internal Sector	HT MESSAGE (L)dd **f**			
16 b.	16 Output Routing UI MESSAGE b = Coordination Indicator	aaa	Adapted coordination indicator of the facility to which transmission of flight data is unsuccessful. The UI message is routed to the ATM IPOP.	See Example of Field 16b Usage Below:	3
Example of Field 16b Usage Below: UI message was sent to HDS with an UTM for AD+ ARTS facility. -- Output to HDS SOURCE = HOSTZCH0 BLOCK SEQ NUM= 13015 MESSAGE LENGTH= 00079 Field 0 E = 1314071734 Field 2 A = MRA677 Field 2 D = 103 **Field 16 B = AD+** Field 29 D = 1700 Field149 A = EOM					
16 b	16 Output Routing GI MESSAGE b = Application Facility Short Name	aaa	Field 16b aaa is an Application Facility Short Name for HADDS or its ATM IPOP client applications.	Used in the GI commands to specify output location. Example: **GI HDS ○HDS** is a short name for (HADDS)	3
16 d	16 Output Routing GI/GH MESSAGE d = Sector Number	dd	Used in the FDIO GI message or in the ATM IPOP GH message to specify an ERAM center sector position. The dd is the sector number not to exceed 99.	Example of entire command: FDIO Tower position inputs: **GI 20 ○ UAL821 DFW READY FOR TAKEOFF** FDIO Tower Sends GI	2

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
				MESSAGE to ERAM center sector 20	
16 d	16 Output Routing GI MESSAGE d = AT Specialist Position Identifier	Ld	FDIO input to ERAM is used as follows: Used in the GI command to specify output to an AT Specialist position. L must be one of the following: S – Supervisory A W – Watch Supervisor/Flow Controller E – Systems Engineer G – General A d must be between 1-9.	Example: **G4** Routed to AT Specialist Position G4 – General A	2
16 f	16 Output Routing GI /GH MESSAGE f = FDIO Remote Position	aaaL(aaa)	Routing aaa is the adapted facility name to or from ERAM to FDIO or FDIO to FDIO or ATM IPOP to FDIO as follows: L must be one of the following: T – Tower position D – Approach control departure position A – Approach control arrival position O – Approach control overflight position Optional (aaa) is the printer name for an Approach Control Departure or Arrival Position.	Used in the GI and GH message to specify output to a remote location. Example: **ORDA** (ORD arrival FDIO) **CHSANSW** (CHS arrival FDIO with printer NSW)	4–7
16 f	16 Output Routing	LLLS	Field 16 LLL must be an adjacent ERAM or ATOP center identifier.	Example:	4

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
	GI MESSAGE f = Adjacent ERAM or ATOP Center, Supervisory A AT Specialist.		The "S" is used in the GI command to specify output to the Supervisory A position at an adjacent center.	GI message will be routed to ZCMS (ZCM adjacent ARTCC identifier) that will be routed to the ZCM Supervisory A position	
16 f	16 Output Routing GI MESSAGE f = Adjacent ERAM or ATOP Center, Watch Supervisor AT Specialist.	LLLW	Field 16 LLL must be an adjacent ERAM or ATOP center identifier. The "W" is used in the GI command to specify output to the Watch Supervisor position at an adjacent center.	Example: GI message will be routed to ZCMW (ZCM adjacent ARTCC identifier) that will be routed to the ZCM Watch Supervisor position	4
16 f	16 Output Routing GI MESSAGE f = Adjacent ERAM or ATOP Center, Systems Engineer AT Specialist.	LLLE	Field 16 LLL must be an adjacent ERAM or ATOP center identifier. The "E" is used in the GI command to specify output to the Systems Engineer position at an adjacent center.	Example: GI message will be routed to ZCME (ZCM adjacent ARTCC identifier) that will be routed to the ZCM Systems Engineer position	4
16 f	16 Output Routing GI MESSAGE f = Broadcast Indicator	L	Used to broadcast General Information messages to several facilities or positions as follows: L must be "C", "A", "D", "O", "T", or "G". FDIO input to ERAM. C – All active sector FSPs and AT Specialist positions in the center, except Systems Engineer.	Example of usage: Used in the GI command to specify where to broadcast the output. **GI C O T O ERAM RETURNED TO SERVICE 0121 UTC** The above GI will broadcast the message to all of the following:	1

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
			G – All General A AT Specialists A – All adapted approach control arrival positions D – All adapted approach control departure positions O – All adapted approach control overflight positions T – All adapted Tower positions You can have several optional Field 16s in one message.	C – All active sector FSPs and AT Specialist positions in the center, except Systems Engineer. O – All adapted approach control overflight positions T – All adapted Tower positions	
16 f	16 Output Routing SR MESSAGE f = Sector Number	dd	Used in the SR command to specify an ERAM center sector position. The dd is the sector number not to exceed 99.	Example of entire command: FDIO Tower position inputs **SR UAL821 DFW 20** FDIO Tower Sends strip to ERAM center sector 20	2
16 f	16 Output Routing SR MESSAGE f = FDIO Remote Position	aaaL(aaa)	Used in the SR command to specify output to a remote location. Routing aaa is the adapted facility name to or from ERAM to FDIO or FDIO to FDIO as follows: L must be one of the following: T – Tower position D – Approach control departure position A – Approach control arrival position O – Approach control overflight position	Used in the SR command to specify output to a remote location. Example **ORDA (ORD arrival FDIO)** CHSANSW (CHS arrival FDIO with printer NSW)	4 or 7

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
			Optional (aaa) is the printer name for an Approach Control Departure or Arrival Position.		
16 f	16 Output Routing TD MESSAGE f = FDIO Remote Position	aaaL(aaa)	Used in the TD command to specify output to a remote location. Routing aaa is the adapted facility name to or from ERAM to FDIO or FDIO to FDIO as follows: L must be one of the following: T – Tower position D – Approach control departure position A – Approach control arrival position O – Approach control overflight position Optional (aaa) is the printer name for an Approach Control Departure or Arrival Position.	Example of entire command: Used in the TD command to specify output to a remote location: **TD ORDA** (ORD arrival FDIO printer) **TD CHSANSW** (CHS arrival FDIO with printer NSW)	4 or 7

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
16 f	16 Output Routing TI MESSAGE f = ARTS Handoff to ERAM	Ldd	Used in handoff ARTS to ERAM. ARTS uses Field 16f to provide the ERAM with the ERAM sector of intent for the handoff. L is the adapted ERAM identifier. The dd is the sector number not to exceed 99. N00 is used by The ARTS to tell the ERAM to select the sector for handoff. ERAM will replace the N00 with the intended control sector, such as N45 to route the handoff to ERAM sector 45.	See Example of Field 16f Usage Below:	3

Example of Field 16f Usage Below:

TI MESSAGE 16f. ARTS Handoff to ERAM

FP JBU81 ECID= 321 TCID=688

ZCN1914804   FP 321JBU81 LGAH/E145 1606 WHI P1929 360

ZCN ERAM sends FP to NNN New York ARTS with ECID of 321

NNN1914019   DA 688 ZCN1914804

NNN sends DA message to accept the FP message ZCN1914804 flight JBU81 from ZCN ERAM. The 688 after the DA message is the ARTS TCID 688 for the flight.

NNN1914059   DM 321 1914

NNN ARTS departs the flight JBU81 ECID 321 at 1914.

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
ZCN1914832 DA 321 NNN1914059					
ZCN ERAM DA accepts the DM departure message NNN1914059 using the ERAM ECID 321.					
NNN1915128 TI **N00** 321 -000/-003 0027/-181					
NNN ARTS starts a handoff to the ERAM ZCN sector N00 (N00 is Field 16f) for ERAM flight 321 ECID with a TI message containing the present ARTS location of the flight with Field 23. ERAM ZCN will replace Field 16f N00 with the intended controlling sector number, such as N23. Now the Full Data Block in the ERAM will be sent to sector 23.					
ZCN1914888 DA 321 NNN1915128					
ZCN ERAM DA accepts the TI message NNN1915128 with the ERAM ECID 321.					
NNN1915135 TU 321 -000/-003 0026/-187					
NNN ARTS now will send a TU track update message of the ARTS location of ECID 321 until the ZCN ERAM accepts the handoff.					
NNN1915143 TU 321 -000/-003 0026/-193					
NNN1915147 TU 321 -000/-004 0039/-198					
NNN1915154 TU 321 -000/-004 0063/-199					
ZCN1914913 TA **NNN** 688					
The ZCN ERAM sends a TA track accept message to NNN ARTS (NNN is Field 16f) for the NNN ARTS flight 688 TCID.					
NNN1915160 DA 688 ZCN1914913					
The NNN ARTS DA acepts the ZCN ERAM TA message ZCN1914913 with the NNN ARTS TCID 688.					

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
16 f	16 Output Routing TI/TU/TA MESSAGE f = ERAM to ARTS Identifier and Position within that ARTS	LLL(dL)	Used in Handoff commands From ERAM to an ARTS facility and an optional ARTS position within the ARTS facility. In the case of ARTS Host Non Host (HNH) processing, LLL is the non-host's adapted three letter identifier. For an ERAM to ARTS handoff the first LLL in LLL(dL) is the adapted identifier for the ARTS. The (dL)is the ARTS position.	See Example of Field 16f Usage Below:	3–5

16f. ERAM to ARTS Identifier and Position within that ARTS Scenario

ZCN1918021 FP 014N971K 1/LJ35 1516 SEG E1920 070 LRP

HHH1919702 DA 106 ZCN1918021

ZCN1918025 TI HHH1H 106 -015/0038 0315/-198 ZCN91

HHH1919709 DA 106 ZCN1918025 HHH1H

ZCN1919000 TU HHH 106 -015/0038 0311/-197

ZCN1919000 TU HHH 106 -014/0038 0311/-197

HHH1919714 TA 014 O1H

ZCN1919027 DA 014 HHH1919714

Example of Field 16f Usage Below:

ERAM to ARTS Handoff Scenario

New York ERAM ZCN sends FP UAL304 to New York NNN ARTS. The flight is an arrival for LGA airport.

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
ZCN1913**782** **FP 96**CUAL304 1L/B752 0660 NAN A1928 370 LGA					
NNN ARTS Accepts **DA** the flight plan with TCID 332. NNN shows ZCN message 782 is DA.					
NNN1913986 **DA 332** ZCN1913**782**					
New York ERAM ZCN sends **TI** (track initiate -handoff) UAL304 with TCID 332 to New York NNN ARTS. **Note**: Field 16f is "NNN".					
Field 23 In the examples below, Field 23 is converted to decimal X-Y numbers. An actual message contains binary data in Field 23.					
ZCN1927**818** **TI NNN** 332 -074/0022 0346/-249					
NNN ARTS Accepts **DA** the TI message with TCID 332. NNN shows ZCN message 818 is DA.					
NNN1927268 DA 332 ZCN1927**818**					
New York ERAM ZCN sends TU (radar track update) UAL304 with TCID 332 to New York NNN ARTS. **Note**: Field 16f is "NNN".					
Field 23 In the examples below, Field 23 is converted to decimal X-Y numbers. An actual message contains binary data in Field 23.					
ZCN1927000 **TU NNN** 399 -030/-051 0198/0165					
332 -074/0022 0346/-249					
NOTE: The TU messages will be sent by ZCN every six seconds until NNN accepts the track with a **TA** message.					
NNN Controller ARTS Accepts Track control of UAL304 with the following **TA** message with ECID 96C.					
NNN1929388 **TA 96C**					
ZCN Accepts **DA** the TRACK ACCEPT (TA) with ECID 96C. ZCN shows NNN message **388** is **DA**.					
ZCN1928928 DA **96C** NNN1929**388**					
The ERAM and ARTS controllers radar Full Data Blocks will be updated showing track control exchange. The aircraft will now be switched to NNN ARTS controller.					

<table>
<tr><th colspan="6">Table C-III. Common Appendix Message Field Formats</th></tr>
<tr><th>Field Ref. No.</th><th>Field Number and Field Name</th><th>Field Format</th><th>Description</th><th>Example</th><th>No. of Bytes</th></tr>
<tr><td>16 f</td><td>16 Output Routing
TR (DT) MESSAGE
16f = Adjacent ATOP or ARTS III Facility</td><td>LLL</td><td>Used in the TR and DT command to specify an adjacent ATOP or ARTS III facility for an interface testing message.</td><td>See Example of Field 16f Usage Below:</td><td>3</td></tr>
<tr><td colspan="6">Example of Field 16f Usage Below:
HHH ARTS sends TR to ZCN ERAM
HHH1929888   TR ZCN ○TEST
ZCN ERAM responds by sending a DT that contains HHH ARTS Field 00 message 888
ZCN1928084   DT HHH1929888 ○TEST
ZCZ ATOP facility sends TR to ZCN ERAM
Z120   TR ZCN ○ABCDEFGHIJ01234
ERAM ZCN “N” responds by sending a DT that contains ZCZ ATOP “Z” Field 00 message 120
N696   DT Z120 ○ABCDEFGHIJ01234</td></tr>
<tr><td>16 f</td><td>16 Output Routing
TP/TS MESSAGE
f = Transfer primary and secondary radar</td><td>LLL</td><td>The Transfer Primary Radar Target (TP) message is used to provide primary radar data to one or more eligible CENRAP adapted ARTS III facilities.
The Transfer Secondary Radar Target (TS) message is used to provide secondary radar and/or north mark data to one or more CENRAP adapted ARTS III facilities.
The three letter LLL adapted ARTS identifier is used for routing the radar messages to the specified ARTS III facility.</td><td>See Example of Field 16f Usage Below:</td><td>3</td></tr>
</table>

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
16 Output Routing TP/TS MESSAGE f. Transfer primary and secondary radar **Example of Field 16f Usage Below:** ZCY2245001 TP AAR 0110000100110100 0001100110011000 ZCY2245001 TS AAR xxxxyyyy bbbbcccc 0000nmrk 00000000 Where xxxx = 2 byte X Coordinate yyyy = 2 byte Y coordinate bbbb = beacon code cccc = mode c data 0000nmrk = north mark data					
16 g	16 Output Routing HT MESSAGE g = Point Out Adjacent ERAM Center and Internal Sector	Ldd	When a point out in ERAM is made to an adjacent facility or from one sector to another, the an HT message is sent to the ATM IPOP to specify an adjacent center sector number for that center or an internal ERAM sector number. L is the adapted adjacent Center identifier. The dd is the sector number not to exceed 99.	See Example of Field 16g Usage Below:	3
Example of Field 16g Usage Below: Houston ERAM has sent HDS a HT message with message 1836 – Houston sector 65 has pointed out N162TJ to Memphis sector 45. -- Output to HDS SOURCE= HOSTZCH0 BLOCK SEQ NUM= 13089 MESSAGE LENGTH= 00077					

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
Field 0 E = 1314521**1836** Field 2 A = N162TJ Field 2 D = 744 **Field134 B = 65** **Field 16 G = M45** Field149 A = EOM Houston ERAM has sent HDS a HT message with message 1837 – Houston sector 65 has pointed out N162TJ to Memphis sector 46. --- Output to HDS SOURCE= SOURCE= HOSTZCH0 BLOCK SEQ NUM= 13089 MESSAGE LENGTH= 00077 Field 0 E = 1314521**1837** Field 2 A = N162TJ Field 2 D = 744 **Field134 B = 65** **Field 16 G = M46** Field149 A = EOM Houston ERAM has sent HDS a HT message with message 1062 – Houston sector 86 has pointed out NASA904 to Houston sector 80. --- Output to HDS SOURCE= SOURCE= HOSTZCH0 BLOCK SEQ NUM= 12595 MESSAGE LENGTH= 00077 Field 0 E = 1310111**1062** Field 2 A = NASA904 Field 2 D = 786 **Field134 B = 86** **Field 16 G = 80** Field149 A = EOM					
Field 17	17 Amendment or ICAO Original Data a = Amendment or ICAO Original Data	The data format corresponds to that required for the field designated by Field 12.	Field 17 contains data to Amend flight plan stored data or provide ICAO Original Data.		
17 a	17 Amendment,or ICAO Original Data a = Amendment or ICAO Original Data	The data format corresponds to that required for the field designated by Field 12. In the case of a route data amendment, the amended data must begin and end with route elements already stored in the	Field 17 contains data to Amend flight plan stored data or provide ICAO Original Data. Used in the AM and FP commands. Field 12 identifies a flight plan field and is generally paired with a Field 17, which contains the associated data to be	Example of Field 17a Usage: See Below	Variable

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
		route field or a location identifier followed by the departure up arrow or destination down arrow indicator and /or (*** or** (⊕)). In the case of an Amendment or Flight Plan message, where embedded space characters are permitted as data, the data must begin and end with double plus characters (++). When Field 17 has a paired Field 12 of OTH, Field 17 must be enclosed with double plus sign characters (++) when embedded blanks are present or format errors can occur. Each valid indicator entered in Field 17 must be preceded by a space character except the first valid indicator. If the last Field 12 is not followed by a Field 17, then the data in the element/indicator in 12 will be deleted. When Field 17 has a paired Field 12 of OTH, and if the Field 17 contains an ICAO Other Information indicator without	used in the flight plan field referenced by Field 12. The length of Field 17 is controlled by the length of the field being amended as specified by Field 12. If Field 12 of an AM from FDIO is RNP or RNV, Field 17 can consist of either a plus sign, "+", or a minus sign, "-". A plus sign indicates that the performance types of all stored E-PBN records are to be changed to the type specified by Field 12. A minus sign indicates that all stored E-PBN records are to be deleted.		

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
		data, then the data of the ICAO Other Information indicator will be deleted. In the case of an Amendment from FDIO where Field 12 specifies ICAO Field 10, element a (either via the abbreviation "EQP" or field reference number 24), one or more individual equipment codes may be added and/or deleted using "+" and "-" action types. Each of the two types are grouped together with no intervening spaces allowed.	ERAM will reject an ICAO Field 10 Amendment specifying Field 17 which includes the "no equipment" code "N" if: Insertion of "N" when not all existing codes are being deleted Insertion of "N" when other codes are also being inserted Deletion of "N" when no other codes are being inserted For Route Amendment Correction, the input is a response to a ROUTE READOUT Message for a previously entered AM which contains an ambiguous route element error and requires correction. The Route Amendment Correction message contains an amended route with numbered route element(s) substituted for the name(s) of the route merge elements(s) to resolve ambiguity. The route element numbers allow the user to conveniently and unambiguously reference route elements in the Route Amendment Correction.		
Example of Field 17a Usage:					

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes

Example of entire command:

AM AA123 BCN 1234

AM AA123 04 1234

AM AA123 FLT S

AM DL450 AID DL470 Delta flight 450 amended to Delta flight 470 (DL470 is Field 17)

AM 604 WAK H (H is Field 17) Amends type of aircraft to a "H" heavy aircraft

AM 012 OTH ++EET/CAP0745 XYZ0830++

AM 01A EET/ EET/EINN0204 (EET/EINN0204 is Field 17)

AM 012 OTH ++RIF/DTA HEC KLAX++ (++RIF/ DTA HEC KLAX++ is Field 17)

AM 012 OTH ++RIF/ESP G94 CLA APPH++ (RIF/ ESP G94 CLA APPH++ is Field 17)

AM 012 RIF/ LEMD (LEMD is Field 17)

AM 012 STS/ HOSP (HOSP is Field 17)

AM 012 OTH ++STS/ONE ENG INOP++ (++STS/ ONE ENG INOP++ is Field 17)

AM 301 COM/ ++UHF ONLY++ (++UHF ONLY++ is Field 17)

AM AA123 OPR/ UAL DAT/ S (UAL and S is Field 17)

AM AA123 COM/ ++HF ONLY++ (++HF ONLY++ is Field 17)

AM 010 DAT/ S for satellite data link (DAT/ S is Field 17)

AM 102 DAT/ H for HF data link (DAT/ H is Field 17)

AM 810 DAT/ V for VHF data link (DAT/ V is Field 17)

AM 31A DAT/ M for SSR (DAT/ M is Field 17)

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
AM 221 DEST/ KDFW (DEST/ KDFW is Field 17)					
AM 321 CODE/ F00001 is the lowest aircraft address contained in the specific block administered by ICAO. (CODE / F00001 is Field 17)					
AM DLT407 EQP +HIJ (to add H, I and J equipment codes to ICAO Field 10a)					
AM 667 24 –TEQ (to delete T, E and Q equipment codes from ICAO Field 10a					
AM AM4644 EQP +HI-XRB (to add equipment codes H and I and to delete equipment codes X, R and B for ICAO Field 10a					
AM 301 COM/ ++UHF ONLY++ EQP +ABCD-SVEFGHIJKT					
Example of Field 17a Route Amendment Correction Usage: Given the following route:					
3CT./.C3T.V26.E2B/D1+00..3ETF..F3C..3ETF					
The following Route Readout message would be output:					
1 -3CT.2 -/.3 -C3T.4 -V26.5 -E2B/D1+00..6 -3ETF..7 -F3C..8 -3ETF					
The following are examples Route Correction Amendments:					
Input: 3..D2B..5/D1+00					
Meaning: Merge on elements 3 and 5 and keep suffix on element 5					
Result: 3CT./.C3T..D2B..E2B/D1+00..3ETF..F3C..3ETF					
Input: 3..5					
Meaning: Delete element 4 and suffix data on element 5					
Result: 3CT./.C3T..E2B..3ETF..F3C..3ETF					
Input: 3..6					
Meaning: Delete elements 4 and 5					

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
Result: 3CT./.C3T..3ETF..F3C..3ETF Input: 3..F3C Meaning: Delete all elements between element 3 and F3C Result: 3CT./.C3T..F3C..3ETF Input: 5 Meaning: Delete suffix data from element 5 Result: 3CT./.C3T.V26.E2B..3ETF..F3C..3ETF Input: 5/D0+30 Meaning: Add or change suffix data on element 5 Result: 3CT./.C3T.V26.E2B/D0+30..3ETF..F3C..3ETF					
Field 18	18 Progress Report a = fix c = (/)element Separator d = time	aa(a)(a)(a)(/)(a)(a)(a)(a)(a)(a)(/dd dd) **a** **c d** Fix formats include: aa(a)(a)(a), for fix name **a** or aa(a)(a)(a)dddddd, for fix radial distance **a** or dddd(L)/(d)dddd(L), for lat/long	Field 18 is used by ERAM in the PR message and by ATM IPOP in the PH message to update the progress status of an active flight plan. ATM IPOP requires and uses the PH message Field 18a fix and 18d time. A fix element 18a on the converted route of flight and an optional time Field element 18cd (/dddd) expressed in hours and minutes. The clock time cannot exceed 23 in the first two digits or 59 in the last two digits. Fix Name format (See Field 10 description of Adapted Fix for details) followed by a separator and an optional		

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
		a Optional time element: $\boxed{\text{(/dddd)}}$ **c d**	time.		
18 a	18 Progress Report a = Fix	Fix formats include: aa(a)(a)(a), for fix name or aa(a)(a)(a)dddddd, for fix radial distance or dddd(L)/(d)dddd(L), for lat/long	Field 18a is used by ERAM in the PR message and by ATM IPOP in the PH message to specify the position location report of the flight along the filed route of flight. If the PR command Field 18 is input without the optional time element, the present clock time will be used.	Example of Field 18a Usage: Example of entire command: **PR AAL60 TXK** **PR CONDO01 OKC270015** **PR ZEBRA22 3500N/94000W**	2–12
18 a c d	18 Progress Report a = fix c = (/)element Separator d = time	Fix formats include: aa(a)(a)(a), for fix name **a** or aa(a)(a)(a)dddddd, for fix radial **a** distance or dddd(L)/(d)dddd(L), for lat/long a Optional time element:	Field 18a is used in the PR message to specify the position location report of the flight along the filed route of flight. The Field 18cd optional time element is used to specify the time of the flight arriving at the specified fix of Field 18a. Field 18c and 18d optional time field (/dddd) expressed in hours and minutes. The clock time cannot exceed 23 in the first two digits or 59 in the last two digits.	Example of Field 18acd Usage: Example of entire command: **PR AAL60 TXK/1201** **PR CONDO01 OKC270015/2359** **PR ZEBRA22 3500N/94000W/1111**	7–17

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
		(/dddd) **c d**			
18 a d	18 Progress Report a = fix d = time	Fix formats include: aa(a)(a)(a), for fix name **a** or aa(a)(a)(a)dddddd, for fix radial distance **a** or dddd(L)/(d)dddd(L), for lat/long a Time element: dddd **d**	Field 18a is used in the PH message to specify the position location report of the flight along the filed route of flight. The Field 18d time element is used to specify the time of the flight arriving at the specified fix of Field 18a. Field 18d time field dddd expressed in hours and minutes. The clock time cannot exceed 23 in the first two digits or 59 in the last two digits. ATM IPOP requires and uses the PH message Field 18a fix and 18d time.	Example of Field 18ad Usage: Example of entire command: **ATM IPOP PH message:** 150a 00e 02a 02d 167a **18a 18d** 149a **PH … AAL60 419… TXK 1201** **18a 18d**	Fix 18a 2–12 Time 18d 4
Field 21	21 Hold Data a = fix c = (/)element Separator d = time e = Action (C)	aa(a)(a)(a)(/)(a)(a)(a)(a)(a)(a)(/dddd) **a c d** Fix formats include: aa(a)(a)(a), for fix name	Optional Field 21 is used in the HM command to specify the status of a holding flight. Field 21 is required for the ATM IPOP HH and HO message. The Hold command is used to initiate, modify, terminate or cancel a hold		

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
		a or aa(a)(a)(a)dddddd, for fix radial **a** distance or dddd(L)/(d)dddd(L), for lat/long **a** Optional time elements: $\boxed{\text{(/dddd)}}$ **c d** Optional Action character (C) **e**	action for any specified flight. Field 21 can contain any of the following optional elements: • Fix Name, • Fix Radial Distance, • Lat/Long • Expect Further Clearance(EFC) time • A "C" Cancel Hold Indicator. • No Field 21, Present Position Hold When the time is included, the time is expressed in hours and minutes. The clock time cannot exceed 23 in the first two digits or 59 in the last two digits. Field 21a Fix Name format (See Field 10a description of Adapted Fix for details) followed by a optional Field 21c element separator that will include Field 21d time element. Field 21c element separator is not used for the ATM IPOP HH and HO message. Field 21 element e which is the letter "C" is used in Hold message to terminate an existing stored hold. Element e. cannot be combined with any		

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			other elements. Element e. is allowed from FDIO for the HM message and is allowed as part of the HH message to ATM IPOP.		
21 a	21 Hold Data a = Fix	Fix formats include: aa(a)(a)(a), for fix name or aa(a)(a)(a)dddddd, for fix radial distance or dddd(L)/(d)dddd(L), for lat/long	Field 21a Fix is used in the HM, HH and HO message to specify the position location for the flight to Hold along the filed route of flight. If the HM, HH and HO message Field 21a is input without the optional time element, the flight will go into an indefinite hold status when the flight arrives at the hold fix.	Example of Field 21a Usage: Example of entire command: **HM AAL60 TXK** **HM CONDO01 OKC270015** **HM ZEBRA22 3500N/94000W**	2–12
21 a c d	21 Hold Data a = fix c = (/)element Separator d = time	Fix formats include: aa(a)(a)(a), for fix name **a** or aa(a)(a)(a)dddddd, for fix radial **a** distance or dddd(L)/(d)dddd(L), for lat/long **a** Optional time element:	Field 21a Fix is used in the HM message to specify the position location for the flight to Hold along the filed route of flight. A fix on the converted route of flight followed by an optional EFC time. The Field 21cd optional time element is used to specify the time the flight can expect further clearance at the specified hold fix of Field 21a. Field 21c and 21d optional time field (/dddd) expressed in hours and minutes. The clock time cannot exceed 23 in the first two digits or 59 in the last two	Example of Field 21a, 21c and 21d Usage: Example of entire command: **HM AAL60 TXK/1201** **HM CONDO01 OKC270015/2359** **HM ZEBRA22 3500N/94000W/1111**	7–17

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
		(/dddd) **c d**	digits. Field 21acd cannot be used for ATM IPOP messages.		
21 a d	21 Hold Data a = fix d = time	Fix formats include: aa(a)(a)(a), for fix name **a** or aa(a)(a)(a)dddddd, for fix radial distance **a** or dddd(L)/(d)dddd(L), for lat/long **a** Optional time element: (dddd) **d**	Field 21a Fix is used in the ATM IPOP HH and HO message to specify the position location for the flight to Hold along the filed route of flight. A fix on the converted route of flight followed by an optional EFC time. The Field 21d optional time element is used to specify the time the flight can expect further clearance at the specified hold fix of Field 21a. Field 21d optional time field (dddd) expressed in hours and minutes. The clock time cannot exceed 23 in the first two digits or 59 in the last two digits.	Example of Field 21a and 21d Usage: **TXK 1201** **OKC270015 2359** **3500N/94000W 1111**	Field 21a 2–12 Field 21d 4
21 d	21 Hold Data d = Time	dddd	The Field 21d optional time element is used to specify the time the flight can expect further clearance at the holding location. Field 21d optional time field (dddd) expressed in hours and minutes. The clock time cannot exceed 23 in the first	Example of Field 21d Usage: Example of entire command: **HM AAL60 1201** **HM CONDO01 2359** **HM ZEBRA22 1111**	4

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			two digits or 59 in the last two digits. If this is the first Hold Message input for the flight, the flight will be placed into holding status at the present position of the aircraft with an estimated departure time of the time entered for Field 21d. A flight with a hold may have its EFC time modified by a subsequent HOLD message. Field 21d alone cannot be used for the ATM IPOP HH and HO message.		
21 e	21 Hold Data e = Action (C)	The format of the Optional Action character is the letter “C”	The optional element e. which is the letter “C” is used in a Hold message to terminate an existing stored hold. Element e. cannot be combined with any other elements. Element e. is allowed from FDIO in the HM message and can be part of the ATM IPOP HH message.	Example of Field 21e Usage: Example of entire command: **HM AAL60 C** **HM CONDO01 C** **HM ZEBRA22 C**	1
21	21 Hold Data = No Field 21	None	If No Field 21 is input with the Hold Message for the flight, the flight will be placed into an indefinite holding status at the present position of the aircraft with no EFC time. Not allowed for the ATM IPOP HH and HO message.	Example of No Field 21 Usage: Example of entire command: **HM AAL60** **HM CONDO01** **HM ZEBRA22**	0

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
Field 23	23 Track Position and Velocity Components (bits) b = ERAM To and From ARTS III (TI, TU and TZ messages) d = Track Position From ERAM to ATM IPOP e = Velocity From ERAM to ATM IPOP	**b. ERAM To ARTS III** X−Y coordinates sssbbbbb high order byte bbbbbbb0 low order byte Velocity components ssssbbb high order byte bbbbbbb0 low order byte **b. ARTS III To ERAM** X−Y coordinates sssbbbbb high order byte bbbbbbb0 low order byte Velocity components sssssbbb high order byte bbbbbbb0 low order byte TZ message uses only X-Y coordinates. **d. Track Position From ERAM to ATM IPOP** ddddddL / Virgule separates Latitude and Longitude. dddddddL **e. Velocity From ERAM to ATM IPOP** ad(d)(d)(d)/ad(d)(d)(d)	Field 23 is one of the fields used to transfer RADAR control of a flight or to provide tracking information to another controller. Track position and velocity coordinates will be in coordinates of stereographic plane of the ARTS III when sent or received on an ARTS interface.		

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
23 b.	23 Track Position and Velocity Components (bits) b = ERAM To and From ARTS III	**b. ERAM To ARTS III** X−Y coordinates sssbbbbb high order byte bbbbbbb0 low order byte Velocity components sssssbbb high order byte bbbbbbb0 low order byte **b. ARTS III To ERAM** X−Y coordinates sssbbbbb high order byte bbbbbbb0 low order byte Velocity components sssssbbb high order byte bbbbbbb0 low order byte TZ message does not include velocity.	1. X or Y coordinates are each represented by two bytes, sign extended ones complement expressed to the closest 1/8 nautical mile. 2. Velocity components are each represented in two bytes, sign extended ones complement expressed to the closest nautical mile per hour along their respective X or Y axis. The TZ message from ARTS does not include velocity. 3. The sss or sssss in the high order byte represents a sign for positive (0) or negative (1) direction in respect to the origin of the axis. 4. The following bit configurations are prevented by requiring the low order bit to be 0. (10110001)—EOM character (10110011)—LRC prepare character.	Example of Field 23b Usage: See below:	4 or 8

Example of Field 23b Usage:

Binary:	00000001	11100100	00000001	01101000	11111111	11011110	11111111	11001000
Hexadecimal:	01	E4	01	68	FF	DE	FF	C8

X Coordinate = 0x01E4, Y Coordinate = 0x0168, X Velocity = 0xFFDE, Y Velocity = 0xFFC8

01E4 = +30 2/8 nautical miles (X coordinate)
0168 = + 22 4/8 nautical miles (Y coordinate)

<table>
<tr><th colspan="6">Table C-III. Common Appendix Message Field Formats</th></tr>
<tr><th>Field Ref. No.</th><th>Field Number and Field Name</th><th>Field Format</th><th>Description</th><th>Example</th><th>No. of Bytes</th></tr>
<tr><td colspan="6">FFDE =   -16 nautical miles per hour (X Velocity Component)
FFC8 =   -27 nautical miles per hour (Y Velocity Component)
ERAM to ARTS III TI message example using Field 23b:
Field 23b In the example below, Field 23b is converted to decimal X-Y numbers. An actual message contains binary data in Field 23.
ZCN1915800   TI PPP 177 -041/0024 0345/-134 ZCN26
ARTS III to ERAM TZ message example using Field 23b (two instances):
Field 23b In the example below, Field 23b is converted to decimal X-Y numbers. An actual message contains binary data in Field 23.
ZCN1916822   TZ AAL123/333 307 330 -041/0025 BAW90/389 356 390 616/-295</td></tr>
<tr><td>23 d</td><td>23 Track Position and Velocity Components (bits)
d = Track Position From ERAM to ATM IPOP</td><td>d. Track Position From ERAM to ATM IPOP
ddddddL
/ Virgule separates Latitude and Longitude.
dddddddL</td><td>For TZ messages from ARTS facilities, only X−Y coordinates will be in Field 23.
ERAM will convert ARTS X,Y to LAT/LONG.
Latitude used in the TH and HZ messages.
The first two d’s are degrees, the second two are minutes and the last two are seconds. L = N or S.
Longitude used in the TH and HZ message.
The first three d’s are degrees, the second two are minutes and the last two are seconds. L = E or W.</td><td>Example of Field 23d Usage:
Track Position Field 23d as follows:
Field23 D = 393106N/0842535W</td><td>16</td></tr>
<tr><td>23 e</td><td>23 Track Position and Velocity Components (bits)</td><td>e. Velocity From ERAM to
ATM IPOP</td><td>Velocity in NM/hr used in the TH message sent to ATM IPOPs or ATM Applications</td><td>Example of Field 23e Usage:
Velocity Field 23e as follows:</td><td>5–11</td></tr>
</table>

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
	e = Velocity From ERAM to ATM IPOP	ad(d)(d)(d)/ad(d)(d)(d)	ad(d)(d)(d) = X component /ad(d)(d)(d) = Y component a = + or −; d(d)(d) = velocity in NM per hour −0/−0 = not available −0/Hd(d)(d) = only heading (in degrees) available −0/Sd(d)(d)(d) = only speed (in NM per hr) available	**Field 23 E = +254/+260** **Field 23 E = +46/-355** **Field 23 E = -4/-367** Speed in NM per hour: **Field 23 E = -0/S439** **Field 23 E = -0/S360** **Field 23 E = -0/S105**	
Field 24	24 Target Coordinates or North Mark Data	**Target Coordinates:** sssssbbb - high order byte bbbbbbb0 - low order byte	Field 24 is used for the ERAM to STARS interface. Field 24 contains the target X and Y expressed as STARS coordinates for the referent STARS facility, or North Mark Data. This field is used in CENRAP processing when sending primary or secondary radar from ERAM to STARS via the TP and TS messages. North Mark Data is the adapted data that is transmitted to a CENRAP adapted STARS facility every time a Beacon Test Radar message is successfully processed from an adapted north mark radar site for the referent STARS facility. The north mark data is used by STARS to ensure correct range/azimuth orientation during periods of CENRAP.	**See Example of Field 24 Usage Below:**	4

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			The target X-Y coordinates are converted from the X-Y coordinates of the ARTCC stereographic plane to the X-Y coordinates of the referent STARS facility system plane. Target X or Y coordinates are each represented by two bytes, sign extended ones complement expressed to the closest 1/8 nautical mile. The format "sssssbbb" represents the high order byte and "bbbbbbb0" represents the low order byte, where "s" represents the sign and "b" represents binary. Field 24 may contain north mark data in place of X-Y coordinates. North mark data is comprised of zeros for the X coordinates and an adapted range for the Y coordinates. North mark data is included with Target X-Y data within the same physical TS message.		

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
Field 24	24 Beacon Code And Mode C Altitude	**Beacon Code:** **0ibb bbbb - high order byte** **bbbbbb00 - low order byte** **Mode C Altitude:** **000sbbbb - high order byte** **bbbbbbb0 - low order byte**	Field 24 is used for the ERAM to STARS interface. The TS message uses Field 24 that contains the binary Mode 3/A Beacon Code and Mode C Altitude expressed in hundreds of feet. The Beacon Code is represented by two bytes. Where i = 1 if ident, 0 = no ident. b = beacon code bits. The Mode C Altitude is represented by two bytes, which will contain: s = sign bit. b = altitude in hundreds of feet. The Mode C Altitude element will contain zeros when the Mode C altitude is not available. If Field 24 contains north mark data, Field 24 will contain zero's for the beacon code and the Mode C.	**See Example of Field 24 Usage Below:**	4

Example of STARS Interface Field 24 Usage Below:

ZCY2245001 TP AAR 01100001001101000001100110011000

ZCY2245001 TS AAR xxxxyyyybbbbcccc 0000nmrk00000000

Where xxxx = 2 byte X Coordinate

yyyy = 2 byte Y coordinate

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
bbbb = beacon code cccc = mode c data 0000nmrk = north mark data **Note**: Repeating Field 24 is followed by a space character and a LRC.					
Field 25	25 Field Reference Number Referent Message Descriptor a = possibly the Referent Message addresser, Referent Msg time, Referent Msg number, Referent Msg addressee. b = Referent message number	Lddd **a** LLLddddddd **a** dddd **b**	Field 25 contains Field 00 of the message being acknowledged (the referent message). Field 25 contains one of the following referents: 1. Field 25a is Field 00ac - Lddd the message being acknowledged to ERAM to Adjacent ATOP. 2. Field 25a is Field 00abc - LLLddddddd the message being acknowledged ERAM to ARTS III. 3. Field 25b is Field 00e – dddd the message being acknowledged in ATM IPOP to ERAM. The last four dddd is the Field 00e sequence number in the range of 0000 – 9999. 4. The source identification of the received Test (TR) Message in a DT Message.		
25 a	25 Field Reference Number Referent Message Descriptor	Lddd	ERAM to Adjacent ATOP messages will have 1 letter (L) for the identification of the facility sending the message followed by the message number (ddd). Message numbers are 0	Example of Field 25a Usage: The following example demonstrates the Lddd format of Field 25a, where "A" is the	4

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
	a = Referent Message addresser, Referent message number		to 999 and then startover.	adjacent ATOP identifier and "001" is the message number: **F718 DT <u>A001</u> ○THIS IS A TEST**	
25 a	25 Field Reference Number Referent Message Descriptor a = Referent Message addresser Referent Msg time Referent Msg number	LLLddddddd	ERAM to ARTS and ARTS to ERAM messages will have 3 letters (LLL) for the identification of the facility sending the message followed by seven numerics. These seven digits represent time (in hhmm format) and the original message number. Message numbers are 0 to 999 and then startover.	Example of Field 25a Usage: The following example demonstrates the LLLddddddd format of Field 25a. "NNN" identifies the sending facility, "1919" is the time the original message was sent, and "634" is the message number rejected with the DR message. **ZCN1919287 DR NNN1919634**	10
25 b	25 Field Reference Number Referent Message Descriptor b = Referent message number	dddd	Field 25b from ATM IPOP Field 00e - dddddd$\boxed{\text{dddd}}$ is the last four dddd that contains a sequence number in the range 0000 – 9999. The last four dddd sequence number represents Field 25b that will be used to acknowledge the Field 00e message. Field 25b four characters in length is used in the IA, IL, IR, and IT messages.	Example of Field 25b Usage: Field 00b – 2359359001 **Field 25 B = 9001** Field 00b Message for ATM IPOP time 23:59:35 UTC with a message number 9001 Field 25b 9001 will be used with the IA, IL, IR, and IT messages.	4

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
Field 26 a	26 Departure Point a = Departure Point	aa(a)(a)(a)(/)(a)(a)(a)(a)(a)(a) Fix formats include: aa(a)(a)(a), for fix name or aa(a)(a)(a)dddddd, for fix radial distance or dddd(L)/(d)dddd(L), for lat/long	The Departure Point is the starting point to process the flight plan route as follows: the departure airport,or the airfile point. When the flight plan represents an airfile, originating within this center area, this field contains the airfile point. Departure Point is used for the ATM IPOP interface for the CL, DH, IH, HV, BA, and RE message.	Example of the different types of Departure Point: **AB** **BUJ** **DFW** **KDFW** **ATOKA** **AB200010** **SHP090015** **ATOKA300040** **3500/04000** **3500N/04000W** **Note**: a delay time cannot be attached to the Departure Point. **See Example below for Field 26, 27 and 28.**	2–12
Field 27 a	27 Destination a = Destination	aa(a)(a)(a)(/)(a)(a)(a)(a)(a)(a) Fix formats include: aa(a)(a)(a), for fix name or aa(a)(a)(a)dddddd, for fix radial distance or dddd(L)/(d)dddd(L), for lat/long	The Destination is the end point to process the flight plan. Destination Field 27a is used for the ATM IPOP interface for the CL, DH, IH, HV, BA, and RE message.	Example of the different types of Destinations: **AB** **BUJ** **DFW** **KDFW** **ATOKA** **AB200010** **SHP090015** **ATOKA300040** **3500/04000** **3500N/04000W** **Note**: a delay time cannot be	2–12

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
				attached to the Departure Point. See Example below for Field 26, 27 and 28.	
Field 28	28 Arrival Time a = ETA b = Arrival Time	dddd **a** Ldddd **b**	For ATM IPOP. Field 28a is the Estimated Time of Arrival (ETA). Field 28b is the reported arrival time.		
28 a	28 Arrival Time a = ETA	dddd	For ATM IPOP. Four characters representing the Estimated Time of Arrival (ETA) at destination in hours and minutes (ETA supplied only if the Estimated Time Enroute (ETE) was filed with the flight plan)—dddd	See Example below for Field 26, 27 and 28.	4
28 b	28 Arrival Time b = Arrival Time	Ldddd	For ATM IPOP. Ldddd where L =A if time received in Field 00 of TB message from ARTS III caused the flight to be dropped; L = E if flight dropped by application of AFDI or EFDI.; dddd = hhmm	See Example below for Field 26, 27 and 28.	5

Full Message Example of Field 26a, 27a, 28a & 28b Usage:

SOURCE= HOSTZCH0 BLOCK SEQ NUM= 12733 MESSAGE LENGTH= 00119

DH Message

Field 0 E = 1311311286 Field 2 A = COA1590 Field 2 D = 582

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
Field 3 C = B733 Field 3 E = Q **Field 26 A = IAH** Field 7 D = D1311 **Field 27 A = MIA** **Field 28 A = 1519** Field149 A = EOM SOURCE= HOSTZCH0 BLOCK SEQ NUM= 12735 MESSAGE LENGTH= 00089 HV Message Field 0 E = 1311361289 Field 2 A = BTA3325 Field 2 D = 172 **Field 26 A = VPS** **Field 27 A = IAH** **Field 28 B = E1305** Field149 A = EOM SOURCE= HOSTZCH0 BLOCK SEQ NUM= 12863 MESSAGE LENGTH= 00088 HV Message Field 0 E = 1312541499 Field 2 A = N441HT Field 2 D = 934 **Field 26 A = HOU** **Field 27 A = CRP** **Field 28 B = A1313** Field149 A = EOM					
Field 29	29 Airspace Assignment a = Sector number c = no FAV assigned d = FAV number	dd **a** **-** **c** dddd **d**	Used for ATM IPOP Airspace Assignment.		
29 a	29 Airspace Assignment	dd	Used for ATM IPOP Sector Airspace Assignment.	See Example below for Field 29a, 29c and 29d.	2

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
	a = Sector number		The following is Field 29a sector 23. **Field 29 A = 23** Field 29 C = -		
29 c	29 Airspace Assignment c = no FAV assigned	-	Used for ATM IPOP, indicates NO FAV Airspace Assignment. Field 29 A = 22 **Field 29 C = -**	See Example below for Field 29a, 29c and 29d.	1
29 d	29 Airspace Assignment d = FAV number	dddd	Used for ATM IPOP provides FAV Airspace Assignment. Field 29 A = 24 **Field 29 D =2405**	See Example below for Field 29a, 29c and 29d.	4

Full Message Example of Field 29a, 29c & 29d Usage:

SOURCE= HOSTZCH0 BLOCK SEQ NUM= 13015 MESSAGE LENGTH= 00079

UI Message:

UTM UI message sent to ATM IPOP for MRA677, flight information unsuccessful to AD+ ARTS and the Field 29d FAV for the flight is 1700.

Field 0 E = 1314071734 Field 2 A = MRA677 Field 2 D = 103

Field 16 B = AD+ **Field 29 D = 1700** Field149 A = EOM

SOURCE= HOSTZCH0 BLOCK SEQ NUM= 13053 MESSAGE LENGTH= 02790

SH Message:

Below partial SH message for example only:

Field 29a is followed by Field 29c when no FAVs are assigned to a sector.

Field 29a is followed by Field 29d for each FAV assigned to a sector.

Notice in the following message sector 22, 23, and 26 have no FAVs assigned.

Notice in the following message sector 24 has 23 FAVs assigned and sector 25 has 4 FAVs assigned.

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
Field 0 E = 1314311784 Field 29 A = **22** Field 29 C = - Field 29 A = **23** Field 29 C = - Field 29 A = **24** Field 29 D = 2405 Field 29 D = 2406 Field 29 D = 2411 Field 29 D = 2412 Field 29 D = 2413 Field 29 D = 2414 Field 29 D = 2415 Field 29 D = 2416 Field 29 D = 2417 Field 29 D = 2418 Field 29 D = 2419 Field 29 D = 2420 Field 29 D = 2421 Field 29 D = 2422 Field 29 D = 2423 Field 29 D = 2424 Field 29 D = 2425 Field 29 D = 2426 Field 29 D = 2427 Field 29 D = 2428 Field 29 D = 2429 Field 29 D = 2430 Field 29 D = 2431 Field 29 A = **25** Field 29 D = 2501 Field 29 D = 2502 Field 29 D = 2503 Field 29 D = 2507 Field 29 A = **26** Field 29 C = - **…………………..NOT A COMPLETE MESSAGE**					
Field 30	30 Sector Change Field b =Sector Identification c =FAV d =Element Delimiter f =Element Delimiter	(d)dd **b** (d)dddd **c** / **d** + **f**	Field 30 is used in the Resector (CS) message, which is used to control sectorizaton such that the airspace to the right of the "/" is assigned to the airspace to the left of the "/". Several different airspace volumes are possible in this command.	Examples of Field 30-a: **30/32** – adds sector 32's airspace to sector 30's **30/32+39 -** adds sector 32's and sector 39's airspace to sector 30's. Example of Field 30-b: **30/3402** - adds FAV 3402 airpace to sector 30	

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
				Example of 30-c **3205/3402** – adds airspace from FAV 3402 to FAV 3205	
30 b d b f	30 Sector Change Field Sector to Sector Assignment b = Sector Identification d = Element Delimiter f = Element Delimiter	(d)dd/(d)dd **b d b** **OR** (d)dd/(d)dd(+(d)dd…+(d)dd) **b d b f b f b**	The airspace assigned to the sector to the right of the "/" delimiter is assigned to the sector on the left side of the delimiter. There may be multiple sectors on the right side of the "/", separated by the "+" delimiter. The airspace of all sectors on the right side of the "/" is assigned to the sector on the left side.	Examples of Field 30 Sector to Sector Assignment: **30/32** **30/32+34+39**	
30 b d c	30 Sector Change Field FAV/LPA to Sector Assignment b =Sector Identification c =FAV d =Element Delimiter	(d)dd/(d)dddd **b d c**	The Fixed Airspace Volume (FAV) or Logical Posting Address (LPA) on the right of the "/" delimiter is assigned to the sector on the left.	Example of Field 30 FAV to Sector assignment: **30/3402**	
30	30 Sector Change Field	(d)dddd/(d)dddd	The Fixed Airspace Volume (FAV) on the right of the "/" delimiter is assigned to the FAV on the left.	An example of Field 30 Airspace Volume to Airspace Volume Assignment:	

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
c d c	Airspace Volume to Airspace Volume Assignment (FAV to FAV, LPA to FAV, or LPA to LPA) c = FAV d = Element Delimiter	**c d c**	OR The Logical Posting Address (LPA) on the right is assigned to the FAV on the left. OR The LPA on the right is assigned to the LPA on the left.	**3402/3901**	
Field 34 a or b	34 Altimeter Data a = reported altimeter setting OR b = altimeter report missing	ddd or M **a b**	The Altimeter Setting (AS) message is used to enter altimeter reference data for selected, adapted, reporting stations. The altimeter data entered is used for display at control positions and in calculating Mode C correction factors. Field 34a reports the 3 digits of barometric pressure. An altimeter setting of 000-499 implies a value of 3000-3499, and a setting of 500-999 implies a value of 2500-2999. The only possible range of settings is 2500 to 3499. NOTE: The leading digit 2 or 3 is not reported.	Example of Field 34a and 34b Usage: **929** The Altimeter is 2929 **011** The Altimeter is 3011 **M** The Altimeter is Missing **Field 34 A = 985** The Altimeter is 2985 **Field 34 B = M** The Altimeter is Missing See full message example below:	1 or 3

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			Field 34a will be three characters in length. If the character M is entered, the altimeter setting for the associated reporting station is missing and is reported as Field 34b. Field 34b will be one character in length.		
Full Message Example of Field 34a, 34b, & 35a Usage: DESTINATION= ******** SOURCE= ERAMZCH0 BLOCK SEQ NUM= 13186 MESSAGE LENGTH= 00068 Field 0 E = 1315521995 **Field 35 A = 1314** **Field 13 3 = IAH** **Field 34 A = 987** Field149 A = EOM NOTE: Field 35 A indicates the altimeter was observed at (1314) with a reading of Field 34 A (as **2987**) for weather station Field 13 3 (IAH). DESTINATION= CNFP**** SOURCE= ERAMZCY0 BLOCK SEQ NUM= 00008 MESSAGE LENGTH= 00057 Field 0 E = 2301220201 Field 13 3 = SEA **Field 34 B = M** Field149 A = EOM NOTE: Since, Field 34 B is M (SEA weather or altimeter report is **M**issing), field 35 A is not required.					
Field 35 a	35 Altimeter or Weather Data Entrance Time a = observed time	dddd	Field 35a - When entered with an altimeter setting or weather message, the time represents the **time** of the observed weather or altimeter setting. When entered with a Weather Message, the time represents the **time** the Weather Observation was taken. The time field (Field 35a) must be four digits. The first two digits (hours) must not exceed 23, and the last two digits (minutes) must not exceed 59.	Example of Field 35a Usage: **Field 35 A = 1312** The weather or altimeter was observed at UTC time1312. See full message example above:	4

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
Field 36	36 Action Indicator a = Action Indicator h = Action Indicator	LL(L) **a** LL(L)(L) **h**	Field 36 is an action indicator with the following type indicators: • ON • OFF • AUTO		
36 a	36 Action Indicator a = Action Indicator	LL(L)	Field 36a is an action indicator with the following type indicators: • ON • OFF Field 36a is used with the IF message and the HR message for ATM IPOP.	Example of Field 36a: HR message showing the status of routes: Field 135a shows SID SD001 and Field 36a shows the route is turned OFF. Field135 A = SD001 **Field 36 A = OFF**	2–3
36 h	36 Instrument Approach Count Action Indicator h = Action Indicator	LL(L)(L)	**Field 36h is t**he action indicator for one of the following: AUTO—count instrument approaches based on stored weather ON—count instrument approaches regardless of stored weather OFF—do not count instrument approaches Field 36h is 2-4 characters.	Example of Field 36h: **IC MLC AUTO** **AC message will be output to ATM IPOP** **Field 36 H = AUTO**	2–4

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
Field 41	41 Established Beacon Code	dddd	Field 41 contains the established Mode 3/A beacon code.		
41 a	41 Established Beacon Code a = Mode 3/A beacon code	dddd	Field 41a contains the established Mode 3/A beacon code only if the track has an established beacon code. The established beacon code in an intercenter TI message forwarded between ERAM and ARTS facilities. In the described format, four digits (dddd) represents the Mode 3/A beacon code. The format is octal only representation. Each digit cannot be greater than 7.	The following example demonstrates the dddd format of Field 41a: The established beacon code in this TI Message as received at NNN ARTS is 2443: ZCN1913807 TI NNN 274 -073/-041 0326/0285 **2443**	4
Field 42 m	42 ICAO Flight Data Selection m = output data selection	I or C or A or F or 1 or 2	Used in the Flight Plan Readout Request FR commands to indicate output data selection. I: Outputs the ICAO Associated Data for the referent flight plan, if present C: Outputs the flight plan in ICAO CPL format. When there is incomplete data to construct a CPL command, only the ICAO elements that are incomplete will be output. If the flight does not exit directly to a Non-U.S. Automated Facility a reject message will be output.	Example of entire command: **FR AA123 I** **FR AA123 C** **FR AA123 A** **FR AA123 F** **FR AA123 1** **FR AA123 2**	1

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
			A: Outputs ICAO field elements, Field 18 and/or the Field 18 Indicators containing data that are adapted for this option. When there is incomplete data for the required field elements or the flight does not exit directly to Non-U.S. Automated Facility airspace, the command will be rejected. F: Outputs the flight plan in ICAO FPL format. When there is incomplete data to construct an FPL message, only the ICAO elements that are incomplete will be output. 1. Outputs the ICAO field elements, ICAO Field 18, and/or ICAO Field 18 Indicators that are adapted for option 1. 2. Outputs the ICAO field elements, ICAO Field 18, and/or ICAO Field 18 Indicators that are adapted for option 2.		
Field 45	45 Weather Data	Clear Weather Symbol (O)Free text Weather report and an asterisk (*)	FDIO can input the WX command Used in the WX command to enter weather observation data for selected adapted reporting stations. The weather data, if accepted, is stored by the software. 1. The field is begun with a Clear Weather Symbol (O).	Example: **O WEATHER REPORT FREE FORMAT NOT FORMAT CHECKED**	2–242

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
			2. The data is accepted and stored as entered and is not format checked by the program. 3. An asterisk at the end of Field 45 indicates an additional Weather Sequence may follow. The entire field may not exceed 240 characters, excluding O and optional *.		
Field 47	47 Beacon Code Utilization Count a = Internal Primary and Secondary Codes b = Internal Tertiary Codes c = External Primary and Secondary Codes d = External Tertiary Codes e = Code Reassignments	The formats used in Field 47. are: dddd/dddd **a** dddd/dddd **b** dddd/dddd **c** dddd/dddd **d** dddd **e** All of the data will be in EBCDIC format.	Field 47 contains the peak number of beacon codes used, the total number of adapted codes and the number of code reassignments since start-up or local midnight, for an adapted period of time. The peak number of beacon codes used and the total number of adapted codes are broken down by the following categories: 1. Internal Primary and Secondary codes. 2. Internal Tertiary codes. 3. External Primary and Secondary codes. 4. External Tertiary codes. 5. The number of code reassignments since midnight. Field 47 is used in the Beacon Code Utilization Information (UB) Message		

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			sent to ATM IPOP every parameter BCRO minutes.		
47 a.	47 Beacon Code Utilization Count a = Internal Primary and Secondary Codes	Element 47a. consists of 8 digits - 4 digits separated by an oblique stroke "/", followed by 4 digits: **dddd/dddd** Where dddd is a number in the range 0000 to 9999. / is an oblique stroke character dddd is a number in the range 0000 to 9999.	Element 47a contains the Peak number of internal primary and secondary codes and the total number of adapted codes	The following is an example of Field 47a as used in a UB message: **Field 47 A = 0045/0315**	9 with "/"
47 b.	47 Beacon Code Utilization Count b = Internal Tertiary Codes	Element 47b. consists of 8 digits - 4 digits separated by an oblique stroke "/", followed by 4 digits: **dddd/dddd** Where dddd is a number in the range 0000 to 9999. / is an oblique stroke character dddd is a number in the range 0000 to 9999.	Element 47b contains the Peak number of internal tertiary codes and the total number of adapted codes	The following is an example of Field 47b as used in a UB message: **Field 47 B = 0000/0000**	9 with "/"

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
47 c.	47 Beacon Code Utilization Count c = External Primary and Secondary Codes	Element 47c consists of 8 digits—4 digits separated by an oblique stroke "/", followed by 4 digits: **dddd/dddd** Where dddd is a number in the range 0000 to 9999. / is an oblique stroke character dddd is a number in the range 0000 to 9999.	Element 47c contains the Peak number of external primary and secondary codes and the total number of adapted codes	The following is an example of Field 47c as used in a UB message: **Field 47 C = 0067/0378**	9 with "/"
47 d.	47 Beacon Code Utilization Count d = External Tertiary Codes	Element 47d consists of 8 digits—4 digits separated by an oblique stroke "/", followed by 4 digits: **dddd/dddd** Where dddd is a number in the range 0000 to 9999. / is an oblique stroke character dddd is a number in the range 0000 to 9999.	Element 47d contains the Peak number of external tertiary codes and the total number of adapted codes	The following is an example of Field 47d as used in a UB message: **Field 47 D = 0000/0000**	9 with "/"

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
47 e.	47 Beacon Code Utilization Count e = Code Reassignments	Element 47e. consists of 4 digits: **dddd** Where dddd is a number in the range 0000 to 9999.	Element 47e contains the number of code reassignments since midnight	The following is an example of Field 47e as used in a UB message: **Field 47 E = 0086**	4
Field 48	48 Accepting Sector a = Over Indicator b = Accepting Sector Number/ Position Identifier	L **a** dd or $\boxed{00}$ **b** **b** dL **b**	Field 48 contains the identifier of the sector accepting control of the track.		
48 a	48 Accepting Sector a = Over Indicator	L	Field 48a identifies the over indicator. In the field format, L represents either the letter O or the letter K. The letter O indicates that either the receiving sector/position in the receiving facility or the sending sector in the sending center accepted control. The letter K indicates that a sector/position other than the receiving sector/position in the receiving facility, or in the sending sector in the sending center, accepted control. The over indicator is always included in Field 48.	The following examples demonstrate the use of the over indicator in Field 48a: **TA AAR 051 <u>O</u>02** **TA AAR 028 <u>K</u>03**	1

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
48 b	48 Accepting Sector b =Accepting Sector Number/ Position Identifier	dd or $\boxed{00}$ **b b** dL **b**	Field 48b identifies the accepting sector. In the field format: The dd is the sector number not to exceed 99. The dd format is used in TA messages from ERAM to ARTS. 00 - will be used for HNH handoffs if the original TA did not contain Field 48. dL - Represents the identifier of the position in the receiving ARTS that accepted the interfacility handoff. This identifier is also used for HNH handoffs to identify the receiving position in the external ARTS. The dL format is used in TA messages from ARTS to ERAM. The accepting sector/position is always included in Field 48. Field 48b is 2 characters in length.	The following example of Field 48 shows the over indicator Field 48a and the accepting sector/position number Field 48b: **TA AAR 051 O<u>02</u>** **TA AAR 028 K<u>03</u>** The following example shows the over indicator and the accepting ARTS sector/position: **TA DFA 019 O1W**	2

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
Field 50	Geographic Region Code a = Elapsed Time since last report b = Destination Region Identifier c = Peak number of geographic primary beacon codes and the total number of adapted primary codes d = Peak number of geographic secondary beacon codes and the total number of adapted secondary codes	The formats used in Field 50. are: dddd **a** dd **b** dddd/dddd **c** dddd/dddd **d** All of the data will be in EBCDIC format.	Field 50 contains the total number of adapted beacon codes for each destination region as well as the peak number of beacon codes used for each destination region during the period. This data is used in the Geographic Beacon Code Utilization (UG) message. A UG message is sent to ATM IPOP every Parameter BCRO minutes, beginning at Startup, and every time parameter BCRO is modified by the Change Parameter (CP) message, and then every BCRO minutes from the time the CP message was entered.		
50 a.	Geographic Region Code a = Elapsed Time since last report	Element 50a. consists of 4 digits: **dddd** Where dddd is a number in the range 0000 to 1440	Element 50a. contains the Reporting Interval in minutes.		4
50 b.	Geographic Region Code b = Destination Region Identifier	Element 50b consists of 2 digits: **dd** Where dd is the adapted destination region.	Element 50b. contains the Destination Region Identifier		2

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
50 c.	Geographic Region Code c = Peak number of geographic primary beacon codes and the total number of adapted primary codes	Element 50c. consists of 8 digits - 4 digits separated by an oblique stroke "/", followed by 4 digits: **dddd/dddd** Where dddd is a number in the range 0000 to 9999. / is an oblique stroke character dddd is a number in the range 0000 to 9999.	Element 50c. contains the Peak number of geographic primary beacon codes and the total number of adapted primary codes for the region.		9
50 d.	Geographic Region Code d = Peak number of geographic secondary beacon codes and the total number of adapted secondary codes	Element 50d. consists of 8 digits - 4 digits separated by an oblique stroke "/", followed by 4 digits: **dddd/dddd** Where dddd is a number in the range 0000 to 9999. / is an oblique stroke character dddd is a number in the range 0000 to 9999.	Element 50d. contains the Peak number of geographic secondary beacon codes and the total number of adapted secondary codes for the region.		9

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
Field 52 a.	52 Filed Aircraft ICAO Address (24 bit) a	LLLL/hhhhhh (CODE/ followed by 6 hexadecimal digits).	Optional Field 52 provides the filed ICAO Aircraft Address in FP messages between ERAM and ARTS/STARS.	Example of Field 52a: Field 52a = CODE/A75CD2	11
Field 54	54 REPORTED ALTITUDE a = Altitude b = B4 indicator c = C4 indicator	ddd **a** a or special character **b** # **c**	Field 54 is used to report the altitude and status between computers and shows the status of the controllers full data block using special indicators.		
54 a	54 REPORTED ALTITUDE a = Altitude	ddd	For aircraft with operative Mode C capability, Field 54a contains the Mode C altitude. For aircraft without Mode C capability or with non-operative Mode C capability, Field 54a may contain the controller-reported altitude. If there is no Mode C or controller-reported altitude, or the reported altitude is negative, Field 54a contains "000". In the field format, ddd is a numeric value between 000 and 999 which represents the aircraft altitude in hundreds of feet. Leading zeros are inserted for altitudes of less than 3 digits.	See Below for Message Example of Field 54a, 54b, & 54c Usage.	3

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
54 b	54 REPORTED ALTITUDE b = B4 indicator	a or special character	The ERAM controllers full data block used for tracking an aircraft has a special indicator for the B4 character of the full data block as follows: **See next page for Field 54b description.** Field 54b is one character in length.	See Below for Message Example of Field 54a, 54b, & 54c Usage.	1

The ERAM controllers full data block used for tracking an aircraft has a special indicator for the B4 character of the full data block as follows:

A

Reported altitude (controller entered) equals single assigned altitude.

B

Beacon-reported altitude is in conformance or controller entered reported altitude is in the block for an aircraft which has been assigned an altitude block (B1 to B3 - low altitude limit of block and C1 to C3=high altitude limit of block).

C

Beacon-reported altitude is within Altitude Conformance Limits feet.

F

Reported altitude (controller entered) equals first altitude or (beacon reported) is within Altitude Conformance Limits of first altitude when assigned altitude is (d)dd/fix/(d)dd and the first altitude is displayed in Field B.

N

No beacon-reported altitude has been received for the aircraft; no controller entered reported altitude exists for the aircraft; or the aircraft's rate of change is questionable and Computed Rate of Change is being used to make further conformance checks.

T

Interim altitude is currently being displayed in the assigned altitude field (B1 through B3).

V

Beacon reported or controller entered reported altitude, when no assigned altitude exists for the aircraft.

X

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
Beacon-reported altitude becomes disestablished. (C1-C3 will also contain `X' character.) ↑ Beacon reported or controller entered reported altitude is below assigned altitude when flight is climbing ↓ Beacon reported or controller entered reported altitude is above assigned altitude when flight is descending + Beacon-reported altitude exceeds upper conformance limit for an aircraft which has reached it assigned altitude or the controller entered reported altitude exceeds the assigned altitude for a non-Mode C aircraft which has previously been reported at the assigned altitude. – Beacon-reported altitude is less than lower conformance limit for an aircraft which has reached its assigned altitude or the controller entered reported altitude is less than the assigned altitude for a non-Mode C aircraft which has previously been reported at the assigned altitude. / Flight type is `OTP' or `VFR'					
54 c	54 REPORTED ALTITUDE c = C4 indicator	# **c**	The ERAM controllers full data block used for tracking an aircraft has a special indicator for the C4 character of the full data block as follows: If the aircraft is not responding with the Mode C altitude, the controller entered reported altitude will be displayed in Field C with a pound sign (#) in position C4 whenever (1) the controller entered reported altitude does not equal the assigned altitude or is not within the assigned altitude block, (2) no assigned altitude has been entered, or (3) the assigned altitude is VFR, VFR/(d)dd,	See below for Message Example of Field 54a, 54b, & 54c Usage.	1

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			OTP, or OTP/(d)dd. In either case for a Mode C reported altitude or a controller-reported altitude, when an interim altitude is displayed in Field B the B4 character position will contain the letter "T" and the reported altitude, or either the lower or upper altitude of an assigned block altitude will be displayed in Field C. In the case where a controller entered reported altitude exists, a pound sign (#) will be displayed in the C4 position.		
54 d	54 REPORTED ALTITUDE d = Type of Altitude and Altitude	Transfer Initiate (TI) for ARTS III to ERAM only (L)ddd **d**	TI From ARTS III Field 54 Reported Altitude contains the following: One optional letter Altitude Type designator and three digit altitude value. Indication of Altitude Type is optional. If indication of Altitude Type is implemented, omit the Altitude Type designator for Pilot/Controller-reported altitudes. For Mode C altitudes use "C", and for Unknown or unreasonable Mode C Altitudes use "U". If indication of Altitude Type is not implemented, omit the Altitude Type designator, and ERAM will treat the altitude as Pilot/Controller Reported, unless the altitude is "000", in which case, ERAM will treat it as if it had an Altitude Type of "U".	Example of the altitude type and the altitude is as follows: **060** Controller-reported altitude of 6000 feet **000** No Mode C or Controller-reported altitude **C090** Mode C Altitude of 9000 feet **U140** Unreasonable Mode C Altitude of 14000 feet	3–4

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
			In the field format, ddd is a numeric value between 000 and 999 which represents the aircraft altitude in hundreds of feet. Leading zeros are inserted for altitudes of less than 3 digits		

ATM IPOP Message Example of Field 54a, 54b, and 54c Usage:
TH Message:
In the message below Field 54a indicates the altitude reported mode C is 310, and Field 54b shows a "↓" descending flight to an assigned altitude of 290 (Field 8).
Field 2 A = EGF812 Field 2 D = 694 Field 5 B = 430
Field 8 A = 290 Field 54 A = 310 Field 54 B = ↓
TH Message:
In the message below Field 54a indicates the altitude reported mode C is 366, and Field 54b shows a "↑" climbing flight to an assigned altitude of 410 (Field 8).
Field 2 A = N804AC Field 2 D = 612 Field 5 B = 422 Field 8 A = 410
Field 54 A = 366 Field 54 B = ↑
TH Message:
In the message below Field 54a indicates the altitude reported mode C is 081, and Field 54b shows a "-" flight is below an assigned altitude of 100 (Field 8).
Field 2 A = CJC9864 Field 2 D = 672 Field 5 B = 281
Field 8 A = 100 Field 54 A = 081 Field 54 B = -
TH Message:
In the message below Field 54a indicates the altitude reported mode C is 370, and Field 54b shows a "+" flight is above an assigned altitude of 350 (Field 8).
Field 2 A = UAL752 Field 2 D = 332 Field 5 B = 440
Field 8 A = 350 Field 54 A = 370 Field 54 B = +
Field138 A = ZCM
TH Message:
In the message below Field 54a indicates no reported altitude mode C 000, Field 54b shows a "T" Temporary Interim altitude assigned altitude by the controller, and Field 54c a pound sign shows a controller-reported altitude has been entered.
Field 2 A = N44LV Field 2 D = 196 Field 5 B = 025 Field 8 A = 30
Field 54 A = 000 Field 54 B = T Field 54 C = #
TH Message:
In the message below Field 54a indicates no reported altitude mode C 043; Field 54b shows a "T" Temporary Interim altitude assigned altitude by the controller.

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
Field 2 A = MRA677 Field 2 D = 103 Field 5 B = 177 Field 8 A = 60 Field 54 A = 043 Field 54 B = T TH Message: In the message below Field 54a indicates the altitude reported mode C is 041, and Field 54b shows a “C” level flight within a parameter conformance of the assigned altitude. Field 2 A = N4260L Field 2 D = 696 Field 5 B = 110 Field 8 A = 40 Field 54 A = 041 Field 54 B = C					
ATM IPOP Message Example of Field 54a, 54b, & 54c Usage: TH Message: In the message below Field 54a indicates no reported altitude mode C 000, Field 54b shows an “N”, No beacon-reported altitude has been received for the aircraft, and Field 54c a pound sign shows a controller-reported altitude has been entered. Field 2 A = MRA677 Field 2 D = 103 Field 5 B = 177 Field 8 A = 60 Field 54 A = 000 Field 54 B = N Field 54 C = # Field138 A = ZCH Field138 B = 97 TH Message: In the message below Field 54a (170) is the reported altitude (controller entered) that equals a single assigned altitude Field 08 (170), therefore Field 54b shows an “A” , Field 2 A = N400TW Field 2 D = 975 Field 5 B = 000 Field 8 A = 170 Field 54 A = 170 Field 54 B = A Field138 A = ZCF Field139 A = ZCH Field139 B = 83 TH Message: In the message below Field 54a indicates a reported altitude mode C 126, Field 54b shows a “B”, the reported altitude is inside of the assigned block altitude for the aircraft (see Field 08 80B140). Field 2 A = BOAR02 Field 2 D = 671 Field 5 B = 111 Field 8 D = 80B140 Field 54 A = 126 Field 54 B = B Field138 A = ZCH Field138 B = 56 TH Message: In the message below Field 54a indicates a reported altitude mode C 000, Field 54b shows a “X”, the reported altitude is unreliable, therefore the “X” is displayed in the controllers full data block. Beacon-reported altitude becomes disestablished. (C1-C3 will also contain \`X' character.) Field 2 A = N102GC Field 2 D = 088 Field 5 B = 179 Field 8 G = VFR Field 54 A = 000 Field 54 B = X Field138 A = ZCF					

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
TH Message: In the message below Field 54a indicates the altitude reported mode C is 076, and Field 54b shows a "/" flight has an assigned altitude of VFR/75 (Field 8). Field 2 A = N85BA Field 2 D = 530 Field 5 B = 168 Field 8 H = VFR/75 Field 54 A = 076 Field 54 B = /					
Field 60	Logic Check Override	/OK	The /OK is used to override eligibility rules.	Example of /OK as Field 60 DQ **/OK** AAL04 Example of /OK entered in response to VERIFY ELIGIBILITY **/OK**	
Field 67 a	67 Time a = Coordinated Universal Time (UTC)	dddd	Field 67a contains the Coordinated Universal Time (UTC) expressed in hours and minutes. In the field format dddd, the first two digits represent hours and must be within the range 00 to 23. The second two digits represent minutes and must be within the range of 00 to 59. Leading zeros are required.	The following example demonstrates the dddd format of Field 67a, where "2245" is the UTC expressed as hhmm: **ZCY OPERATIONAL <u>2245</u>**	4
Field 68	68 Fix/Time c = Fix/Time f = MRP g = CSP Name	aa(a)(a)(a)(a)(a)(a)(a)(a)(a)(a)/dddd **c** cc(c)(c)(c)(c)(c)(c)(c)(c)(c)(c)(c)(c)(c)(c)	Fix with expected time of arrival in hours and minutes. Fix for the Meter Reference Point name.		

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
		f, g			
68 c	68 Fix/Time c = Fix/Time	aa(a)(a)(a)(a)(a)(a)(a)(a)(a)(a)/ddd d	The Converted Route Information message is sent to an ATM IPOP to provide fix and calculated time of arrival at each fix that describes an aircraft's ERAM converted route of flight. Fix with expected time of arrival in hours and minutes.	Example of Field 68c: **Field 68 C = LFT/1800** **Field 68 C = JIMIE004034/1320**	7–17
68 f	68 Fix/Time f = MRP Name	cc(c)(c)(c)(c)(c)(c)(c)(c)(c)(c)(c)(c)(c)(c)	Meter Reference Point (MRP) name. A MRP can be either a CSP name or non-CSP metering arc name. MRP has two subsets: 1. CSP – location used to de-conflict traffic and used as a delay distribution point. a. ERFMP – represented by a TBFM metering arc. b. AFMP – represented by a TBFM metering fix or a TBFM metering arc. Non-CSP metering arc – any outer arc applicable to a CSP which is used only as a delay distribution point.	Examples of Field 68f: **Field 68 F = LCH/J** **Field 68 F = DAS** **Field 68 F = BURNE**	2–16
68g	68 Fix/Time	cc(c)(c)(c)(c)(c)(c)(c)(c)(c)(c)(c)(c	Used in IM, PA and in FH, AH, HU	Examples of Field 68g:	2-16

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
	g = CSP Name	)(c)(c)	messages.	**Field 68 G = LCH/J** **Field 68 G = DAS**	
Field 69 a	69a Report Identification a = Report Identification	L	Field 69 is used in the BU message to indicate the type of report being requested. C requests a Current Beacon Code Utilization report. P requests a Peak Beacon Code Utilization report.	Example of Field 69a: **Field 69 A = C** **Field 69 A = P**	1
Field 71	71 Receiving Sector Number/Position/Location a = ERAM Receiving Location and Sector Number b = ARTS Receiving Position Identifier c = ARTS/STARS Receiving Location Identifier and position identifier	LLLdd **a** dL **b** LLL(dL) **c**	Field 71 is used in the DA message in response to a TI message. Field 71 contains the receiving facility three letter identifier and optional position number.		

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
71 a	71 Receiving Sector Number/Position/Location a = ERAM Receiving Location and Sector Number	ERAM DA to ARTS/STARS LLLdd a	Field 71 is used in the DA message in response to a TI message. Field 71a LLLdd contains the ERAM receiving-facility 3 letter identifier and sector identifier. The sector number dd is not to exceed 99. Field 71a is the adjacent center identifier followed by two zeros when the handoff receiving facility is an ARTS hosted at that adjacent center and that ARTS is not adapted to provide Field 71.	The following example demonstrates the "LLLdd" format of Field 71a where "ZCY" is the receiving location identifier and "01" is the sector position identifier: **DA 906 AAR1220001 <u>ZCY01</u>**	5
71 b	Receiving Sector Number/Position/Location b = ARTS Receiving Position Identifier	Internal ARTS DA to ERAM dL **b**	In a DA message received from an internal ARTS in response to a TI message, Field 71 will be present under the following condition: If the ARTS is **not** "feedback enhanced" but has ARTS specific position handoff (ASPH) eligibility and Field 16 of the TI message did not contain a specific position routing or contained an inactive position, Field 71b will contain the two-character receiving ARTS position identifier.	The following example demonstrates the "dL" format of Field 71b where "1S" is the ARTS position identifier: **DA 906 ZCF1201001 <u>1S</u>**	2
71 c	Receiving Sector Number/Position/Location c = ARTS/STARS Receiving Location	Adjacent Host center DA to ERAM LLL(dL) **c**	Field 71 is used in the DA message in response to a TI message. If the handoff receiver is an ARTS hosted at an adjacent center, Field 71c LLL(dL) will contain the three-letter	The following example demonstrates the "LLL(dL)" format of Field 71c where "TUA" is the external ARTS identifier and "1S" is the position identifier:	3 or 5

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
	Identifier and position identifier		ARTS identifier (used in the adjacent center to identify the ARTS) and optional two-character position identifier. The position identifier will be included if the original DA from the Host ARTS contained Field 71.	**DA 906 ZCF1201001 <u>TUA1S</u>** The following example demonstrates the "LLL" format of Field 71c where "AMA" is the external ARTS identifier: **DA 906 ZCF1201005 <u>AMA</u>**	
		Internal ARTS / STARS DA to ERAM LLLdL (**Note**: dL is required) **c**	In a DA message received from an internal ARTS / STARS in response to a TI message, Field 71 will be present under the following condition: If the ARTS / STARS is "feedback enhanced", Field 71c will contain the three-letter receiving ARTS / STARS identifier and two-character position identifier.	The following example demonstrates the "LLLdL" format of Field 71c where "DFA" is the ARTS identifier and "1S" is the position identifier: **DA 906 ZCF1201001 <u>DFA1S</u>**	5
Example of Field 71 Usage: **ZCC0538775 TI TTT 184 -044/0026 0335/-239 ZCC14** **TTT0539230 DA 184 ZCC0538775 TTT1W** **---** **ZCN1924543 TI WWW 191 -062/0023 0276/-097 ZCN91** **WWW1925010 DA 191 ZCN1924543 WWW1N**					
Field 76	76 INTERIM ALTITUDE a = delete interim	L **a**	Field 76 ddd contains the interim altitude expressed in hundreds of feet (leading zeros required).		

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
	altitude b = Interim altitude	ddd **b**	Field 76 can also delete an ATM IPOP interim altitude.		
76 a	76 Interim Altitude a = delete interim altitude	L	Field 76a contains the letter "**D**" that is used to delete the interim altitude stored by ATM IPOP.	The following example demonstrates Field 76a that is used to delete the interim altitude stored by ATM IPOP: **Field 76 A = D**	1
76 b	76 Interim Altitude b = Interim altitude	ddd	Field 76b is included if an interim altitude is assigned. In the field format, ddd is a numeric value between 001 and 999 which represents the aircraft altitude in hundreds of feet. Leading zeros are required.	The following example demonstrates the ddd format of Field 76b as sent by ERAM to ATM IPOP: **Field 76 B = 240**	3
Field 82	82 FAD Flow Calculation Times b = delay time in minutes c = start time d = option end time	(d)dd **b** dddd **c** (dddd) **d**	The Flow Control Advisory Information (IF) message is sent to ERAM by the Traffic Flow Management System (TFMS) via an ATM IPOP to implement a ground delay program. The IF message activates FAD flow processing for a destination airport and results in the assignment of EDCTs for proposed flights and PDTs for active flights to the destination airport.		
82 b	82 FAD Flow Calculation Times b = delay time in	(d)dd	Field 82b is the delay value in minutes for the IF message.	Example of Field 82b: **Field 82 B = 20**	2–3

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
	minutes				
82 c	82 FAD Flow Calculation Times c = start time	dddd	Field 82c is the start time for the delay where dddd=start time (HHMM). The first two digits must not exceed 23. Field 82c must be in increments of 15 minutes, one of 00, 15, 30, or 45.	Example of Field 82c: **Field 82 C = 1145**	4
82 d	82 FAD Flow Calculation Times d = option end time	(dddd)	Field 82d is the stop time for the delay where (dddd) = optional end time (HHMM). The first two digits must not exceed 23. The time in Field 82d, if entered, must be higher than the time in Field 82c. Field 82d, if entered, must be in increments of 15 minutes, one of 14, 29, 44, or 59.	Example of Field 82d: **Field 82 D = 2359**	4
Field 83	83 ADS-B Equipment Qualifier	LLL/Ld(Ld)(Ld)(Ld)(Ld)(Ld) (COM/ followed by one to six pairs of characters which represent ADS-B equipage codes.) No spaces are allowed after the COM/ or between codes. No codes can be repeated. **Note**: that when Field 83 is used in an FP message, there should be at least one equipment qualifier entered.	Optional Field 83 provides ADS-B equipment qualifier(s) in FP messages between ERAM and ARTS/STARS. The characters represent ADS-B equipage codes. The valid codes are: • B1 – 260B ADS-B with dedicated 1090 MHz ADS-B “out” capability • B2 – 260B ADS-B with dedicated 1090 MHz ADS-B “in-out” capability • U1 – 282B ADS-B “out” capability	Example of Field 83a: Field 83a = COM/U1B2V1	6–16

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			using UAT • U2 – 282B ADS-B “in-out” capability using UAT • V1[1] – ADS-B “out” capability using VDL Mode 4 • V2[1] – ADS-B “out” and “in” capability using VDL Mode 4 [1]ADS-B VDL Mode 4 is not recognized as U.S. certified and will not be stored as ADS-B equipped flight. V1 and V2 will be stored in ICAO Item 10b.		
Field 86 b	86b Metering Time Field	dddddd	The IM message is used to send metering information to ERAM for the Meter Reference Point List. Field 86b is the Meter/Outer Fix or Arc Crossing time Format = dddddd dd = Hours dd = Minutes dd = Seconds	Example of Field 86b: **Field 86 B = 235915** **Field 86 B = 132716**	6
Field 87 a	87a Airport Configuration Name a = Airport Configuration Name	cc(c)(c)(c)(c)(c)	The Airport Configuration Information Header message is sent to ERAM from TMA via an ATM IPOP to provide information on changes in airport runway configuration. Active airport configuration in use or pending.	Example of Field 87a: **Field 87 A = DFW17**	2–7

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
Field 88 a	88a Metering Vertex Acceptance Rate a = Metering Acceptance Rate	a(a)(a)	The Airport Configuration Information Header message is sent to ERAM from TMA via an ATM IPOP to provide information on changes in the airport runway arrival rate. Arrival Rate - Arrival rate at vertex of an airport. Normally the vertex arrival rate is in d(d)(d) format representing number of aircraft that a vertex of an airport can accept. It can also be in a(a)(a) format to allow display of alphanumerics (e.g., UR for unrestricted)	Example of Field 88a: **Field 88 A = 60** **Field 88 A = UR**	1–3
Field 91 a	91a Meter/Outer Fix Delay a = Meter/Outer Fix Delay	(-)dd(d)	Used in the IM message to specify delay time. Two digits of minutes can be positive or negative. The two digits represent the minutes. The optional d, used in the IM message, represents the tens of seconds and must be within the range 0 to 5.	Example of Field 91a: **Field 91 A = -01** **Field 91 A = 10** **Field 91 A = 103** **Field 91 A = -245**	2–4
Field 92	92 Estimate Departure Clearance Time a = EDCT b = Cancellation Indicator	dddd a L b	Field 92 Estimate Departure Clearance Time is used between the ATM IPOP and ERAM in the ID and ET message for providing ground delay.		
92	92a Estimate Departure	dddd	The ID message will be sent to ERAM by the Central Flow Control Function	Example of Field 92a:	4

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
a	Clearance Time a = EDCT		(CFCF) via an ATM IPOP to assign an estimated departure clearance (EDCT) time to a proposed flight going to a destination airport requiring delays; the EDCT assigns a ground delay to a specific aircraft prior to departure. An acceptable ID message results in an Information Accept (IA) message and in the transmission of an Expected Departure Time Information (ET) message to ATM IPOP. The Expected Departure Time Information (ET) message provides Estimated Departure Clearance Time (EDCT) information (i.e., the assigned flight departure time on a proposed flight plan inbound to a controlled airport with a ground delay in effect) to an ATM IPOP. Field 92a is the estimated departure clearance time where dddd = time (HHMM). The first two digits must not exceed 23. The last two digits must not exceed 59.	**Field 92 A = 2100**	

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
92 b	92 Estimate Departure Clearance Time b = Cancellation Indicator	L	Field 92b is used in the ET and ID message interface between ERAM and ATM IPOP to cancel the EDCT delay for an aircraft. The format is one character L where L = C for cancellation.	Example of Field 92b Usage: C	1
Field 104	104 Target Coordinates or North Mark Data	**Target Coordinates:** ssssbbb - high order byte bbbbbbb0 - low order byte	Field 104 contains the target X and Y expressed as ARTS coordinates for the referent ARTS facility, or North Mark Data. This field is used in CENRAP processing when sending primary or secondary radar from ERAM to ARTS via the TP and TS messages. North Mark Data is the adapted data that is transmitted to a CENRAP adapted ARTS facility every time a Beacon Test Radar message is successfully processed from an adapted north mark radar site for the referent ARTS facility. The north mark data is used by ARTS to ensure correct range/azimuth orientation during periods of CENRAP. The target X-Y coordinates are converted from the X-Y coordinates of the ARTCC stereographic axis to the X-Y coordinates of the referent ARTS facility system plane. Target X or Y coordinates are each represented by two bytes, sign extended ones complement expressed to the closest 1/8 nautical mile. The format "sssssbbb" represents	**See Example of Field 104 105 Usage Below:**	4

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
			the high order byte and "bbbbbbb0" represents the low order byte, where "s" represents the sign and "b" represents binary. Field 104 may contain north mark data in place of X-Y coordinates. North mark data is comprised of zeros for the X coordinates and an adapted range for the Y coordinates. North mark data is included with Target X-Y data within the same physical TS message.		
Field 105	105 Beacon Code And Mode C Altitude	**Beacon Code:** 0ibb bbbb - high order byte bbbbbb00 - low order byte **Mode C Altitude:** 000sbbbb - high order byte bbbbbbb0 - low order byte	Field 105 contains the binary Mode 3/A Beacon Code and Mode C Altitude expressed in hundreds of feet. The Beacon Code is represented by two bytes. Where i = 1 if ident, 0 = no ident. b = beacon code bits. The Mode C Altitude is represented by two bytes, which will contain: s = sign bit. b = altitude in hundreds of feet. The Mode C Altitude element will contain zeros when the Mode C altitude is not available. If Field 104 contains north mark data, Field 105 will contain all zero's (i.e., both beacon code and mode c will be zero).	**See Example of Field 104 105 Usage Below:**	4

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
Example of Field 104 105 Usage Below: ZCY2245001 TP AAR 01100001001101000001100110011000 ZCY2245001 TS AAR xxxxyyyybbbbcccc 0000nmrk00000000 Where xxxx = 2 byte X Coordinate yyyy = 2 byte Y coordinate bbbb = beacon code cccc = mode c data 0000nmrk = north mark data **Note** 1: Field 104 and Field 105 in the TS message do not have a delimiter between the fields. **Note** 2: Repeating Field 104 and Field 105 is separated by a space character and a LRC.					
Field 134	134 Source Sector Routing a = HB, HC, and IR message b = HT message	Ldd **a** dd **b**	Field 134 provides the center sector number for the ATM IPOP messages HB, HC, IR, HT		
134 a	134 Source Sector Routing a = HB, HC, and IR message	Ldd	Field 134a provides the Sector Identification for ATM IPOP messages HB, HC, and IR where L is position R or D and dd is the sector number. The dd is the sector number not to exceed 99.	Example of Field 134a: **Field134 A = R34**	3
134 b	134 Source Sector Routing b = HT message	dd	Field 134b provides the entering sector number for a point out action HT message for ATM IPOP.	Example of Field 134b: **Field134 B = 50**	2

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
			The dd is the sector number not to exceed 99.		
Field 135 a	135a Route Status Elements a = Route Status Elements	aa(a)(a)(a)(a)	Route Status Information (HR) message are used to provide an ATM IPOP with the status of adapted arrival and departure routes (i.e., whether a given route is active or inactive). The Route Status Information message contains the source, adapted route status elements and the action indicator which provide route status information. The adapted names are Standard Instrument Departures (SID), Standard Terminal Arrival Routes (STAR), Adapted Arrival Routes (AAR), Adapted Departure Routes (ADR) and Adapted Departure and Arrival Routes (ADAR) that are active when initialization begins.	Example of Field 135a: Status of a SID **Field135 A = SD001** **Field 36 A = OFF** Status of a ADR **Field135 A = AD001** **Field 36 A = ON** Status of a ADAR **Field135 A = DA001** **Field 36 A = ON**	2–6
Field 137	137 Action Indicator a = Frozen Flight b = Suppress c = Resequence d = Hold e = Heavy Jet f = MRP Type g = Speed Advisory Status	A one character action indicator	The Field 137 Action Indicators are used in the FH, AH, HU, HD, IM, and PA messages to specify characteristics of the metered flight and the MRP.		
137 a	137 Action Indicator	d	The IM message contains an action	Examples of Field 137a:	1

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
	a = Frozen Flight		indicator to indicate whether or not the time at the MRP is frozen as follows: d = 1 or 0 1 = Time at MRP is frozen 0 = Time at MRP is not frozen	Time at MRP is not frozen: **Field137 A = 0** Time at MRP is frozen: **Field137 A = 1**	
137 b	137 Action Indicator b = Suppress	a	Field 137b contains an action indicator to reflect whether or not a metering list entry is suppressed or unsuppressed, as follows: a = U for Unsuppress S for Suppress	Examples of Field 137b: Entry is Suppressed: **Field137 B = S** Entry is Unsuppressed: **Field137 B = U**	1
137 c	137 Action Indicator c = Resequence	a	The IM message contains an action indicator to reflect whether or not the flight has been resequenced within the metering list, as follows: a = R for Resequence a = I for Inplace	Examples of Field 137c: MRP entry has been resequenced: **Field137 C = R** MRP entry has been resequenced (is inplace): **Field137 C = I**	1
137 d	137 Action Indicator d = Hold	a	The IM message contains an action indicator to indicate that the metered flight is in Hold, as follows: A = H for Hold. The indicator is not provided if the flight is not in Hold.	Example of Field 137d: Flight is in Hold: **Field137 D = H**	1

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
137 e	137 Action Indicator e = Heavy Jet	a	The IM message contains an action indicator to indicate that the metered flight is a Heavy Jet, as follows: a = + for Heavy Jet The indicator is not provided if the flight is not a Heavy Jet.	Example of Field 137e: Flight is a Heavy Jet **Field137 E = +**	1
137 f	137 Action Indicator f = MRP Type	a	The IM Message contains an optional action indicator to reflect the type of metering construct. A MRP Type can be an En Route Flow Management Point (ERFMP) CSP, or Arrival Flow Management Point (AFMP) CSP, or a non-CSP metering arc as follows: a = E (ERFMP) CSP a = A (AFMP) CSP a = M Non-CSP metering arc This field is only present when the initiating TBFM is capable of supplying proposed speed advisories in support of Ground-based Interval Management – Spacing (GIM-S to a CSP (ERFMP or AFMP).	Examples of Field 137f: MRP Type is an ERFMP **Field137f = E** MRP Type is an AFMP **Field137f = A** MRP Type is a non-CSP metering arc **Field137f = M**	1
137g	137 Action Indicator g = Speed Advisory Status	a	The PA Message contains an action indicator to reflect the availability of proposed speed advice from TBFM for the metered flight. The speed advisory status can have one of 4 values:	Examples of Field 137g: No possible speed advisory can be provided to resolve an aircraft's meet time error	1

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
			a = N – No speed advisory can make the aircraft reach the MRP at the scheduled time, a = T – No speed advisory is required at this time. a = A – A new speed advisory is available to allow the aircraft to resolve its meet time error and reach the MRP at the scheduled time. a = D – The Speed Advisory is deleted. The speed advisory status is only present when the initiating TBFM is capable of supplying proposed speed advisories in support of Ground-based Interval Management – Spacing (GIM-S).	**Field 137h = N** No speed advisory is necessary, as the aircraft appears to be on target for its CSP. **Field 137h = T** A speed advisory is available to help resolve the aircraft's meet time error **Field 137h = A** **Field 137h = D** The speed advisory is deleted.	
Field 138	138 Controlling Facility/Sector a = Controlling Facility b = ARTS IIII Controlling Position b = ERAM Controlling Sector	LLL **a** da **b** dd **b**	The ATM Track Information message includes the following information: source, flight identification, ground speed, assigned altitude, reported altitude, **controlling facility/sector**, receiving facility/sector, track position, track velocity, and action indicator.		
138 a	138 Controlling Facility/Sector a = Controlling Facility	LLL	Field 138a is used in the ATM IPOP TH, OH and PT message. Where LLL is the controlling facility. **Note 1:** The Controlling Facility is the	Example of Field 138a: **Facility is Houston ARTCC ZCH** **Field138 A = ZCH**	3

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			facility that is controlling the flight. **Note 2:** Value will be 3 blank characters if identification of the controlling facility is not available.	**Facility is Houston ARTS ASA** **Field138 A = ASA**	
138 b	138 Controlling Facility/Sector b = ARTS III Controlling Position	da	Field 138b is used in the ATM IPOP TH and OH message. Where da is the controlling ARTS position. **Note** 1: The Controlling Sector is the sector/position that is controlling the flight. **Note** 2: Value will be 00 if identification of the controlling sector is not available	Example of Field 138b: **Facility Position is Houston ARTS** **Field138 B = 1W**	2
138 b	138 Controlling Facility/Sector b = ERAM Controlling Sector	dd	Field 138b is used in the ATM IPOP TH, PT and OH message. Where dd is the controlling ERAM ARTCC sector number. **Note** 1: The Controlling Sector is the sector/position that is controlling the flight. **Note** 2: Value will be 00 if identification of the controlling sector is not available. The dd is the sector number not to exceed 99.	Example of Field 138b: **Field138 B = 74** **Field138 B = 11**	2

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
Field 139	139 Receiving Facility/Sector a = Receiving Facility b = ARTS IIII Receiving Position b = ERAM Receiving Sector	LLL **a** da **b** dd **b**	The ATM Track Information message includes the following information: source, flight identification, ground speed, assigned altitude, reported altitude, controlling facility/sector, **receiving facility/sector**, track position, track velocity, and action indicator.		
139 a	139 Receiving Facility/Sector a = Receiving Facility	LLL	Field 139a is used in the ATM IPOP TH, PT and OH message. Where LLL is the receiving facility.	Example of Field 139a: **Facility is Fort Worth ARTCC ZCF** **Field139 A = ZCF** **Facility is Houston ARTS AIA** **Field139 A = AIA**	3
139 b	139 Receiving Facility/Sector b = ARTS IIII Receiving Position	da	Field 139b is used in the ATM IPOP TH and OH message. Where da is the receiving ARTS position. **Note**: Value will be 00 if identification of the receiving sector is not available	Example of Field 139b: **Facility Position is Houston ARTS** **Field139 B = 1N**	2
139 b	139 Receiving Facility/Sector b = ERAM Receiving Sector	dd	Field 139b is used in the ATM IPOP TH, PT and OH message. Where dd is the receiving ERAM ARTCC sector number.	Example of Field 139b: **Field139 B = 74** **Field139 B = 11**	2

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			Note: Value will be 00 if identification of the receiving sector is not available The dd is the sector number not to exceed 99.	**Field139 B = 00**	
Field 140	140 Status Change Indicator a = ON2 Operational b = Shutdown c = Channel Switch d = TMAD e = RVSM	Lla **a** LLL **b** LLL **c** LLL **d** LL(L) **e**	The ERAM Status Information (HS) message is sent to an ATM IPOP when an ERAM status change occurs. The HS message is sent as part of system initialization. The HS message is sent by ERAM to an ATM IPOP to indicate a change in ERAM status to include: • TMAD On/Off • RVSM On/Off • Operational on channel in Active Mode • Operational on channel in Test Mode • Channel Switch PAS/SAS Switch		
140 a	140a Status Change Indicator a = ON2 Operational	Lla	The ERAM Status Information (HS) message is sent to an ATM IPOP when an ERAM status change occurs. 3 characters LLa where: INA = inactive ON2 = operational using live inputs	Example of Field 140a: **Field140 A = INA** **Field140 A = ON2**	3

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
140 b	140b Status Indicator b = Shutdown	LLL	The ERAM Status Information (HS) message is sent to an ATM IPOP when an ERAM status change occurs. 3 characters LLL = PSN where: PSN = planned shutdown not active	Example of Field 140b: **Field140 B = PSN**	3
140 c	140c Status Change Indicator c = Channel Switch	LLL	The ERAM Status Information (HS) message is sent to an ATM IPOP when an ERAM status change occurs. 3 characters LLL where: SSO = channel switch SSW = PAS/SAS switch SSN= channel switch / PAS/SAS switch not in effect	Example of Field 140c: **Field140 C = SSO** **Field140 C = SSW** **Field140 C = SSN**	3
140 d	140d Status Change Indicator d = TMAD	LLL	The ERAM Status Information (HS) message is sent to an ATM IPOP when an ERAM status change occurs. 3 character LLL where: DOF = TMAD off DON = TMAD on	Example of Field 140d: **Field140 D = DOF** **Field140 D = DON**	3
140 e	140e Status Indicator e = RVSM	LL	The ERAM Status Information (HS) message is sent to an ATM IPOP when an ERAM status change occurs. 2 characters LL where: ON = RVSM is on	Example of Field 140e: **Field140 E = ON**	2
Field 141	141 Adapted Route indicator	aaaaa **a**	If required for the flight, Field 141a, 141b or 141c will contain the ADAR, ADR or AAR adapted preferential route		

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
	a = ADAR b = ADR c = AAR	aaaaa **b** aaaaa **c**	name.		
141 a	141a Adapted Route indicator a = ADAR	aaaaa	If required for the flight, Field 141a will contain the ADAR departure arrival route name.	Example of Field 141a: **Field141 A = DA001**	5
141 b	141b Adapted Route indicator b = ADR	aaaaa	If required for the flight, Field141b will contain the ADR adapted departure route name.	Example of Field 141b: **Field141 B = PD001**	5
141 c	141c Adapted Route indicator c = AAR	aaaaa	If required for the flight, Field 141c will contain the AAR adapted arrival route name.	Example of Field 141c: **Field141 C = PA001**	5

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
Field 142	142 Preferential Route Alphanumerics a = ADAR Field 10 format b = ADAR non-Field 10 format c = ADR Field 10 format d = ADR non-Field 10 format e = AAR Field 10 format f = AAR non-Field 10 format	For Fields 142a 142c and 142e, the format between the Transition-fix and the alphanumerics will consist of the correct number of periods as described by ERAM Field 10a above when the alphanumerics are in Field 10 format (fix.route.fix). For Fields 142b, 142d and 142f, the format between the Transition-fix and the alphanumerics will consist of only a plus sign '+' when the alphanumerics are not in Field 10 format. The '+' delimiter will precede and follow the non-Field 10 format elements.	Preferential Route Alphanumerics are used to control the flow and separation of traffic departing and arriving at designated airports. If required for the flight, the FH, AH, and HU messages to ATM IPOP will contain Fields 142a, 142b, 142c, 142d, 142e, or 142f for the ADAR, ADR, or AAR adapted route.		
142 a	142a Preferential Route Alphanumerics a = ADAR Field 10 format	For Field 142a the format between the departure and the destination airports and the alphanumerics will consist of the correct number of periods as described by ERAM Field 10a above when the alphanumerics are in Field 10 format (fix.route.fix).	Preferential Route Alphanumerics are used to control the flow and separation of traffic departing and arriving at designated airports. If required for the flight, the FH, AH and HU message to ATM IPOP will contain Field 142a for the Adapted Departure Arrival Route (ADAR) route. An ADAR has the complete preferential routing from the departure airport to the arrival airport.	Example of Field 142a: Pilots filed route (Field 10a): **Field 10 A (13 characters) = IAH..CRP/0040** Adapted ADAR for the flight IAH to CRP is PSX81: **Field141 A = PSX81** Adapted ADAR preferential route: **Field142 A (19characters)= .PSX2.PSX.V20.CRP..**	4–97

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
142 b	142b Preferential Route Alphanumerics b = ADAR non-Field 10 format	For Field 142b the format between the departure and the destination airports and the alphanumerics will consist of only a plus sign '+' when the alphanumerics are not in Field 10 format. The '+' delimiter will precede and follow the non-Field 10 format elements.	Preferential Route Alphanumerics are used to control the flow and separation of traffic departing and arriving at designated airports. If required for the flight, the FH, AH and HU message to ATM IPOP will contain Field 142b for the ADAR adapted route.	Example of Field 142b: Pilots filed route (Field 10a): **Field 10 A (24characters)= CRP..CRP.LISSE6.HOU/0029** Adapted ADAR for the flight CRP to HOU is DA714: **Field141 A = DA714** Adapted ADAR preferential route: **Field142 B (8 characters)= +LISSE6+** Notice the non-Field 10 alphanumerics indicated by the plus signs (+) at the start and end of the alphanumerics.	4–97
142 c	142c Preferential Route Alphanumerics c = ADR Field 10 format	For Field 142c, the format between the alphanumerics and Transition-fix will consist of the correct number of periods as described by ERAM Field 10a above when the alphanumerics are in Field 10 format (fix.route.fix).	Preferential Route Alphanumerics are used to control the flow and separation of traffic departing and arriving at designated airports. If required for the flight, the FH, AH and HU message to ATM IPOP will contain Field 142c for the ADR adapted route.	Example of Field 142c: Pilots filed route (Field 10a): **Field 10 A** **(75 characters) = SAT.ALAMO6.JUMBO.J131.FUZ.J105.RZC..FAM..ENL..TTH..VHP..FWA.MIZAR3.DTW/0229** Adapted ADR for the flight from SAT is SJ216:	4–97

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
				Field141 B = SJ216 Adapted ADR preferential route: **Field142 C (27 characters)= .ALAMO6.HENLY.J131.FUZ. J105**	
142 d	142d Preferential Route Alphanumerics d = ADR non-Field 10 format	For Field 142d the format between the alphanumerics and Transition-fix will consist of only a plus sign ‘+’ when the alphanumerics are not in Field 10 format. The ‘+’ delimiter will precede and follow the non-Field 10 format elements.	Preferential Route Alphanumerics are used to control the flow and separation of traffic departing and arriving at designated airports. If required for the flight, the FH, AH and HU message to ATM IPOP will contain Field 142d for the ADR adapted route.	Example of Field 142d: Pilots filed route (Field 10a): **Field 10 A** **(32 characters)= HRL..BRO.J25.CRP.LISSE6. HOU/0048** Adapted ADR for the flight from HRL is HR104: **Field141 B = HR104** Adapted ADR preferential route: **Field142 D (18 characters)=** **+RV J25+CRP.LISSE6** Notice the non-Field 10 alphanumerics indicated by the plus signs (+) at the start and end of the alphanumerics.	4–97

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
142 e	142e Preferential Route Alphanumerics e = AAR Field 10 format	For Field 142e, the format between the Transition-fix and the alphanumerics will consist of the correct number of periods as described by ERAM Field 10a above when the alphanumerics are in Field 10 format (fix.route.fix).	Preferential Route Alphanumerics are used to control the flow and separation of traffic departing and arriving at designated airports. If required for the flight, the FH, AH and HU message to ATM IPOP will contain Field 142e for the AAR adapted route.	Example of Field 142e: Pilots filed route (Field 10a): **Field 10 A (16 characters) = BNA./.BLEUZ..MSY** Adapted AAR for the flight to MSY is MS002: **Field141 C = MS002** Adapted AAR preferential route: **Field142 E (16 characters)= ./.BLEUZ.RYTHM3.**	4–97
142 f	142f Preferential Route Alphanumerics f = AAR non-Field 10 format	For Field 142f, the format between the Transition-fix and the alphanumerics will consist of only a plus sign '+' when the alphanumerics are not in Field 10 format. The '+' delimiter will precede and follow the non-Field 10 format elements.	Preferential Route Alphanumerics are used to control the flow and separation of traffic departing and arriving at designated airports. If required for the flight, the FH, AH and HU message to ATM IPOP will contain Field 142f for the AAR adapted route.	Example of Field 142f: Pilots filed route (Field 10a): **Field 10 A (32 characters)= HRL..BRO.J25.CRP.LISSE6. HOU/0048** Adapted AAR for the flight to HOU is HO041: **Field141 C = HO041** Adapted AAR preferential route: **Field142 F (16 characters)= .J25.CRP+LISSE6+** Notice the non-Field 10 alphanumerics indicated by the plus signs (+) at the start and end of the alphanumerics.	4–97

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
				Notice Fields 142d and 142f are the same flight in the example, an ADR out of HRL and an AAR into HOU.	
Field 143	143 FAV b = FAV number	dddd **b**	Field 143b is the Uncombined FAV number containing the First AAR Fix for the AH, FH and HU message or is the FAV number containing the Meter Reference Point for the ATM IPOP HD and IM message.		
143 b	143b FAV b = FAV number	dddd	Field 143b is the FAV number containing the first fix where the route alteration occurs due to an AAR application for the ATM IPOP AH, FH and HU message. Field 143b is the FAV number containing the Meter Reference Point for the ATM IPOP HD and IM message.	Example of Field 143b: Pilots filed route (Field 10a): **Field 10 A (33 characters)= MMMY./.NLD..LRD.J21.SAT. JEN8.KDFW** Adapted AAR for the flight LRD to KDFW is FW007: **Field141 C = FW007** Adapted AAR preferential route **Field142 E (14 characters)= .J21.SAT.JEN8.** Field 143b first FAV posting for the AAR is 7601: **Field143 B = 7601**	4

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
Field 144 a	144a Reconstitution State	LLL	Field 144a is used in the Reconstitution Information (RN) message to describe the state (initiate, ready to send/receive, complete) of an ATM IPOP application's database reconstitution. The following are the valid contents for LLL: HRR = ERAM has detected need to reconstitute application database ARR = application requests reconstitution of database HRS = ERAM is ready to send reconstitution data to application ARD = application is ready to receive reconstitution data from ERAM HRC = ERAM has completed reconstitution	**HRR** **ARR**	3
Field 145 a	145a Field Reference Number / Format ID in Error	(d)(d)da	Field number in error, right justified with leading blanks. Identifies the errant field number, ddd, and field format, a, in the ATM IPOP Information Reject (IR) message. Filed 145a (d)(d)da is right justified and blank padded within a 4 byte fixed length field.	**2A** **11B** **23E** **86B** **143B**	4

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
Field 146 a	146a Client System Address	aaaaaaaa	Field 146a is the source system identifier used in the Client Status Information (CI) message. Field 146a is comprised of two identifiers, the first 4 bytes, aaaa, identify the application and last 4 bytes, aaaa, identify the node.		8
Field 147 a	147a Client System Status and Communication Eligibility	LL	Field 147a is the Client System Status and Communication Eligibility field used in the Client Status Information (CI) message. Field 147a is comprised of two units of information. The first letter, L, describes the Client System Status in the format: C = connected, or D = disconnected The second letter, L, describes the Client System's Communication Eligibility in the format: O = One-way communications (with ERAM), or T = Two-way communications (with ERAM) Filed 147a LL is left justified and blank padded within a 2 byte fixed length field	**CT** **CO** **DO** **DT**	2
Field 149 a	149a End of Message	LLL	3 EBCDIC letters "EOM" to denote End Of Message.	**EOM**	3

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
Field 150 a	150a Message Header	aaaaaaaa aaaaaaaa bbbbbbbbbbbbbbbb aa	Field 150a is comprised of four data items which together form the message header used at the start of all CMS Block Transmission Protocol messages. Destination Address, which is 8 characters EBCDIC data. Source Address, which is 8 characters EBCDIC data. Message Size, which is 2 bytes binary data. Message Type, which is 2 characters EBCDIC data.	A message from ERAM to an ATM IPOP application: **HADS****** **HOSTZCI0** **0000 0000 0000 0100** **CK** A message from an ATM IPOP application to ERAM: **HOSTZCH0** **CTASZHU0** **0000 0000 0001 0010** **IM**	20
Field 151 a	151a Field Header	bbbbbbbb bbbbbbbb bbbbbbbb bbbbbbbb a	Field Header is comprised of three pieces of data (two binary and one character) used at the start of every field in all CMS Block Transmission Protocol messages. Each Field 151a in a message describes the contents of the field that immediately follows 151a, and provides three essential pieces of data: 1. Field Size: A two-byte binary integer number describing the length of the data that follows Field 151a	Field 11B with a length of 12 bytes: **00000000 00001100** **00000000 00001011** **B** Field 02A with a length of 7 bytes: **00000000 00000111** **00000000 00000010** **A**	5

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			2. Field Reference Number: A two-byte binary integer describing the Field Number of the field that follows Field 151a 3. Field Format: A single EBCDIC character describing the Field Element coupled to the Field Reference Number of the field that follows Field 151a		
Field 152 a	152a Block Transmission Header Number	(d)(d)(d)(d)d	Field 152 contains four bytes of binary data. The first two bytes contain the message size including Field 152. The second two bytes contain the sequence number of the message. Block Transmission Header Number is used in the Information Reject (IR) message to identify the received message containing the referent error. Range = 0 to 65535	**1** **2** **3** **65535**	1–5
Field 153 a	153a Coast Indicator a = coast indicator	L Where: L = C = coast	The ATM IPOP TH Track Information message includes the following information: source, flight identification, ground speed, assigned altitude, reported altitude, controlling facility/sector, receiving facility/sector, track position, track velocity, and **action indicator.** If the aircraft track is in Coast, the	Example of Field 153a: **Field153 A = C** The track is reported in Coast.	1

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			action indictor for Field 153a is provided as one character "L" as follows: Where: L = C = coast.		
Field 154 a	154a a = ARTS TZ Data Items Data Items for Fields (00), 02, 05, 08 and 23.	Data Items for Fields (00), 02, 05, 08 and 23.	Field 154a contains the ARTS TZ Information message that provides the ATM IPOP with Flow Control Track/Full Data Block data for a flight.		
Field 154 a	154a a = ARTS TZ Data Items Data Items for Field (00)	Source ID Field (00) (LLLL)	Optional Field 00 (LLLL) contains the following: First L is the Sending ERAM Center ID Last three LLL is the ARTS ID that originated the TZ message.	**See Example of the ATM IPOP HZ message below:**	4
	Data Item Separator	one space			1
Field 154 a	154a a = ARTS TZ Data Items Data Items for Field 02	Flight Identification AID/CID Field 02 La (a) (a) (a) (a) (a) /daa or La (a) (a) (a) (a) (a) /FFF	Field 02 contains the flight identification followed by a "/" separator and the ERAM ECID. If the ECID is not available, FFF will be displayed in its place.	**See Example of the ATM IPOP HZ message below:**	6–11
	Data Item Separator	one space			1
Field 154 a	154a a = ARTS TZ Data	Ground Speed Field 05 ddd	Field 05 ground speed for the aircraft is ddd.	**See Example of the ATM IPOP HZ message below:**	3

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
	Items Data Items for Field 05		If the ground speed is not available, the value will be 3 zeros.		
	Data Item Separator	one space			1
Field 154 a	154a a = ARTS TZ Data Items Data Items for Field 08	Assigned Altitude Field 08 Field 08 equals One of the following formats: a. ddd altitude b. OTP/ddd VFR-on-top plus altitude c. dddT Interim Altitude d. dddBddd a block of altitudes e. dddC Reported Mode C altitude where it is not within an adapted number of feet of the assigned altitude	Assigned Altitude Field 08 is the assigned altitude of the aircraft.	**See Example of the ATM IPOP HZ message below:**	3–7

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
	Data Item Separator	one space			1
Field 154 a	154a a = ARTS TZ Data Items Data Items for Field 23.	Track Position Field 23 Latitude/Longitude ddddddL / Virgule separates Latitude and Longitude. dddddddL	For TZ messages from ARTS facilities X−Y coordinates will be in Field 23. ERAM will convert the ARTS X,Y to LAT/LONG. Latitude used in the TH and HZ messages. The first two d's are degrees, the second two are minutes and the last two are seconds. L = N or S. Longitude used in the TH and HZ message. The first three d's are degrees, the second two are minutes and the last two are seconds. L = E or W.	**See Example of the ATM IPOP HZ message below:**	16

Example of the ATM IPOP HZ message using Field 154a (a = ARTS TZ Data Items for Fields (00), 02, 05, 08 and 23):

FLD154A

HASA ROUGH51/878 188 095 290834N/0974548W

Field 00 is HASA, H is Houston Center and ASA is the ARTS sending the TZ message.
Field 02 is ROUGH51/878, ROUGH51 is the aircraft identification and 878 is the ERAM ECID.
Field 05 is 188 the aircraft's ground speed.
Field 08 is 095 aircraft's altitude.
Field 23 is 290834N/0974548W the track location of the aircraft.

Example of the ATM IPOP HZ message using Field 154a (a = ARTS TZ Data Items for Fields (00), 02, 05, 08 and 23) when the ECID is not available:

FLD154A

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
HASA ROUGH51/ZHU 188 095 290834N/0974548W **Field 00, 05, 08, 23 are same as above example.** **Field 02 is ROUGH51/ZHU, ROUGH51 is the aircraft identification and ZHU is the ARTCC ID in which the ARTS facility resides.**					
Field 155	FDB Fourth Line Heading, Speed and Free Form Text a = heading b = speed c = Free Form Text	a (a) (a) (a) **a** 1-4 characters **b** 1-8 characters **c**	The FDB Fourth Line Information message provides an ATM IPOP with displayable, user-specified FDB fourth line data stored in ERAM, i.e., heading, speed or free form text, when this data is created, changed or deleted. The FDB Fourth Line Information message includes source, flight identification and optionally user-specified FDB fourth line information. Fields 155a, 155b and 155c will not be transmitted when they contain null values (no data), however, they will always be transmitted when they contain data. When these fields are not present in the message it indicates that all user-specified FDB fourth line data has been deleted by ERAM and therefore is not displayable.		

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
155 a	155a FDB Fourth Line Heading, Speed and Free Form Text a = heading	a (a) (a) (a)	The FDB Fourth Line Information message provides an ATM IPOP with displayable, user-specified FDB fourth line data stored in ERAM, i.e., heading, speed or free form text, when this data is created, changed or deleted. Field 155a is to display the heading of the aircraft issued by the controller.	Example of Field 155a: **075** **H075** Controller has issued a heading of 075 to the flight to fly.	1–4
155 b	155b FDB Fourth Line Heading, Speed and Free Form Text b = speed	1–4 characters **In Knots:** ddd ddd+ ddd− +d(d) −d(d) Sddd **In MACH:** dd dd+ dd− M(d)dd Mdd+ Mdd− .dd M.dd .dd+	The FDB Fourth Line Information message provides an ATM IPOP with displayable, user-specified FDB fourth line data stored in ERAM, i.e., heading, speed or free form text, when this data is created, changed or deleted. Field 155b is to display the speed of the aircraft issued by the controller.	Example of Field 155b: **280+** **280** **S260** **S280** **M83** **M77** **M83+** Controller has issued a speed for the flight to fly.	1–4

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
		dd− **Other:** PS + −			
155 c	155c FDB Fourth Line Heading, Speed and Free Form Text c = Free Form Text	1-8 characters Only characters A−Z, 0−9, −, +, =, *, /, underscore (_), semicolon (;), period (.), comma (,), up arrow, down arrow and overcast symbol are valid as input. Leading or embedded spaces are not allowed.	The FDB Fourth Line Information message provides an ATM IPOP with displayable, user-specified FDB fourth line data stored in ERAM, i.e., heading, speed or free form text, when this data is created, changed or deleted. Field 155c is to display free form text of the aircraft issued by the controller.	Example of Field 155c: **-BUFFI** **NOBBL** **-SJI** **BLVNS** Controller has issued a route for the flight to fly.	1–8
Field 161 a	161a SAA ID	a(a)(a)(a)(a)(a)(a)(a)(a)(a)	The special Airspace Activities ID is comprised of up to 10 alphanumerics.	Example of Field 161a: **SHPT38ALPHA** SHP Air Force BASE training area “Alpha” for T38s. **SHPT37BRAVO** SHP Air Force BASE training area “Bravo” for T37s.	1–10
Field 162 a	162a SAA Activation Type	LL(L)(L)(L)	SAA Activation Type Field 162a provides the status of the SAA area as follows: • “ON”	Example of Field 162a: **ON** **Area is active** **OFF**	2–5

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			• "OFF" • "SCHED"	**Area is not active** **SCHED** **Area activation is controlled by schedule.**	
Field 163 a	163a SAA Schedule Type	L	The Schedule Type describes whether the Activity is Scheduled or Deleted. The following formats are valid: • "S" = scheduled • "D" = deleted	Example of Field 163a: **S** **D**	1
Field 164	164 SAA Scheduled Activation/Deactivation Date & Time a = Activation Date & Time b =Deactivation Date & Time	dddddd a dddddd b	Field 164 contains the dates and UTC times of an activation period in the format ddhhmm (dd: day of month, hh: UTC hour, mm: UTC minute).		
164 a	164a SAA Scheduled Activation Date & Time	dddddd	Field 164a contains the date and UTC time of an activation in the format ddhhmm (dd: day of month, hh: UTC hour, mm: UTC minute).	Example of Field 164a **302355**	6

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
164 b	164b SAA Scheduled Deactivation Date & Time	dddddd	Field 164b contains the date and UTC time of a deactivation in the format ddhhmm (dd: day of month, hh: UTC hour, mm: UTC minute).	Example of Field 164b **010245**	6
Field 165	165 SAA Altitude Range a = SAA Low Altitude Range b = SAA High Altitude Range	(-)d(d)(d)(d)(d)(d) a (-)d(d)(d)(d)(d)(d) b	Field 165 contains the low and high altitude range for the SAA. Valid range is -2000 to 100000 feet		
165 a	165a SAA Low Altitude Range	(-)d(d)(d)(d)(d)(d)	Field 165a contains the low altitude of the altitude range for the SAA. Valid low range is -2000 to 100000 feet	Example of Field 165a **5000**	1–7
165 b	165b SAA High Altitude Range	(-)d(d)(d)(d)(d)(d)	Field 165b contains the high altitude of the altitude range for the SAA. Valid high range is -2000 to 100000 feet The high altitude must be greater than or equal to the low altitude. If the high altitude is equal to the low altitude, the SAA is active only at this altitude.	Example of Field 165b **30000**	1–7

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
Field 166 a	166a SAA Schedule ID	LLLdddddddddd	Field 166a contains the identification of the facility scheduling along with a sequence number in the format: LLL = facility ID dddddddddd = sequence number (10 digits with leading 0's)	Example of Field 166a: **SHP0000000016**	13
Field 167 a	167a Site Specific Plan Identifier a. SSPID	bbbbbbbbbbbbbbbb Binary	Site Specific Plan Identifier (SSPID) SSPID is a unique ID for each system plan in the system. Field 167a will contain Site Specific Plan Identifier with a range of 1 to 4000 in 2-byte 16 bit binary format. The Site Specific Plan Identifier, assigned by IFPA, is unique for a system plan in each ERAM facility.	Example of Field 167a: bbbbbbbbbbbbbbbb Example is Binary	2
Field 168 a	168 System Type Identification a = System Type Identification	LLLL	Field 168a System Type Identification is 4 characters LLLL where LLLL = ERAM Used in the HS message ERAM to ATM IPOP.	Example of Field 168a Usage: ERAM	4
Field 169 a	169 CMS Version Number a = CMS Version Number	aaaa	Field 169a is the CMS version number that will contain the third through sixth alphanumeric characters of the ERAM national release name that is in use at the local ERAM facility. This number is sent by ERAM to ATM IPOP in the HS message.	Example of Field 169a Usage: 0012	4

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
Field 170 a	170 Time of Track Data a = Time of Track Data	bbbbbbbb bbbbbbbb bbbbbbbb bbbbbbbb	Field 170a is the time of the track stored as a 32-bit integer representing the number of seconds elapsed since the start of the Unix epoch which began at 00:00:00 UTC, 1/1/1970. Used in the TH message ERAM to ATM IPOP.	Example of Field 170a Usage: 00000000 00000000 00000100 10110000 = 1200 hundred seconds since start of Unix epoch	4
Field 171 a	171 Target Position a = Target Position	(ddddddL/dddddddL) (ddddddL / Virgule separates Latitude and Longitude. dddddddL)	Optional Field 171a is the ERAM RADAR target position in Latitude/Longitude as follows: Latitude used in the TH message. The first two d's are degrees, the second two are minutes and the last two are seconds. L = N or S. Longitude used in the TH message. The first three d's are degrees, the second two are minutes and the last two are seconds. L = E or W.Latitude = 7 bytes Used in the TH message ERAM to ATM IPOP provided the track is not in COAST.	Example of Field 171a Usage: 412442N/0815059W	16
Field 172	172 Target Altitude a = Target Altitude b = Target Altitude invalid	(ddd) a (INV) b	Optional Field 172 is used for reporting the Mode C Target altitude or to indicate the altitude is invalid (INV).		

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
172 a	172 Target Altitude a = Target Altitude	(ddd)	Optional Field 172a is 3 digits reporting the Mode C Target altitude (corrected for barometric pressure) in hundreds of feet (leading zeros are required). If the target altitude is negative, 172a will be 000. Used in the TH message ERAM to ATM IPOP provided the track is not in COAST.	Example of Field 172a Usage: 290 055 008	3
172 b	172 Target Altitude b = Target Altitude invalid	(INV)	If optional Field 172a is not a valid Mode C, Field 172b is sent as INV (for invalid Mode C altitude). Used in the TH message ERAM to ATM IPOP provided the track is not in COAST.	Example of Field 172b Usage: INV	3
Field 173 a	173 Time of Target Data a = Time of Target Data	(bbbbbbbb bbbbbbbb bbbbbbbb bbbbbbbb)	Optional Field 173a is the time of the correlated target return stored as a 32-bit integer representing the number of seconds elapsed since the start of the Unix epoch which began at 00:00:00 UTC, 1/1/1970. Used in the TH message ERAM to ATM IPOP provided the track is not in COAST.	Example of Field 173a Usage: 00000000 00000000 00000100 10110000 = 1200 hundred seconds since start of Unix epoch	4
Field 174a	174 Target ADS-B position a= Target ADS-B position	ddddddL/dddddddL / virgule separates latitude and longitude	Field 174a is an optional field used in the TH message for ADS-B targets. Field 174a indicates the ADS-B target position (latitude and longitude).	Example of Field 174a usage: Field 174a = **393106N/0842535W**	16

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
			Latitude: The first two d's are degrees, the second two are minutes and the last two are seconds. L = N or S. Longitude: The first three d's are degrees, the second two are minutes and the last two are seconds. L = E or W.		
Field 175a	175 Target ADS-B altitude a= Target ADS-B altitude	ddd	Field 175a is an optional field used in the TH message for ADS-B targets. Field 175a indicates the ADS-B target altitude (corrected for barometric pressure) in hundreds of feet. It is three digits (leading zeros are required).	Example of Field 175a usage: Field 175a = 290 Field 175a = 055 Field 175a = 008	3
Field 176a	176 Target ADS-B velocity a= Target ADS-B horizontal velocity	ad(d)(d)(d)/ad(d)(d)(d)	Field 176a indicates the ADS-B target horizontal velocity in NM/hr ad(d)(d)(d) = X component /ad(d)(d)(d) = Y component a = + or −; d(d)(d)(d) = velocity in NM per hour	Example of field 176a usage: **Field 176a= +254/+260** **Field 176a= +46/-355** **Field 176a= -4/-367** Speed in NM per hour	5-11
Field 177a	177 Target ADS-B time a= Target ADS-B time	bbbbbbbb bbbbbbbb bbbbbbbb bbbbbbbb	Field 177a is an optional field used in the TH message for ADS-B targets. Field 177a is the time associated with ADS-B target data, stored as a 32-bit integer representing the number of seconds elapsed since the start of the	Example of Field 177a usage: Field 177a = 00000000 00000000 00000100 10110000 = 1200 hundred seconds since start of Unix	4

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
			Unix epoch which began at 00:00:00 UTC, 1/1/1970.	epoch.	
Field 316 a	316a Global Unique Flight ID a. GUFI	aaaaaaaaaa	Global Unique Flight ID (GUFI) aaaaaaaaaa = 10 ASCII characters	Example of Field 316a: For a flight departing the Seattle ARTCC: KS00030513	10
Field 317 a	317a Controller Initials	This format is used for controller initials: **LL(a)** where: LL =2 characters containing the identifying initials for the controller. (a) = Optional alphanumeric identifier.	Field 317a contains the controller initials for a sign in/sign out action. A controller can only be signed into one R-, D-, or N-position at a time, and an R-, D-, or N-position can have only one signed in controller at a time. A controller can be signed into multiple A-positions at a time (up to the system limit of 300), and a single A-position can contain multiple (up to an adapted maximum of 10) controllers at a time.	**Field 317a** PD PD is an example of a Fort Worth ARTCC controller initials.	2–3
Field 318a	318a Non-Operational User Initials	This format is used for non-operational user initials: **LL(a)** where: LL =2 characters containing the identifying initials for the Controller. (a) = Optional alphanumeric identifier	Optional Field 318a contains the non-operational user initials for a sign in or sign out action.	LB is an example of a Fort Worth ARTCC supervisory initials.	2–3

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
Field 319a	319a Crew Number	A single digit: **d** where d = a crew number from 0 to 9.	Field 319a contains the crew number associated with the user(s) at the time of a sign in or sign out action.	7 is an example of a Fort Worth ARTCC crew number.	1
Field 320a	320a Area Number	A single digit: **d** where d = a decimal number in the range 0-9.	Field 320a contains the area number in a sign in or sign out action. The area number is an adapted value correlating a defined area to a sector, i.e., the target position for a sign in/sign out action.	1 is an example of a Fort Worth ARTCC area number 0 is an example of a Fort Worth ARTCC area number, null position.	1
Field 321a	321a Message Type Indicator (Sign In OR Sign Out message)	A single Letter, which must be either: **I** -or- **O** where: I indicates a Sign In message O indicates a Sign Out message	Field 321a contains the type of message in a sign in or sign out action. The type can be either a sign in (I) or sign out (O).	I is an example of sign in indicator. O is an example of sign out indicator.	1
Field 322a	322a Role Operational or Training.	A single Letter, which must be either: **O** -or- **T**	Field 322a. contains the task of the user in a sign in or sign out action, either an operational role (O) or a training role (T)	O is an example of an operational role. T is an example of a training role.	1

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
		where: O indicates Operational T indicates Training			
Field 323a	323a Tracker Indicator Handoff Controller OR Not Handoff Controller.	A single Letter, which must be either: **Y** -or- **N** where: Y indicates Handoff Controller N indicates Not Handoff Controller	Field 323a contains the responsibilities of the user in a sign in or sign out action, either handoff controller (Y) or not handoff controller (N).	N is an example of Not Handoff Controller. Y is an example of Handoff Controller.	1
Field 324a	324a Sign In Date and Time	A 12-digit date and time: **dddddddddddd** where dddddddddddd is defined as: yyyy = year mm = month and ranges from 01-12 dd = day of month and ranges from 01-31 hh = hour and ranges from 00-23 mm = minute and ranges from 00-59	Optional Field 324a contains the date and time for a **sign in** action. Sign in date and time is provided in 12 digits representing year, month, day, and time in hours and minutes. Current system time is always used for a sign in action except for those initiated at the AT Specialist Position, which may optionally include date and time as part of the sign in message. When both Fields 324a and 325a are included in a sign in/sign out action, the user will be signed in and automatically signed out at the same position.	200510252359 is an example of sign in date and time.	12

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
Field 325a	325a Sign Out Date and Time	A 12-digit date and time: **dddddddddddd** where dddddddddddd is defined as: yyyy = year mm = month and ranges from 01-12 dd = day of month and ranges from 01-31 hh = hour and ranges from 00-23 mm = minute and ranges from 00-59	Optional Field 325a contains the date and time for a **sign out** action. Sign out date and time is provided in 12 digits representing year, month, day, and time in hours and minutes. Current system time is always used for a sign out action except for those initiated at the AT Specialist Position, which may optionally include date and time as part of the sign out message. When both Fields 324a and 325a are included in a sign in/sign out action, the user will be signed in and automatically signed out at the same position.	200510250401 is an example of sign out date and time.	12
Field 326a	326a Position	A single Letter, which must be one of the following: R = R-position console D = D-position console A = A-position console N = Pseudo position	Field 326a contains the target position, i.e., the position where a sign in/sign out action occurs. The position that a user is attempting to sign into is defined as the target position, and is determined by either the sector position that the command is entered from (R-, D-, or A-positions), or the sector position contained in a SISO message entered at the AT Specialist position.	R is an example of target position.	1

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
Field 327a	327a Sector Number	dd	Field 327a contains a sector number. Used in AC, AK and SY messages. When used in a sign in/sign out action designating an "N" position, the sector number is not checked to determine if it is adapted in the center.	50 is an example of sector number.	2
Field 328a	328a Recording Reason Reason for Sign In/Sign Out	A single digit: **d** Where: d = a decimal number in the range 0 thru 5.	Field 328a contains the reason for recording a sign-in/sign-out action. The reason for the action must be one of the following: 0 = Sign In/Sign Out entered from a Sector Position 1 = Sign In/Sign Out (less than two time fields) entered from an AT Specialist Position 2 = Sign Out due to a resectorization 3 = Forced Sign Out due to another Sign In 4 = Automatically Signed Back In 5 = Sign In/Sign Out due to a Sign In with two time fields from an AT Specialist Position.	0 is an example of the recording reason.	1

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
Field 329a	329a Local UTC Offset	A special character followed by 2 digits: **±dd** where: ± = a plus or minus indicator dd = hours in a range from 00 to 23	Field 329a contains the local UTC time offset, i.e., the number of hours, plus or minus, that local midnight occurs relative to UTC midnight.	-06 is an example of local UTC offset. Ft. Worth center is offset minus 6 hours from UTC.	3
Field 330	330 Entering Position a = Position Number	A single Letter followed by 2 digits: **Ld** where: Ld = A position number from A1 to Z9	Field 330a contains the position number identifying the entering position for an AC or AK message. The position number must begin with a Letter, in the range from A to Z, followed by a 1 digit identifier in the range 1 to 9.	**S1** **G2** **E1**	3
Field 331	331 Position a = Position Type	A single Letter: **L** where: R = R-position console D = D-position console A = A-position console S = AT Specialist.	Field 331a contains the position type, a single letter identifying the type of entering position for an AC or AK message. The position type must be either "R", "D", "A", or "S".	**R** **D** **A** **S**	1

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
Field 332	332 Entering Facility a = Facility Identifier	**L**	Field 332a contains the facility identifier, a single letter identifying the entering facility for an AC or AK message. Each ERAM facility has a unique 1 letter identifier.	**F** is the facility identifier for Ft. Worth ERAM. **W** is the facility identifier for Washington ERAM. **N** is the facility identifier for New York ERAM.	1
Field 333	333 Source Specialist Routing a = AT Specialist Position	**LLd**	Field 333a contains the source specialist routing in an IR message. The IR message is sent from an ATM IPOP system to notify ERAM of the rejection of a message received by the ATM system that fails logic checking. The source specialist routing must be an AT specialist position.		
Field 333 a.	333 Source Specialist Routing a = AT Specialist Position.	**LLd**	Field 333a contains the AT specialist position routing in an IR message. Format **LLd** where: The first **L** is **S** followed by **Ld** which is an AT Specialist Position from A1 to Z9.	SE1 SS1 SG1	3
Field 334	334 Accepting Facility a = Facility Identifier	**LLL**	Field 334a contains the accepting facility identifier used in the OH message. The accepting facility is the facility receiving the flight when the handoff was initiated. Data in Field 334a in an OH message indicates that a	**ZCA49** ZCA is an example of an ERAM facility identifier. **AAA1B** AAA is an example of an	3

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			handoff is accepted. Field 335a (Sector Number) is appended to Field 334a when an accepting sector is associated with the accepting facility. Field 334a is the same as Field 139a.	ARTS facility identifier.	
Field 335	335 Accepting Sector a = Sector Number a = ARTS position	**dd** or **da**	Field 335a contains the accepting sector data used in the Handoff Information (OH) message. The OH message is sent to the ATM IPOP when a handoff is initiated, accepted, or retracted, or when failure of handoff is detected. The accepting sector is the receiving sector/position that accepts the flight in handoff status. Field 335a is the same as Field 139b.		
335 a.	335 Accepting Sector a = Sector Number	**dd**	Field 335a contains the accepting sector number. Where dd is the ERAM sector number in the range of 01 to 99.	**49** is an example of a sector number.	2
335 a.	335 Accepting Sector a = ARTS Position	**da**	Field 335a contains the accepting ARTS position. A single digit followed by a single alphanumeric **da**, where: da is the ARTS position.	**1b** is an example of an ARTS position.	2

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
Field 336	336 Handoff Event Indicator a = Handoff Event Indicator	A single letter: **L** where L must be one of the following: I for Initiation A for Acceptance R for Retraction T for Take Control U for Update F for Failure.	Field 336a contains the handoff event indicator used in the OH message initiated when the event of a handoff is detected.	**I** **A** **R** **T** **U** **F**	1
Field 337	337 Traffic Count Adjustment Data a = Data Field	4 alphanumerics followed by a single special character followed by 3 digits: **aaaa±ddd** where: aaaa = alphabetic subcategory contraction (see Description) ± = directs either incrementation (plus) or decrementation (minus) ddd = value to be applied in the range of 001 - 999. Field 337a. is the same as Field 44a.	Field 337a contains the Traffic Count Adjustment Data for an AK message. The first four characters (aaaa) of the data field must be alphabetic and one of the following subcategory contractions: ACDD Air Carrier Domestic Departures ATDD Air Taxi Domestic Departures GADD General Aviation Domestic Departures MIDD Military Domestic Departures ACDO Air Carrier Domestic Overs ATDO Air Taxi Domestic Overs GADO General Aviation Domestic Overs MIDO Military Domestic Overs	ACDD+001 Add one air carrier domestic departure.	8

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			ACOD Air Carrier Oceanic Departures ATOD Air Taxi Oceanic Departures GAOD General Aviation Oceanic Departures MIOD Military Oceanic Departures ACOO Air Carrier Oceanic Overs ATOO Air Taxi Oceanic Overs GAOO General Aviation Oceanic Overs MIOO Military Oceanic Overs VFRC VFR Traffic Count		
Field 338	338 Instrument Approach Count Adjustment Data a = Data Field	2 Letters followed by a special character followed by 2 digits: **LL±dd** Where: LL = alphabetic subcategory contraction (see Description) ± = directs either incrementation (plus) or decrementation (minus) dd = value to be applied in the range of 01 - 99.	Field 338a contains Instrument Approach Count Adjustment Data used in the AC Message. This field consists of alphabetic subcategory data, incrementation or decrementation indicator, and the value to be applied to the alphabetic subcategory. The alphabetic subcategory must be one of the following: AC = air carrier AT = air taxi GA = general aviation MI = military	**MI+03** In this example a military count is incremented by 03. **GA−12** In this example a general aviation count is decremented by 12.	5

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
Field 339	339 Tentative Flight Plan Merge Status a = Merge Status	A single Letter: **L** where: L = the merge status identifier, either N, S, or D.	Field 339a. contains the tentative flight plan merge status used in the NL message. The merge status must be one of the following: N deletion without merge – the tentative plan is deleted without merge S* merge – an active plan is merged into the tentative flight plan; the flight has the same CID and Site Specific Plan Identifier as the tentative plan D* merge – a proposed plan is activated and the tentative flight plan is merged into the activated plan; the flight has the CID and Site Specific Plan Identifier of the activated plan which are different from the tentative plan. * **Note**: For Field 339a L=S, an FH is sent for the merged flight plan. For Field 339a L = D, an AH or DH message is sent for the activated flight plan.	**N** **S** **D**	1
Field 341	341 Merged Flight Plan ID a = Merged Flight Plan Computer ID	**daa**	Field 341a. contains the merged flight plan computer ID (ECID) used in the NL message. The Tentative Flight Plan Removal (NL) message is used to inform the ATM IPOP of the removal of a tentative	Example of Field 341a: **452** **45A** **522** **9PP**	

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			flight plan.		
Field 342	342 Merged Flight Plan ID a = Merged Flight Plan Site Specific Plan Identifier	bbbbbbbbbbbbbbbb Binary	Field 342a is the Site Specific Plan Identifier of the Merged Flight Plan. If the merge is of an active flight into the tentative, (339a=S), the SSPID will be the same as the tentative. If the merge is due to activation of a proposed flight plan, (339a=D), the SSPID will be that of the activated flight plan.	Example of Field 342a: bbbbbbbbbbbbbbbb Example is Binary	2
Field 343a	343 Speed Advisory Flight Phase a = Speed Advisory Flight Phase	a	Field 343a associates a flight phase with a proposed speed advisory (Field 344) when provided in a PA message, or with an accepted speed advisory when provided in an FH, AH, or HU message. The association of phase to speed allows a controller to provide multiple speed clearances to a pilot, differentiated by phase of flight. There are two possible values for this field: a = C for cruise phase, and a = D for descent phase	Examples of Field 343a: Speed advisory is for cruise phase **Field 343a = C** Speed advisory is for descent phase **Field 343a = D**	1
Field 344	344 Speed Advisory Value a = Mach speed b = Calibrated Airspeed	Mdd a (d)dd	Field 344 is used for a speed advisory which is associated with a flight phase (see Field 343). When used in a PA message it represents a proposed speed from TBFM; when used in an FH, AH, or HU message it represents an accepted		2-3

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
		b	speed advisory.		
344a	344 Speed Advisory - Mach a = Mach speed	Mdd	Mdd = Mach Speed. The mach speed is 3 characters. Cruise speed can be specified as either Mach or CAS. Descent speed can only be specified as CAS.	Example for Mach Speed **M85** The Mach Speed is 0.85 Mach	3
344b	344 Speed Advisory - CAS b = Calibrated airspeed (CAS)	(d)dd	Calibrated airspeed = (d)dd format The calibrated airspeed is in knots 2-3 characters that must be greater than 0 and cannot exceed 999. TBFM will apply constraints to support procedures defined in FAA Order JO 7110.65. Calibrated airspeed is the indicated airspeed of an aircraft, corrected for position and instrument error. Calibrated airspeed is equal to true airspeed in standard atmosphere at sea level. Cruise speed can be specified as either Mach or CAS. Descent speed can only be specified as CAS.	Example for Calibrated Airspeed **540** Aircraft calibrated airspeed is 540 knots	2-3
Field 908	Flight Rules and Type of Flight a = Flight Rules b = Type of Flight	L a and L	Field 908 contains the flight rules and type of flight.		

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
		b Element 908b is optional.			
908 a.	Flight Rules and Type of Flight a = Flight Rules	L	Element 908a is the flight rules expressed in a single character which must be one of the following: I IFR V VFR Y IFR First Z VFR First **Note**: If Y or Z is used, the point or points at which a change of flight rules is planned should be shown in the route.	This example shows the flight rules of VFR: V	1
908 b.	Flight Rules and Type of Flight b = Type of Flight	L	Optional element 908b is the type of flight expressed in a single character which must be one of the following: S Scheduled air transport N Non-scheduled air transport G General aviation M Military X Other flights	This example shows the type of flight: S	1
Field 909	Wake Turbulence Cat. c = Wake Turbulence Category	L	Field 909 contains the Wake Turbulence Category.		
909 c.	c = Wake Turbulence Category	L	Element 909c is the 1 character wake turbulence category which must be one	This example shows the wake turbulence category:	1

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
			of the following: H Heavy M Medium L Light	$\boxed{H}$ $\boxed{M}$ $\boxed{L}$	
Field 910	Equipment a = Airborne equipment Qualifier (Radio Communication, Navigation, and Approach AID Equipment) b = Airborne equipment Qualifier (Surveillance Equipment) c = Same as a, but uses ICAO2012 format d = Same as b, but uses ICAO2012 format	See specific formats for 910a, 910b, 910c, 910d	Field 910 contains the airborne equipment qualifiers, i.e., radio, navigation and approach AID equipment, and surveillance equipment.		
910 a,	Equipment a = Airborne equipment Qualifier (Radio Communication, Navigation, and Approach AID Equipment)	L(L)...(L) or: N	Element 910a is the Airborne Equipment Qualifier expressed in 1 to 24 characters. Element 10a has 1 required plus 24 optional letters. The 25 possible letters are the letters A thru Z and each letter can only be used once.	The following examples demonstrate the adapted radio, navigation and approach AID equipment. $\boxed{S}$ $\boxed{SCHJ}$	1–25

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
			If the letter N is present, it must be the only letter present. See ICAO 4444 for complete list of characters.	$\boxed{\text{N}}$	

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
910 b,	Equipment b = Airborne equipment Qualifier (Surveillance Equipment)	L(L)	Element 910b is the ICAO Airborne Equipment Qualifier. Element 910b first letter must be one of the SSR equipment listed letters and the second letter, if used, must be the ADS capability letter D. Qualifier SSR Equipment N Nil A Transponder Mode A C Transponder Mode A and C X Transponder Mode S without both aircraft ID and pressure- altitude transmission. P Transponder Mode S, with pressure-altitude transmission but no aircraft ID transmission. I Transponder Mode S with aircraft ID but no pressure-altitude transmission. S Transponder Mode S with both pressure altitude and aircraft ID transmission. D ADS capability	This example shows the SSR equipment as Mode A: **A** This example shows the SSR equipment as Mode S with ADS capability: **SD**	1–2

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
910 c,	Equipment a = Airborne Equipment Qualifier (Radio Communication, Navigation, and Approach AID Equipment)	N or S or (L or Ld)(L or Ld)...(L or Ld) up to a maximum of 64 characters.	Element 910c is the ICAO Airborne Equipment Qualifier for Radio Communications, Navigation, and Approach AID Equipment and Capabilities. See Amendment 1 to ICAO 4444 for more details. N – No equipment is carried, or equipment is unserviceable. S – Standard equipment is carried and is serviceable. And/Or A – GBAS landing system B – LPV (APV with SBAS) C – LORAN C D – DME E1 – FMC WPR ACARS E2 – D-FIS ACARS E3 – PDC ACARS F – ADF G – GNSS H – HF RTF I – Inertial Navigation J1 – CPDLC ATN VDL Mode 2	$\boxed{\textbf{ADE3RV}}$	1–64

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			J2 – CPDLC FANS 1/A HFDL J3 – CPDLC FANS 1/A VDL Mode A J4 – CPDLC FANS 1/A VDL Mode 2 J5 – CPDLC FANS 1/A SATCOM (INMARSAT) J6 – CPDLC FANS 1/A SATCOM (MTSAT) J7 – CPDLC FANS 1/A SATCOM (Iridium) K – MLS L – ILS M1 – ATC RTF SATCOM (INMARSAT) M2 – ATC RTF (MTSAT) M3 – ATC RTF (Iridium) O – VOR P1-P9 – Reserved for RCP R – PBN approved T – TACAN U – UHF RTF V – VHF RTF W – RVSM approved		

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			X – MNPS approved Y – VHF with 8.33-kHz spacing cap. Z – Other equipment carried		
910 d,	Equipment b = Airborne Equipment Qualifier (Surveillance Equipment)	N or L or Ld…(L or Ld) One or more letters or letter digits, up to a maximum of 20 characters	Element 910d is the ICAO Airborne Equipment Qualifier for Surveillance Equipment and Capabilities. See Amendment 1 to ICAO 4444 for more details. 918 SUR/ is used for additional equipment. N – No surveillance equipment or equipment unserviceable. Or **SSR Modes A and C** A - Transponder Mode A C - Transponder Mode A and C **SSR Mode S** E - Transponder - Mode S, including aircraft identification, pressure-altitude and extended squitter (ADS-B) capability. H - Transponder - Mode S, including aircraft identification, pressure-altitude and enhanced surveillance capability. I - Transponder - Mode S, including aircraft identification, but no pressure-altitude capability.	$\boxed{\textbf{HB2U2V2G1}}$	1–20

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			L - Transponder - Mode S, including aircraft identification, pressure-altitude, extended squitter (ADS-B) and enhanced surveillance capability. P - Transponder - Mode S, including pressure-altitude, but no aircraft identification. S - Transponder - Mode S, including both pressure altitude and aircraft identification capability. X - Transponder - Mode S with neither aircraft identification nor pressure-altitude capability. **ADS-B** B1 - ADS-B with dedicated 1090-MHz ADS-B “out” capability. B2 - ADS-B with dedicated 1090-MHz ADS-B “out” and “in” capability U1 - ADS-B “out” capability using UAT. U2 - ADS-B “out” and “in” capability using UAT. V1 - ADS-B “out” capability using VDL Mode 4. V2 - ADS-B “out” and “in” capability using VDL Mode 4.		

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
			ADS-C D1 - ADS-C with FANS 1/A capabilities. G1 - ADS-C with ATN capabilities.		
Field 916	Alternate Arrival Point(s) (Aerodrome(s) c = Alternate Arrival Point(s) (Aerodrome(s))	LLLL (LLLL) or aa(a)(a)(a) (aa(a)(a)(a)) fix name, or aa(a)(a)(a)dddddd (aa(a)(a)(a)dddddd) fix radial distance, or dddd(L)/(d)dddd(L) (dddd(L)/(d)dddd(L)) lat/long	Field 916 contains the alternate arrival points or aerodromes, if any.		
916 c.	c = Alternate Arrival Point(s) (Aerodrome(s))	The aerodrome is expressed in one of the following field formats: LLLL (LLLL)– ICAO names Fix formats include: aa(a)(a)(a) (aa(a)(a)(a)) fix name, or aa(a)(a)(a)dddddd (aa(a)(a)(a)dddddd) fix radial distance, or dddd(L)/(d)dddd(L)	(c) Alternate Aerodrome(s) Four letters, being the four-letter location indicator allocated to an alternate aerodrome, or ZZZZ if no ICAO location indicator has been allocated. **Note:** If ZZZZ is used, the name of the alternate aerodrome is to be shown in the Other Information Field (see Field Type 18 following the corresponding indicator (ALTN/)).	The following examples show the alternate expressed as a LLLL name: EBBR EDDL	2–25

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
		(dddd(L)/(d)dddd(L)) lat/long **Note:** If two alternate arrival points or aerodromes are used, they can be any combination of valid formats.			
Field 918	Other Information (OTH) The valid indicators for Field 918b–x are as follows: b = EET/ c = RIF/ d = REG/ e = SEL/ f = OPR/ g = STS/ h = TYP/ i = PER/ j = COM/ k = DAT/ l = NAV/ m = DEP/ n = DEST/ o = ALTN/ p = RALT/ q = CODE/ r = RACE/ s = SUR/ t = DLE/	$\boxed{\text{LLL(L)/free-form text}}$ b – x Field 918b – x elements contain one or more elements in the format: LLL(L)/(free-form string of character text) Each indicator must be preceded by a space character (unless the valid indicator is at the beginning of 918, where it does not have to be preceded by a space character) and followed by a slash character. There must be data, which can be preceded by one or more spaces, following each valid indicator.	Field 918 elements b – r must begin with one or more of the following 3-4 letter indicators, or one of the adapted indicators, followed by an oblique stroke (/) and free-form text relevant to the indicator. The indicator is one of the following: b. EET/ c. RIF/ d. REG/ e. SEL/ f. OPR/ g. STS/ h. TYP/ i. PER/ j. COM/ k. DAT/ l. NAV/ m. DEP/ n. DEST/ o. ALTN/ p. RALT/ q. CODE/ r. RACE/		**Note:** Spaces preceding data not included in number of bytes.

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
	u = TALT// v = DOF/ w = ORGN/ x = PBN/		s. SUR/ t. DLE/ u. TALT/ v. DOF/ w. ORGN/ x. PBN/		
918 b.	b = EET/	LLL/	Estimated Elapsed time to Significant Point or FIR Boundary The "EET/" consists of one or more Significant Points with appended estimated flying time from departure in hhmm format with a blank separating each occurrence of Significant Point and time.	**EET/KZNY0046 HUBE0213**	1–3000
918 c.	c. RIF/	LLL/ free-form string of character text)	Revised Route – the data following the "RIF/" must be in ICAO route (15c) format		1–3000
918 d.	d. REG/	LLL/(free-form string of character text)	Aircraft Registration	**REG/N5258E**	1–3000
918 e.	e. SEL/	LLL/(free-form string of character text)	SELCAL Code	**SEL/ACHA** **SEL/BRLM**	1–3000
918 f.	f. OPR/	LLL/(free-form string of character text)	Aircraft Operator	**OPR/UAL**	1–3000
918 g.	g. STS/	LLL/(string of character text) The following are the only valid special handling indicators:	Reason for Special Handling	**STS/ALTRV**	1–3000

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
		ALTRV ATFMX FFR FLTCK HAZMAT HEAD HOSP HUM MARSA MEDEVAC NONRVSM SAR STATE			
918 h.	h. TYP/	LLL/(free-form string of character text)	Type(s) of Aircraft If "ZZZZ" used in ICAO 09b.	**TYP/CESSNA 140**	1–3000
918 i.	i. PER/	LLL/L	Aircraft Performance Data Single valid letter specified in PAN-OPS 8168 Volume 1: A - Indicated airspeed (IAS) less than 169 km/h (91 kt) B - IAS between 169 km/h (91 kt) and 224 km/h (121 kt)	**PER/C**	1–3000

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
			C - IAS between 224 km/h (121 kt) and 261 km/h (141 kt) D - IAS between 261 km/h (141 kt) and 307 km/h (166 kt) E - IAS between 307 km/h (166 kt) and 391 km/h (211 kt) H – Helicopters		
918 j.	j. COM/	LLL/(free-form string of character text)	Communication Equipment Data Used for additional Communication Equipment not specified in 10a	**COM/HF ONLY** **COM/TCAS**	1–3000
918 k.	k. DAT/	LLL/(free-form string of character text)	Data Link Capability Used for additional Data Link Equipment not specified in 10a	**DAT/S**	1–3000
918 l.	l. NAV/	LLL/(free-form string of character text)	Navigation Equipment Data Used for additional Navigation Equipment not specified in 10a	**NAV/ADF ONLY**	1–3000
918 m.	m. DEP/	LLL/(free-form string of character text)	Departure Aerodrome or ATS Unit If “ZZZZ” used in ICAO 13a.	**DEP/NORTON Field**	1–3000
918 n.	n. DEST/	LLLL/(free-form string of character text)	Destination Aerodrome If “ZZZZ” used in ICAO 16a.	**DEST/MILLSPAW FARM**	1–3000
918 o.	o. ALTN/	LLLL/(free-form string of character text)	Alternate Destination Aerodrome(s) If “ZZZZ” used in ICAO 16c.	**ALTN/KRAFFT FARM**	1–3000

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
918 p.	p. RALT/	LLLL/(free-form string of character text)	En-Route Alternate Aerodrome(s)	**RALT/JB RANCH**	1–3000
918 q.	q. CODE/	LLLL/(free-form string of character text)	Aircraft CPDLC Address	**CODE/45FA16**	1–3000
918 r.	r. RACE/	LLLL/(free-form string of character text)	Requested Altitude and Speed En Route	**RACE/ KRAFT/M080F380**	1–3000
918 s.	s. SUR/	LLL/(free-form string of character text)	Surveillance applications or capabilities not specified in 10b	**SUR/282B**	1–3000
918 t.	t. DLE/	LLL/(free-form string of character text)	En Route delay or holding point(s), followed by length of delay (hhmm)	**DLE/MDG0030**	1–3000
918 u.	u. TALT/	LLL/(free-form string of character text)	Takeoff Alternate Aerodrome	**TALT/KRAFFT FARM**	1–3000
918 v.	v. DOF/	LLL/(free-form string of character text)	Date of Flight	**DOF/100727**	1–3000
918 w.	w. ORGN/	LLLL/(free-form string of character text)	Originator’s 8-letter AFTN address or other significant contact details Used (optionally) in message sent using ICAO2012 format.	**ORGN/ LEBBYNYX**	1–3000

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
918 x.	x. PBN/	LLL Ld(Ld)(Ld)(Ld)(Ld)(Ld)(Ld)(Ld) **Note:** RNAV capabilities are 2 characters each: A1, B1 through B6, C1 through C4, D1 through D4. RNP capabilities are 2 characters each: L1, O1 through O4, S1, S2, T1, T2. As many as 8 sets of characters can be included.	Indication of RNAV or RNP capability	**PBN/$\boxed{\textbf{B1O1}}$**	2–16
Field 925	925 a,b,c,d,e,f used for RNV entries g,h,i,j,k,l used for RNP entries	dddd	Field 925 is used to provide accuracy values for both Area navigation (RNAV) and Required Navigation Performance (RNP), expressed in hundredths (.01) nm. The allowable range is 0001-9999. If the value is 0 then the field is not included.		
925a	RNV Arrival Type Value	dddd	Area Navigation (RNAV) accuracy value for the arrival phase of flight expressed in hundredths (.01) nm. The allowable range is 0001-9999. If the value is 0 then the field is not included.	0100 (represents accuracy of 1.0 nm.) 0030 (represents accuracy of 0.3 nm.)	4

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
925b	RNV En Route Type Value	dddd	Area Navigation (RNAV) accuracy value for the en route phase of flight expressed in hundredths (.01) nm. The allowable range is 0001-9999. If the value is 0 then the field is not included.	0100 (represents accuracy of 1.0 nm.) 0030 (represents accuracy of 0.3 nm.)	4
925c	RNV Oceanic Type Value	dddd	Area Navigation (RNAV) accuracy value for the oceanic phase of flight expressed in hundredths (.01) nm. The allowable range is 0001-9999. If the value is 0 then the field is not included.	0100 (represents accuracy of 1.0 nm.) 0030 (represents accuracy of 0.3 nm.)	4
925d	RNV Departure Value	dddd	Area Navigation (RNAV) accuracy value for the departure phase of flight expressed in hundredths (.01) nm. The allowable range is 0001-9999. If the value is 0 then the field is not included.	0100 (represents accuracy of 1.0 nm.) 0030 (represents accuracy of 0.3 nm.)	4
925e	RNV Spare 1 Type Value	dddd	RNV spare 1		4
925f	RNV Spare 2 Type Value	dddd	RNV spare 2		4

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
925g	RNP Arrival Type Value	dddd	Required Navigation Performance (RNP) accuracy value for the arrival phase of flight expressed in hundredths (.01) nm. The allowable range is 0001-9999. If the value is 0 then the field is not included.	0100 (represents accuracy of 1.0 nm.) 0030 (represents accuracy of 0.3 nm.)	4
925h	RNP En Route Type Value	dddd	Required Navigation Performance (RNP) accuracy value for the en route phase of flight expressed in hundredths (.01) nm. The allowable range is 0001-9999. If the value is 0 then the field is not included.	0100 (represents accuracy of 1.0 nm.) 0030 (represents accuracy of 0.3 nm.)	4
925i	RNP Oceanic Type Value	dddd	Required Navigation Performance (RNP) accuracy value for the oceanic phase of flight expressed in hundredths (.01) nm. The allowable range is 0001-9999. If the value is 0 then the field is not included.	0100 (represents accuracy of 1.0 nm.) 0030 (represents accuracy of 0.3 nm.)	4

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
925j	RNP Departure Value	dddd	Required Navigation Performance (RNP) accuracy value for the departure phase of flight expressed in hundredths (.01) nm. The allowable range is 0001-9999. If the value is 0 then the field is not included.	0100 (represents accuracy of 1.0 nm.) 0030 (represents accuracy of 0.3 nm.)	4
925k	RNP Spare 1 Type Value	dddd	RNP spare 1		4
925l	RNP Spare 2 Type Value	dddd	RNP spare 2		4
Field 999	Adapted Field 918 Indicators a through y.	L(L)(L)(L)/(free-form string of character text)	999 contains the data in the 1st adapted 918 indicator thru the data in the 25th adapted 918 Indicator.		
999 a – y	Adapted Field ICAO 18 Indicators a through y.	L(L)(L)(L)/(free-form string of character text) Contents of 1st element 918 through 25th element 918.	Elements a thru y are the data that is present for the optionally adapted element 918 indicators that are transmitted to CMS, when applicable, using a Field Reference Number of 999, with elements a thru y.		1–3000

ICAO Fields 03 through 22

Notes:

1. An FPL is the ICAO Filed Flight Plan Message for a proposed flight. An FPL is broadcast to all Flight Information Region (FIR)s that the flight will enter. The sequence of fields for an ICAO FPL Message is:

   03a-07a-08a (08b)-(09a) 09b 09c-10a 10b-13a 13b-15a 15b 15c-16a 16b (16c)-18a

   Reference Table 1 - ICAO FPL and Field Description for an overview of how the ICAO fields and elements are used in an FPL message.

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
2. ICAO fields are separated by a dash "-" character. ICAO elements within a field are generally separated by a space or an oblique stroke "/". All field elements are required unless specifically noted as "optional" or "not included" in a message type.					
ICAO 03	ICAO Message Type, Number and Reference Data a = Message Type Designator b = Message Number c= Reference Data	LLL $\boxed{\text{L(L)(L)(L) / L(L)(L)(L)ddd}}$ a b L(L)(L)(L) / L(L)(L)(L)ddd c.	ICAO 03 contains message type, location identifiers of the sending and receiving facilities, and a message number.		
ICAO 03 a.	ICAO Message Type, Number and Reference Data a = Message Type Designator	LLL	Element 03a is the type of ICAO message expressed as a 3 character message type, i.e., FPL, etc.	These examples show the message type: **$\boxed{\text{FPL}}$ABC/KZHU054**	3
ICAO 03 b.	ICAO Message Type, Number and Reference Data b = Message Number	L(L)(L)(L) / L(L)(L)(L)ddd	Element 03b is the location identifier of the sending and receiving facilities and also includes the serial number of the message. The format is 1 to 4 characters each for the sending and receiving facilities separated by an oblique stroke (L(L)(L)(L)/L(L)(L)(L)), followed by the serial number (ddd) expressed in hundreds, tens and units.	The example below shows a sending facility ID of MMEX and a receiving facility of KZHU. The message serial number is 001: **MMEX/ZHU001** The example below shows an ICAO FPL message. The sending facility ID is ABC and the receiving facility is KZHU. The message serial number is 054: **FPL$\boxed{\text{ABC}}$/KZHU$\boxed{\text{054}}$**	6–12 include -ing "/"

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
ICAO 03 c.	ICAO Message Type, Number and Reference Data c = Reference Data	L(L)(L)(L) / L(L)(L)(L)ddd	Element 3c contains the sending or receiving ATS Unit, the receiving or sending ATS Unit, depending on the message type, and the message number (from element 3b) which began the sequence of messages of which this message is a part. The format is 1 to 4 characters with the sending or receiving ATS Unit, an oblique stroke character "/", followed by 1 to four characters with the receiving or sending ATS Unit and a three-digit message number.	The example below shows a sending facility ID of MMMD and a receiving facility of KZHU. The message serial number is 294: **FPL$\boxed{\text{MMMD/KZHU294}}$**	6–12 include -ing "/"
ICAO 07	ICAO Aircraft Identification and Beacon Code (Mode A Code) a = Aircraft Identification"/" b = Beacon CodeMode (SSR Mode) c = Beacon Code (SSR Code)	**For a FPL:** Laa(a) (a)(a)(a)($\boxed{\text{/A}}$dddd) a. b. c. or Ld($\boxed{\text{/A}}$dddd) a. b. c.	ICAO 07 contains the ICAO aircraft ID, ICAO beacon code mode and ICAO beacon code. The optional Field 07bc beacon code is expressed as an SSR mode indicator followed by the octal beacon code.		

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
ICAO 07 a.	ICAO Aircraft Identification and Beacon Code (Mode A Code) a = Aircraft Identification	Laa(a)(a)(a)(a) or Ld	Element 07a is the aircraft Identifier as filed in a ICAO flight plan expressed as one letter followed by two to six alphanumerics, or as one letter followed by one digit.	This example shows the aircraft id: **TWA902** **UA420/A5101** **M4**	2–7
	"/"		Oblique stroke ("/") is used as separator.		1
ICAO 07 b.	ICAO Aircraft Identification and Beacon Code (Mode A Code) b. Beacon Code Mode (SSR Mode)	A	Element 07b of the optional elements 07bc is the beacon code SSR mode expressed as 1 character that is always the letter "A". This data is not stored.	This example shows the SSR mode and beacon code: **UA420/A5102**	1
ICAO 07 c.	ICAO Aircraft Identification and Beacon Code (Mode A Code) c. Beacon Code (SSR Code)	dddd	Element 07c of optional elements 07bc is the SSR code assigned to the aircraft expressed as 4 octal digits.	This example shows only the beacon code: **TWA902/A5103**	4

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
ICAO 08	ICAO Flight Rules and Type of Flight a = Flight Rules b = Type of Flight	L a. or L$\boxed{L}$ a.b. Element 08b is optional.	ICAO 08 contains the ICAO flight rules and ICAO type of flight.		
ICAO 08 a.	ICAO Flight Rules and Type of Flight a = Flight Rules	L	Element 08a is the ICAO flight rules expressed in a single character which must be one of the following: I IFR V VFR Y IFR First Z VFR First **Note**: If Y or Z is used, the point or points at which a change of flight rules is planned should be shown in Field 15c."	This example shows the ICAO flight rules of VFR: $\boxed{\mathbf{V}}$	1
ICAO 08 b.	ICAO Flight Rules and Type of Flight b = Type of Flight	(L)	Optional element 08b is the type of flight expressed in a single character which must be one of the following: S Scheduled air transport N Non-scheduled air transport G General aviation M Military X Other flights	This example shows the type of flight: **I**$\boxed{\mathbf{S}}$	1

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
ICAO 09	ICAO Number, Type of A/C and Special A/C Indicator (Wake Turbulence Cat.) a = Number of Aircraft b = Type of Aircraft c = Special Aircraft Indicator (Wake Turbulence Category)	$\boxed{d(d)}$La(a)(a)$\boxed{/L}$ a. b. c. Element 09a is optional.	ICAO 09 contains the ICAO number of aircraft, ICAO type of aircraft, and ICAO Wake Turbulence Category.		
ICAO 09 a.	ICAO Number, Type of A/C and Special A/C Indicator (Wake Turbulence Cat.) a = Number of Aircraft	(d(d))	Optional element 09a is the number of aircraft in the flight expressed as one or two digits if the number is greater than 1.	This example shows the ICAO number: **$\boxed{2}$DC3/M** **$\boxed{24}$B707/M**	0–2
ICAO 09 b.	ICAO Number, Type of A/C and Special A/C Indicator (Wake Turbulence Cat.) b = Type of Aircraft	La(a)(a)------------------------------- -	Element 09b is the authorized aircraft type expressed as 1 letter followed by 1 to 3 alphanumerics. If this element contains ‘ZZZZ’ the actual data should be in the corresponding indicator (TYP/) of ICAO Field 18. (Used when the data does not meet ICAO requirements.)	This example shows the aircraft type: **2$\boxed{DC3}$/M** **$\boxed{B747}$/H** **$\boxed{ZZZZ}$/L**	2–4
	“/”		Oblique stroke ("/") is used as separator.		1

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
ICAO 09 c.	ICAO Number, Type of A/C and Special A/C Indicator (Wake Turbulence Cat.) c = Wake Turbulence Category	L	Element 09c is the one-character ICAO wake turbulence category which must be one of the following: H Heavy M Medium L Light	This example shows the wake turbulence category: **2DC3/$\boxed{\text{M}}$** **24B707/$\boxed{\text{M}}$** **B747/$\boxed{\text{H}}$** **ZZZZ/$\boxed{\text{L}}$**	1
ICAO 10	ICAO Equipment a = Airborne Equipment Qualifier (Radio Communication, Navigation, and Approach AID Equipment and Capability) b = Airborne Equipment Qualifier (Surveillance Equipment and Capability)	L or (L or Ld)...(L or Ld)/L or (L or Ld … (L or Ld)	ICAO 10 contains the ICAO airborne equipment qualifiers, i.e., radio, navigation and approach AID equipment and capabilities, and ICAO surveillance equipment and capabilities.		
ICAO 10 a,	ICAO Equipment a = Airborne Equipment Qualifier (Radio Communication, Navigation, and Approach AID Equipment and	N or S or (L or Ld)(L or Ld)... (L or Ld) up to a maximum of 64 characters.	Element 10a is the ICAO Airborne Equipment Qualifier for Radio Communications, Navigation, and Approach AID Equipment and Capabilities. See Amendment 1 to ICAO 4444 for more details. N – No equipment is carried, or	**$\boxed{\text{ADE3RV}}$**	1–64

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
	Capabilities)		equipment is unserviceable. S – Standard equipment is carried and is serviceable. And/Or A – GBAS landing system B – LPV (APV with SBAS) C – LORAN C D – DME E1 – FMC WPR ACARS E2 – D-FIS ACARS E3 – PDC ACARS F – ADF G – GNSS H – HF RTF I – Inertial Navigation J1 – CPDLC ATN VDL Mode 2 J2 – CPDLC FANS 1/A HFDL J3 – CPDLC FANS 1/A VDL Mode A J4 – CPDLC FANS 1/A VDL Mode 2 J5 – CPDLC FANS 1/A SATCOM (INMARSAT) J6 – CPDLC FANS 1/A SATCOM		

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
			(MTSAT) J7 – CPDLC FANS 1/A SATCOM (Iridium) K – MLS L – ILS M1 – ATC RTF SATCOM (INMARSAT) M2 – ATC RTF (MTSAT) M3 – ATC RTF (Iridium) O – VOR P1-P9 – Reserved for RCP R – PBN approved T – TACAN U – UHF RTF V – VHF RTF W – RVSM approved X – MNPS approved Y – VHF with 8.33-kHz spacing cap. Z – Other equipment carried.		
	"/"		Oblique stroke ("/") is used as separator.		1
ICAO 10 b,	ICAO Equipment b = Airborne	N or L or Ld…(L or Ld)	Element 10b is the ICAO Airborne Equipment Qualifier for Surveillance	$\boxed{\textbf{HB2U2V2G1}}$	1–20

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
	Equipment Qualifier (Surveillance Equipment and Capabilities)	One or more letters or letter digits, up to a maximum of 20 characters.	Equipment and Capabilities. See Amendment 1 to ICAO 4444 for more details. ICAO18 SUR/ is used for additional equipment. N - No surveillance equipment or equipment unserviceable. Or **SSR Modes A and C** A - Transponder Mode A C - Transponder Mode A and C **SSR Mode S** E - Transponder - Mode S, including aircraft identification, pressure-altitude and extended squitter (ADS-B) capability. H - Transponder - Mode S, including aircraft identification, pressure-altitude and enhanced surveillance capability. I - Transponder - Mode S, including aircraft identification, but no pressure-altitude capability. L – Transponder - Mode S, including aircraft identification, pressure-altitude, extended squitter (ADS-B) and enhanced surveillance capability.		

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			P - Transponder **-** Mode S, including pressure-altitude, but no aircraft identification**.** S - Transponder **-** Mode S, including both pressure altitude and aircraft identification capability. X - Transponder **-** Mode S with neither aircraft identification nor pressure-altitude capability**.** **ADS-B** B1 - ADS-B with dedicated 1090-MHz ADS-B “out” capability. B2 - ADS-B with dedicated 1090-MHz ADS-B “out” and “in” capability U1 - ADS-B “out” capability using UAT. U2 - ADS-B “out” and “in” capability using UAT. V1 - ADS-B “out” capability using VDL Mode 4**.** V2 **-** ADS-B “out” and “in” capability using VDL Mode 4**.** **ADS-C**		

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			D1 **-** ADS-C with FANS 1/A capabilities**.** G1 **-** ADS-C with ATN capabilities**.** **Note:** If ICAO10b contains the value N, no other values can be included. ICAO10b cannot contain more than one of the following values: A, C, E, H, I, L, P, S, or X. ICAO10b cannot contain both B1 and B2, or both U1 and U2, or both V1 and V2, or any duplicate ADS-B values.		
ICAO 13	ICAO Departure Point (Aerodrome) and Time a = Departure Point(Departure Aerodrome) b = Estimated Departure Time	Departure aerodrome name and departure time: Laaa(dddd) a b	ICAO 13 contains the ICAO departure point and estimated or actual time of departure.		
ICAO 13 a.	ICAO Departure Point (Aerodrome) and Time a = Departure Point (Departure Aerodrome)	Aerodrome name: Laaa	Element 13a is the departure point aerodrome name Laaa. If this element contains “ZZZZ” the actual data should be in the corresponding indicator (DEP/) of ICAO Field 18. (Used when the data does not meet ICAO requirements.)	The following example shows an ICAO airport name: **KDFW**	4

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			"AFIL" is not valid in FPLs.		
ICAO 13 b.	ICAO Departure Point (Aerodrome) and Time b = Estimated Departure Time	dddd	Element 13b is estimated departure time in hours and minutes. The estimated off-block time before departure. Used in the DLA (delay) message to revise the estimated off-block time (previously received FPL message). Actual time of departure in DEP messages	The following examples show departure time: **EHAM0730**	4
ICAO 15	ICAO Route a = Speed (Cruising Speed or Mach number) b = Requested Altitude (Cruising Level) c = Route Data (Route)	Ref: 15a Ref: 15b Ref: 15c a. **b.** c.	ICAO 15 contains the ICAO Route Data which includes speed, requested altitude, and route.		

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
ICAO 15 a.	ICAO Route a = Speed (Cruising Speed or Mach number)	Lddd(d) or LL = SC	Element 15a is the Cruising Speed or Mach Number which is expressed as one character (L), where **N** means true airspeed in knots and **M** means the Mach number to the nearest hundredth of unit Mach, followed by 3 to 4 digits (ddd(d)) indicating the speed. Or Element 15a is a classified speed which is expressed as two characters (SC), where **SC** means the Speed is Classified.	The following examples show true airspeed: **N0410F150 A4 CCV R11** This example shows a Mach number: **M082A120 BR 614** This example shows a classified speed SC : **SCABV/600 BR 614**	2–5
ICAO 15 b.	ICAO Route b = Requested Altitude (Cruising Level)	The requested altitude is in one of the following formats: Lddd LdddBddd where L = F or A (d)dd (d)ddB(d)dd OTP OTP/(d)dd ABV/(d)dd VFR VFR/(d)dd	Element 15b contains the requested altitude (cruising level) expressed as follows: Lddd, where **F** followed by three digits is Flight Level Number, **A** followed by three digits shows altitude in hundreds of feet, or LdddBddd, where **F** followed by 3 digits is Flight Level Number, followed by a **B** indicating Blocked altitude followed by 3 digits is a higher Flight Level Number, **A** followed by 3 digits shows altitude in hundreds of feet, followed by a **B** indicating Blocked altitude followed by	The following example shows the flight level number: **N0410F150 A4 CCV R11** **N0410F180B200 A4 CCV R11** The following example shows altitude: **M082A120 BR 614** **N0410A090B100 A4 CCV R11** The following example shows NAS altitude formats: **N041090 A4 CCV R11**	2–8

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
			3 digits is a higher altitude in hundreds of feet, The following NAS formats are allowed: (d)dd (d)ddB(d)dd OTP OTP/(d)dd ABV/(d)dd VFR VFR/(d)dd See in this table above “Field 09” for format checking and requirements.	**M082$\boxed{\text{120}}$ BR 614** **N0410$\boxed{\text{80B90}}$ A4 CCV R11** **N0410$\boxed{\text{100B110}}$ A4 CCV R11** **N0410$\boxed{\text{OTP}}$ A4 CCV R11** **N0410$\boxed{\text{OTP/150}}$ A4 CCV R11** **N0410$\boxed{\text{ABV/600}}$ A4 CCV R11** **N0410$\boxed{\text{VFR}}$ A4 CCV R11** **N0410$\boxed{\text{VFR/125}}$ A4 CCV R11**	
ICAO 15 c.	ICAO Route c = Route Data (Route)	See sub-elements c1 through c7.	Element 15c is the ICAO route. This element is comprised of sub-elements c1 through c7. **The elements of ICAO Field 15c are separated by spaces.**		
ICAO 15 c1.	ICAO Route c1 = Standard Instrument Departure (SID)	aa(a)(a)(a)(a)(a)	Sub-element c1 is the designator for the SID Route from the departure point to the first fix on the defined route to be flown expressed as two to seven alphanumerics (aa(a)(a)(a)(a)(a)). Sub-element c1 may be followed by c3 or c4.	The following example shows the ICAO route designator for a SID: **LEK2B**	2–7

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
ICAO 15 c2.	ICAO Route c2 = Airway/ Coded Route (ATS Route Designator)	aa(a)(a)(a)(a)(a)(a)	Sub element c2 is the designator assigned to a route to be flown expressed as two to eight alphanumerics aa(a)(a)(a)(a)(a)(a). Sub-element c2 may be followed by c3 or c4.	The following example shows an ICAO coded route designator: **BCN1G**	2–8
ICAO 15 c3.	ICAO Route c3 = Fix (Significant Point)	This format for 15 c3. Fix (Significant Point) is represented as one of the following: aa(a)(a)(a) Fix Name or aa(a)(a)(a)dddddd Fix radial distance or ddddLdddddL Lat/Lon or ddLdddL Abbr. Lat/Lon /D(d)d+dd Delay Data, may be suffixed to any of the above formats.	Sub-element c3 is the Fix Significant Point expressed as one of the following: 1. Fix name (designator assigned to an en route point) expressed as 2 to 5 alphanumerics. A four character fix name must include at least one letter. 2. Fix-Radial-Distance (Bearing and distance from a designated point) expressed as 2 to 5 alphanumerics representing a fix name followed by 6 digits representing the radial (in degrees) and distance (in NM). 3. Latitude and Longitude (Geographical coordinates in degrees and minutes) expressed as four digits plus a character indicating compass point followed by five digits plus a character. 4. Abbreviated Latitude and Longitude (Abbreviated geographical coordinates in degrees only) expressed as two digits plus a character indicating compass point	The following example shows a fix name: **LEK** The following example shows a fix radial distance: **F0J180040** The following example shows a lat/lon: **4620N07805W** The following example shows an abbreviated lat/lon: **46N078W** The following example shows a fix name with Delay Data: **LEK/D0+20**	Fix 2–12 Delay Data 6–7

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
			followed by three digits plus a character. **Note**: Delay Data, /D(d)d+dd, can be suffixed to a sub-element c3 fix.		
ICAO 15 c4.	ICAO Route c4 = **Fix (Significant Point)**/, Cruising Speed and Cruising Level	One of the following fix formats: aa(a)(a)(a) Fix Name ddddLdddddL Lat/Lon ddLdddL Abbr. Lat/Lon aa(a)(a)(a)dddddd FRD	Sub-element c4 contains the Fix Significant Point which includes one of the following fields: 1. Fix name (Coded designator assigned to an en route point). A four character fix name must include at least one letter. 2. Latitude and Longitude (Geographical coordinates) (degrees and minutes) 3. Abbreviated Latitude and Longitude (Abbreviated geographical coordinates) (degrees only) 4. Fix-Radial-Distance (Bearing and distance from a designated point)	The following example shows a fix name format: **$\boxed{\text{DIN}}$/N0420F330** The following example shows a lat/lon format: **$\boxed{\text{4602N07805W}}$/N0500F350**	2–11
	"/"	Oblique stroke ("/")	Oblique stroke ("/") is used as a separator.		1
ICAO 15 c4.	ICAO Route c4 = Fix (Significant Point)/, **Cruising Speed** and Cruising Level	One of the following speed formats: Lddd(d) where L = N or M or Ldddd where L = K	True Air Speed for the Cruising Speed of the flight, in terms as follows: Kilometres per hour, expressed as **K** followed by 4 figures (e.g., K0830), or Knots, expressed as **N** followed by 4 figures (e.g., N0485), or	The following example shows true airspeed: **DIN/$\boxed{\text{N0420}}$F330** The following example shows Mach number: **LEK/$\boxed{\text{M082}}$A120**	4–5

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
			Mach number, when so prescribed by the appropriate ATS authority, to the nearest hundredth of unit Mach, expressed as **M** followed by 3 figures (e.g., M082). Sub-element c4 indicates a planned change to the speed and/or altitude at the fix.	The following example shows kilometers per hour: The following example shows speed: **LEK/$\boxed{\text{K0830}}$S11300**	
ICAO 15 c4.	ICAO Route c4 = Fix (Significant Point)/, Cruising Speed and **Cruising Level**	And one of the following requested altitude formats: Lddd(d) where L = F, S, A, OR M or VFR	Requested Cruising Levels of the flight in terms as follows: The planned cruising level for the first or the whole portion of the route to be flown, in terms of: Flight level, expressed as **F** followed by 3 figures (e.g., F085; F330), or Standard Metric Level in tens of metres, expressed as **S** followed by 4 figures (e.g., S1130), or Altitude in hundreds of feet, expressed as **A** followed by 3 figures (e.g., A045; A100), or Altitude in tens of metres, expressed as **M** followed by 4 figures (e.g., M0840),	The following example shows flight level number: **DIN/N0420$\boxed{\text{F330}}$** The following example shows altitude: **LEK/M082$\boxed{\text{A120}}$** The following example shows standard metric level: **LEK/M082$\boxed{\text{S1130}}$** The following example shows altitude in tens of metres: **LEK/M082$\boxed{\text{M1000}}$** The following example shows VFR altitude: **LEK/N0420VFR**	4–5

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			or VFR		
ICAO 15 c5.	ICAO Route c5 = Indicator	L(LL)	Sub-element c5 is an Indicator which is expressed as one of the following: 1. VFR - if a change to VFR is to be made at the preceding point, 2. IFR - if a change to IFR is to be made at the preceding point, 3. DCT 4. T DCT is direct flight between points FIXA to FIXB. However, the DCT may be omitted if both points are FRDs or LAT/LONG. “T” means the route description is truncated at the preceding point. Element (c5) may follow (c3) or (c4) and (c6) only.	The following example shows an IFR indicator: **LN/N0284A050 IFR**	1–3

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
ICAO 15 c6.	ICAO Route c6 = Cruise Climb	L / (See 15c4=**Fix (Significant Point)**) / (See 15c4 **Cruising Speed** .) (See 15c4 **Cruising Level** .) Followed by: [15c4 **Cruising Level** or LLLL]	Sub-element c6 is the Cruise Climb data expressed as follows: • The letter C followed by an oblique stroke; then the point at which cruise climb is planned to start, expressed exactly as in sub-element 15c4=**Fix (Significant Point)**, • Followed by an oblique stroke; then the speed to be maintained during cruise climb expressed exactly as in element 15c4 **Cruising Speed**, • Followed by the two levels defining the layer to be occupied during cruise climb; each level expressed as in element 15c4 **Cruising Level**, or the level above which cruise climb is planned, followed by the letters PLUS, without a space between them.	Lat/lon Mach Levels **C/48N050W/M082F290F350** **C/52N050W/M220F580PLUS**	1 1 2–11 1 4–5 4–5 4–5
ICAO 15 c7.	ICAO Route c7 = Standard Terminal Arrival Route (Standard Arrival Route) (STAR)	aa(a)(a)(a)(a)(a)	Sub-element c7 is the designator for the Standard Terminal Arrival Route (STAR) from the point of leaving the defined route to the point at which the approach procedure is initiated. The format is expressed as two to seven alphanumerics designating the STAR.	The following example shows the ICAO route designator for a STAR: **UR1**	2–7

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
ICAO 16	ICAO Arrival Point (Destination Aerodrome), Total Estimated Elapsed Time. Alternate Arrival Point(s) (Aerodrome(s)) a = Arrival Point (Destination Aerodrome) b = Estimated Time En Route (ETE) (Total Estimated Elapsed Time) c = Alternate Arrival Point(s) (Aerodrome(s))	$\boxed{\text{Laaa}}$dddd($\boxed{\text{LLLL)}}$ a. b. c. Element 16c is optional in an FPL. No space between element 16a and 16b. A space is added between 16b and 16c.	ICAO 16 contains the arrival point information which includes the destination aerodrome, estimated time en route, and alternate aerodrome, if any.		
ICAO 16 a.	ICAO Arrival Point (Destination Aerodrome), Total Estimated Elapsed Time. Alternate Arrival Point(s) (Aerodrome(s)) a = Arrival Point (Destination Aerodrome)	The aerodrome is expressed in the following field format: Laaa – aerodrome name	(a) Destination Aerodrome Four alphanumeric characters with the first being a letter, being the four-letter location indicator allocated to the destination aerodrome, or ZZZZ if no location indicator has been allocated. **Note**: If ZZZZ is used, the name of the destination aerodrome is to be shown in the Other Information Field (see Field Type 18 following the corresponding indicator (DEST/)).	The following examples show the arrival point expressed as a fix name: **$\boxed{\text{EINN}}$0630** **$\boxed{\text{EHAM}}$0645 EBBR EDDL**	4

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
ICAO 16 b.	ICAO Arrival Point (Destination Aerodrome), Total Estimated Elapsed Time. Alternate Arrival Point(s) (Aerodrome(s)) b = Estimated Time En Route (Total Estimated Elapsed Time)	dddd	Element 16b is the total estimated time en route expressed in for digits representing hours and minutes.	The following examples show the time en route in hours and minutes: **EINN$\boxed{0630}$** **EHAM$\boxed{0645}$ EBBR EDDL**	4
ICAO 16 c.	ICAO Arrival Point (Destination Aerodrome), Total Estimated Elapsed Time. Alternate Arrival Point(s) (Aerodrome(s)) c = Alternate Arrival Point(s) (Aerodrome(s))	The aerodrome is expressed in one of the following field formats: LLLL – ICAO name ERAM allows the following for the alternate arrival points: Fix formats include: aa(a)(a)(a), for fix name or aa(a)(a)(a)dddddd, for fix radial distance or dddd(L)/(d)dddd(L), for lat/long	(c) Alternate Aerodrome(s) 4 LETTERS, being the **ICAO** four-letter location indicator allocated to an alternate aerodrome, or ZZZZ if no ICAO location indicator has been allocated. **Note:** If ZZZZ is used, the name of the alternate aerodrome is to be shown in the Other Information Field (see Field Type 18 following the corresponding indicator (ALTN/)). **Note:** One further element of (c) should be added, as necessary, preceded by a space. ICAO length = 4-9 characters. ERAM length = 2-25 characters, only for the ATM IPOP interface.	The following examples show the alternate expressed as a LLLL ICAO name: EHAM0645 $\boxed{\text{EBBR EDDL}}$	2–25

<table>
<tr><th colspan="6">Table C-III. Common Appendix Message Field Formats</th></tr>
<tr><th>Field Ref. No.</th><th>Field Number and Field Name</th><th>Field Format</th><th>Description</th><th>Example</th><th>No. of Bytes</th></tr>
<tr><td>ICAO 18</td><td>ICAO Other Information (OTH)

The valid indicators for Field 18a – z are as follows:

a = 0
b = STS/
c = PBN/
d = NAV/
e = COM/
f = DAT/
g = SUR/
h = DEP/
i = DEST/
j = DOF/
k = REG/
l = EET/
m = SEL/
n = TYP/
o = CODE/
p = DLE/
q = OPR/
r = ORGN/
s = PER/
t = ALTN/
u = RALT/
v = TALT/
w = RIF/
x = RMK/
y = IRMK/
z = L(L)(L)(L)/</td><td>d = 0 (no OTH information)
a
or
LLL(L)/free-form text
b – z

Field 18b – z elements contain one or more elements in the format:

LLL(L)/(free-form string of character text)

Each indicator must be preceded by a space character (unless the valid indicator is at the beginning of ICAO 18, where it does not have to be preceded by a space character) and followed by a slash character.

There must be data, which can be preceded by one or more spaces, following each valid indicator except for IRMK/ and RMK/, which are ignored when data is not present.</td><td>ICAO Field 18a with a zero, indicates the flight plan does not have any Field 18b – z elements.

Field 18 elements b – z must begin with one or more of the following three- to four-letter indicators, or one of the adapted indicators, followed by an oblique stroke (/) and free-form text relevant to the indicator. The indicator is one of the following:

b. STS/
c. PBN/
d. NAV/
e. COM/
f. DAT/
g. SUR/
h. DEP/
i. DEST/
j. DOF/
k. REG/
l. EET/
m. SEL/
n. TYP/
o. CODE/
p. DLE/
q. OPR/
r. ORGN/
s. PER/
t. ALTN/
u. RALT/
v. TALT/</td><td></td><td>Note: Spaces preceding data not included in number of bytes.</td></tr>
</table>

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
			w. RIF/ x. RMK/ y. IRMK/ z. L(L)(L)(L)/		
ICAO 18 a.	ICAO Other Information (OTH) a = 0	d	ICAO Field 18a with a zero, indicates the flight plan does not have any Field 18b – z elements.	**0** **No Field 18 Other Information.**	1
ICAO 18 b.	b. STS/	LLL/(string of character text) The following are the only valid special handling indicators: ALTRV ATFMX FFR FLTCK HAZMAT HEAD HOSP HUM MARSA MEDEVAC NONRVSM SAR STATE	Reason for Special Handling	**STS/$\boxed{\text{ALTRV}}$**	1–3000

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
ICAO 18 c.	c. PBN/	LLL/Ld(Ld)(Ld)(Ld)(Ld)(Ld)(Ld)(Ld) **Note:** RNAV capabilities are 2 characters each: A1, B1 through B6, C1 through C4, D1 through D4. RNP capabilities are 2 characters each: L1, O1 through O4, S1, S2, T1, T2. As many as 8 sets of characters can be included.	Indication of RNAV or RNP capability	**PBN/B1O1**	2–16
ICAO 18 d.	d. NAV/	LLL/(free-form string of character text)	Navigation Equipment Data Used for additional Navigation equipment not specified in 10a	**NAV/GBAS**	1–3000
ICAO 18 e.	e. COM/	LLL/(free-form string of character text)	Communication Equipment Data Used for additional Communication equipment not specified in 10a	**COM/260B**	1–3000
ICAO 18 f.	f. DAT/	LLL/(free-form string of character text)	Data Link Capability Used for additional Data Link equipment not specified in 10a.	**DAT/S**	1–3000
ICAO 18 g.	g. SUR/	LLL/(free-form string of character text)	Surveillance applications or capabilities not specified in 10b	**SUR/282B**	1–3000

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
ICAO 18 h.	h. DEP/	LLL/(free-form string of character text)	Non-standard Departure Aerodrome or ATS Unit If "ZZZZ" used in Field 13a.	**DEP/NORTON Field4620N07805W**	1–3000
ICAO 18 i.	i. DEST/	LLLL/(free-form string of character text)	Non-standard Destination Aerodrome If "ZZZZ" used in Field 16a.	**DEST/MILLSPAW FARM4250N08315W**	1–3000
ICAO 18 j.	j. DOF/	LLL/(dddddd) where dddddd represents YYMMDD or LLL/(free-form string of character text)	Date of Flight YYMMDD Used (optionally) for the CHG, CNL, DEP, DLA messages sent using the ICAO2012 format. Use for all other messages using the ICAO2012 format.	**DOF/100727**	1–3000
ICAO 18 k.	k. REG/	LLL/(free-form string of character text)	Aircraft Registration	**REG/N5258E**	1–3000
ICAO 18 l.	l. EET/	LLL/(free-form string of character text)	Estimated Elapsed time to Significant Point or FIR Boundary The "EET/" consists of one or more Significant Points with appended estimated flying time from departure in hhmm format with a blank separating each occurrence of Significant Point and time.	**EET/KZNY0046 HUBE0213**	1–3000
ICAO 18 m.	m. SEL/	LLL/(free-form string of character text)	SELCAL Code	**SEL/ACHA** **SEL/BRLM**	1–3000

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
ICAO 18 n.	n. TYP/	LLL/(free-form string of character text)	Type(s) of Aircraft If "ZZZZ" used as Field 9b.	**TYP/CESSNA 140**	1–3000
ICAO 18 o.	o. CODE/	LLLL/hhhhhh (6 hexadecimal digits)	Aircraft Address	**CODE/45FA16**	6
ICAO 18 p.	p. DLE/	LLL/(free-form string of character text)	En Route delay or holding point(s), followed by length of delay (hhmm)	**DLE//MDG0030**	1–3000
ICAO 18 q.	q. OPR/	LLL/(free-form string of character text)	Aircraft Operator	**OPR/UAL**	1–3000
ICAO 18 r.	r. ORGN/	LLLL/(free-form string of character text)	Originator's eight-letter AFTN address or other significant contact details	**ORGN/ LEBBYNYX**	1–3000
ICAO 18 s.	s. PER/	LLL/L	Aircraft Performance Data Single valid letter specified in PAN-OPS 8168 Volume 1 A - Indicated airspeed (IAS) less than 169 km/h (91 kt) B - IAS between 169 km/h (91 kt) and 224 km/h (121 kt) C - IAS between 224 km/h (121 kt) and 261 km/h (141 kt) D - IAS between 261 km/h (141 kt) and 307 km/h (166 kt) E - IAS between 307 km/h (166 kt) and 391 km/h (211 kt) H - Helicopters	**PER/C**	1–3000

Table C-III. Common Appendix Message Field Formats					
Field Ref. No.	**Field Number and Field Name**	**Field Format**	**Description**	**Example**	**No. of Bytes**
ICAO 18 t.	t. ALTN/	LLLL/(free-form string of character text)	Alternate Destination Aerodrome(s) If "ZZZZ" used as Field 16c.	**ALTN/KRAFFT FARM**	1–3000
ICAO 18 u.	u. RALT/	LLLL/(free-form string of character text)	En Route Alternate Aerodrome(s)	**RALT/JB RANCH**	1–3000
ICAO 18 v.	v. TALT/	LLLL/(free-form string of character text)	Takeoff Alternate Aerodrome	**TALT/KRAFFT FARM**	1–3000
ICAO 18 w.	w. RIF/	LLL/(free-form string of character text)	Route to Revised Destination Aerodrome	**RIF/ DTA HEC KLAX**	1–3000
ICAO 18 x.	x. RMK/	LLL/(free-form string of character text)	Intercenter Remarks. There can be a maximum of 20 RMK/Indicators present in ICAO 18.	**RMK/ICAO KRAFT M080F380 HUBER N0464F380**	1–3000
ICAO 18 y.	y. IRMK/	LLLL/(free-form string of character text)	Intracenter Remarks. IRMK/ is only processed in an FPL that is an internal departure.		1–3000
ICAO 18 z.	z. L(L)(L)(L)/ (adapted name)	L(L)(L)(L)/(free-form string of character text)	Optionally Adapted Indicator(s) such as RVR/		1–3000
Example of ICAO Field 18 LLL(L)/ indicators: **ICAO Field 18 examples:** **COM/U REG/N24736 EET/TXKF0116 KZNY0150 TJZS0240 TTZP0332 SEL/JPFH**					

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
ICAO 22	ICAO Amendment a = Field Indicator Oblique Stroke = / b = Amended Data	d(d)/amended data a b	ICAO Field 22 element a must be one of the digits that represent the ICAO FPL message Fields 7, 8, 9, 10, 13, 14, 15, 16, or 18 followed by an oblique stroke. The data after the oblique stroke "/" element b contains the complete and amended data of the field indicated before the oblique stroke d(d). ICAO Field 22 is used in the ICAO CHG message.	Example of ICAO 22 usaeage: 9/B777/H 8/IS 7/AAL7 **(CHG-AAL8-KDFW-RJAA-7/AAL7-8/IS-9/B777/H)**	Vari-able

Table 1. ICAO FPL and Field Definitions

Example ICAO FPL:

FPL-AAL293-IS-B763/M-SD/S-KORD2345-N0447F310 DCT RBS DCT FAM J137 LIT J131 TXK DCT CWK DCT LRD DCT NLD UJ11 MTY DCT-MMMY0246 KSAT-EET/KZHU0155 KZHU0223 MMTY0225 SEL/KLJM REG/N241AA

ICAO Element/Indicator:		**Associated Element Data From FPL Example:**
ICAO 03a	(Message Type)	FPL
ICAO 07a		AAL293
ICAO 08a		I
08b		S
ICAO 09b		B763
09c		/M
ICAO 10a		SD
10b		/S
ICAO 13a		KORD

Table C-III. Common Appendix Message Field Formats

Field Ref. No.	Field Number and Field Name	Field Format	Description	Example	No. of Bytes
13b		2345			
ICAO 15a		N0447			
15b		F310			
15c		DCT RBS DCT FAM J137 LIT J131 TXK DCT CWK DCT LRD DCT NLD UJ11 MTY DCT			
ICAO 16a		MMMY			
16b		0246			
16c		KSAT			
ICAO 18		EET/KZHU0155 KZHU0223 MMTY0225 SEL/KLJM REG/N241AA			

Appendix D. EBCDIC Character Set

All data in the messages use the EBCDIC character set defined in Table D-I; message headers may also include binary data.

Table D-I. EBCDIC Character Set

Character Code (Hex)	Symbol	Comments
00	NUL	Null
05	TAB	
16	BS	
25	LF	
40	SP	SPACE
48	○	Clear weather symbol
4A	[	
4B	.	
4C	<	
4D	(	
4E	+	
4F	|	
50	&	
5A	!	
5B	$	
5C	*	
5D	)	
5E	;	
5F	_	Underscore
60	-	
61	/	
6B	,	
6C	%	
6D	⊕	Overcast weather symbol
6E	>	
6F	?	
74	↑	Departure Arrow
79	↓	Arrival Arrow

Table D-I. EBCDIC Character Set

Character Code (Hex)	Symbol	Comments
7A	:	
7B	#	
7C	@	
7D	‘	
7E	=	
7F	“	
81	a	
82	b	
83	c	
84	d	
85	e	
86	f	
87	g	
88	h	
89	I	
91	j	
92	k	
93	l	
94	m	
95	n	
96	o	
97	p	
98	q	
99	r	
A1	~	
A2	s	
A3	t	
A4	u	
A5	v	
A6	w	
A7	x	
A8	y	
A9	z	

Table D-I. EBCDIC Character Set

Character Code (Hex)	Symbol	Comments
C0	{	
C1	A	
C2	B	
C3	C	
C4	D	
C5	E	
C6	F	
C7	G	
C8	H	
C9	I	
D0	}	
D1	J	
D2	K	
D3	L	
D4	M	
D5	N	
D6	O	
D7	P	
D8	Q	
D9	R	
E0	\	
E2	S	
E3	T	
E4	U	
E5	V	
E6	W	
E7	X	
E8	Y	
E9	Z	
F0	0	
F1	1	
F2	2	
F3	3	

Table D-I. EBCDIC Character Set

Character Code (Hex)	Symbol	Comments
F4	4	
F5	5	
F6	6	
F7	7	
F8	8	
F9	9	

Appendix E. ERAM/IPOP PROTOCOL (EIP) FOR USER IP SYSTEMS

The EIP is a combined session and presentation layer protocol used within the ERAM to ATM IPOP interface. EIP is applicable to messages sent using TCP transport protocols over the IP network protocol. EIP over TCP/IP messaging is based on the Host Interface Device Protocol (HIDP) used between the Host Interface Device (HID) and its interfacing systems on the HID/NAS LAN. Most of the EIP messaging using TCP/IP is identical to the HIDP. In addition, EIP permits multiple devices to register on a single socket connection using the MR_REG message, if this option is specified in the ERAM adaptation.

E.1 IP and TCP Formats

The IP network protocol and the TCP transport protocol provide the underlying structures on which the EIP is used. These formats are included so that the reader has a complete description of the contents of each kind of packet, or discrete data transmission unit, in the EIP context.

E.1.1 IP Datagram Packet Format

The IP datagram packet format is as shown in Figure E-1. Each IP packet consists of a header followed by a data field. The Header Length field defines the size of the IP header in bytes. For the ERAM implementation, the header length is set to five words, which are 32 bits in length for a total header size of 160 bits or 20 bytes. The IP OPTIONS and PADDING fields are not used. The data field follows the header. The maximum length of the IP packet is limited to 1500 bytes. Definitions of the fields in this table are contained in IETF STD-5. Each packet sent contains this IP header as the first field.

<table>
<tr><td colspan="8">Byte 0</td><td colspan="8">Byte 1</td><td colspan="8">Byte 2</td><td colspan="8">Byte 3</td></tr>
<tr><td>0
0</td><td></td><td></td><td>0
3</td><td>0
4</td><td></td><td></td><td>0
7</td><td>0
8</td><td></td><td></td><td></td><td></td><td></td><td></td><td>1
5</td><td>1
6</td><td></td><td>1
8</td><td>1
9</td><td></td><td></td><td></td><td>2
3</td><td>2
4</td><td></td><td></td><td></td><td></td><td></td><td></td><td>3
1</td></tr>
<tr><td colspan="4">VERSION</td><td colspan="4">HEADER LENGTH</td><td colspan="8">SERVICE TYPE</td><td colspan="16">TOTAL LENGTH</td></tr>
<tr><td colspan="16">IDENTIFICATION</td><td colspan="3">FLAGS</td><td colspan="13">FRAGMENT OFFSET</td></tr>
<tr><td colspan="8">TIME TO LIVE</td><td colspan="8">PROTOCOL</td><td colspan="16">HEADER CHECKSUM</td></tr>
<tr><td colspan="32">SOURCE IP ADDRESS</td></tr>
<tr><td colspan="32">DESTINATION IP ADDRESS</td></tr>
</table>

<table>
<tr><td colspan="3">IP OPTIONS
(not used in EIP)</td><td>PADDING
(not used in EIP)</td></tr>
<tr><td colspan="4">DATA</td></tr>
<tr><td colspan="4">….</td></tr>
</table>

Figure E-1. IP Packet Structure

E.1.2 TCP/IP Packet Format

The TCP packet format (header information plus data) is shown in Figure E-2. The TCP header and data reside within the data field of the IP datagram. The definition of the individual fields within the TCP packet is contained in IETF STD-7. The TCP protocol ensures reliable delivery of packet data between source and destination due to its built-in high reliability data transport mechanism. Each TCP/IP packet contains this TCP Header as the second field, following the IP Header. EIP-specific data resides within the data field of the TCP packet.

<table>
<tr><td colspan="8">Byte 0</td><td colspan="8">Byte 1</td><td colspan="8">Byte 2</td><td colspan="8">Byte 3</td></tr>
<tr><td>0
0</td><td></td><td></td><td>0
3</td><td>0
4</td><td></td><td></td><td>0
7</td><td>0
8</td><td>0
9</td><td>1
0</td><td></td><td></td><td></td><td></td><td>1
5</td><td>1
6</td><td></td><td></td><td></td><td></td><td></td><td></td><td>2
3</td><td>2
4</td><td></td><td></td><td></td><td></td><td></td><td></td><td>3
1</td></tr>
<tr><td colspan="16">SOURCE PORT</td><td colspan="16">DESTINATION PORT</td></tr>
<tr><td colspan="32">SEQUENCE NUMBER</td></tr>
<tr><td colspan="32">ACKNOWLEDGEMENT NUMBER</td></tr>
<tr><td colspan="4">HEADER LENGTH</td><td colspan="6">RESERVED</td><td colspan="6">CODE BITS</td><td colspan="16">WINDOW</td></tr>
<tr><td colspan="16">CHECKSUM</td><td colspan="16">URGENT POINTER</td></tr>
<tr><td colspan="24">OPTIONS (IF ANY)</td><td colspan="8">PADDING</td></tr>
<tr><td colspan="32">DATA</td></tr>
<tr><td colspan="32">….</td></tr>
</table>

Figure E-2. TCP/IP Packet Structure

E.1.3 EIP Session Establishment Over TCP/IP

Before data transfer can occur, each ATM IPOP using EIP over TCP/IP must set up the TCP/IP link and register with ERAM. The ERAM adaptation specifies ATM IPOP addresses that will be allowed to register. This adaptation data consists of the IP address (preset data) and a device name. The MC_REG/MR_REG command/response pair is used for this interchange.

Within one second after establishing a TCP/IP connection to ERAM, the ATM IPOP must send a registration message to ERAM. ERAM will then validate the device name, given as user data in the registration message, against the adaptation information. Registration is successful only if the device name in the registration message matches exactly a device name in the ERAM adaptation. Following successful registration, ERAM establishes a socket-based session with the ATM IPOP and sends the registration response; at that point, data transfer, device control, and health messages can be sent over the interface. Each ATM IPOP must register with the two primary ERAM systems so that a socket will already be established for the ATM IPOP in case of an ERAM PAS/SAS switch. Only one ERAM will be operational at any given time. Operational/Standby status is communicated to each TCP socket connected ATM IPOP by ERAM-generated health messages. The heartbeat message, described below, gives the ATM IPOP information about which ERAM is active. In contrast with the HIDP, EIP permits ATM IPOPs to use the same socket for multiple ATM IPOP device interfaces. Using the EIP, ATM IPOPs may register multiple ATM IPOP devices on the same socket. Each ATM IPOP is restricted to one socket as data for multiple devices are transmitted and received over the same socket that was used for registration. The ERAM adaptation identifies ATM IPOPs that are permitted to register as a multiple device user of the same socket. In this case, the MR_REG message contains a data field that returns the device name of the ATM IPOP device that has been registered. If the ATM IPOP is not adapted to register for a multiple-device socket, the MR_REG response will have no application data (no device name returned) and multiple registrations for that socket are not allowed.

E.1.4 EIP Session Heartbeat Over TCP/IP

EIP over TCP/IP provides the means for ERAM and the ATM IPOPs to send required session maintenance, or “heartbeat”, messages to each other at periodic intervals. For ERAM transmitted messages the interval is one second. For ATM IPOP transmitted messages the interval is adaptable. The MC_HEALTH command message is used for these heartbeat messages. These messages allow ERAM and the ATM IPOPs to monitor the status of the session. In addition, data contained within the flags field of the heartbeat message allows the ATM IPOPs to know which ERAM is operational or standby, or if no status is available.

For active sessions, if ERAM does not receive the heartbeat message from ATM IPOP within four seconds (adaptable), the socket is closed and the status for the interface is set to “down.

The ATM IPOP is free to process the heartbeat messages from ERAM any way it likes. For its heartbeat messages to ERAM, the ATM IPOP can generate the MC_HEALTH message, or simply echo the ERAM MC_HEALTH message back to the originating ERAM socket.

E.2 EIP Packet Format Over TCP/IP

The overall format of EIP TCP/IP-based messages transferred between ERAM and the ATM IPOP is as shown in Table E-I. The EIP packet (header information plus data) resides within the data portion of the TCP packet structure. The EIP protocol “frame” format for EIP messages over TCP/IP, consisting of a header plus data, is shown in Figure E-3. The EIP frame header is followed by the application user data for the packet. Definitions of fields within the EIP TCP/IP frame header are given in Table E-I. These messages are designed to allow the ATM IPOP (application) to transfer data to and from ERAM, and to manage its session with ERAM.

Table E-I. Basic Message Structure for EIP Messages Over TCP/IP

Byte Offset	Length	Information Content
Offset 0	20 bytes	Standard IP Protocol Header (no Options used)
Offset 20	24 bytes	Standard TCP Protocol Header (incl. Options)
Offset 44	16 bytes	Standard EIP Protocol Frame Header for TCP/IP (see below)
Offset 60	Variable	User data for transfer to/from ERAM (formatted per ATM IPOP application)

<table>
<tr><td colspan="6">EIP Frame Format for TCP/IP</td></tr>
<tr><td>Offset</td><td>Length</td><td>Byte 0</td><td>Byte 1</td><td>Byte 2</td><td>Byte 3</td></tr>
<tr><td colspan="2"></td><td>00 … 07</td><td>08 … 15</td><td>16 … 23</td><td>24 … 31</td></tr>
<tr><td>0</td><td>4</td><td colspan="2">MsgLen</td><td colspan="2">Spare</td></tr>
<tr><td>4</td><td>4</td><td colspan="2">DestAddr</td><td colspan="2">SrcAddr</td></tr>
<tr><td>8</td><td>4</td><td>MsgCode</td><td>Status</td><td>Flags</td><td>Spare</td></tr>
<tr><td>12</td><td>4</td><td colspan="4">Timestamp</td></tr>
<tr><td>16</td><td>Variable</td><td colspan="4">Data</td></tr>
</table>

Figure E-3. Frame Format for EIP Messages Over TCP/IP

Table E-II. EIP Over TCP/IP Frame Header Field Definition

Field Name	Definition
MsgLen	Length of the data portion of the message (not including the header). MsgLen is a 16 bit big endian integer.
DestAddr	Intended for physical or logical address of the message's destination. For ERAM, it only needs to contain any positive number.
SrcAddr	Intended for physical or logical address of the message's source or sender. For ERAM, it only needs to contain any positive number.
MsgCode	Unique hexadecimal code identifying the message type.
Status	Bit-oriented field signifying the status of the sender. This field's interpretation is message-dependent.
Flags	Bit-oriented field imparting additional information besides the message type (given in MsgCode). This field's interpretation is message dependent.
Timestamp	Timestamp indicates when the message was created. The timestamp is a big endian 32-bit integer containing the standard Unix timestamp (seconds since Jan 1, 1970).
Spare	Currently unused fields. These fields are always initialized to zero.

Table E-II. EIP Over TCP/IP Frame Header Field Definition

Field Name	Definition
Data	User data. This field's content is message dependent. Variable number of data bytes (maximum of 4096 bytes).
Spare	Currently unused fields must be 0.

E.2.1 EIP Over TCP/IP Detailed Command/Response Message Descriptions

A number of the messages defined for the EIP protocol over TCP/IP are related to session establishment and control. Others are related to data transfer. EIP messages originate from either ERAM or the ATM IPOP. These messages are named Message Command (MC) types. Responses to MC messages are named Message Response (MR) types. The EIP contains a 16-byte message header followed by a variable length data field. The pairs of message command/response types are:

MC_REG (0x21)/MR_REG (0xA1):	ATM IPOP registration with ERAM.
MC_CTL_DEV (0x20)/MR_CTL_DEV (0xA0):	Device control command issued from ERAM to ATM IPOP (application)/Device control response from ATM IPOP (application).
MC_XFR_OUT (0x50)/MR_XFR_OUT (0xD0):	Data transfer from ERAM to ATM IPOP.
MC_XFR_OUT (0x50)/MC_XFR_IN (0x51):	Data transfer from ATM IPOP to ERAM.
MC_HEALTH (0x0D)/ MC_HEALTH (0x0D):	Sent between ERAM and ATM IPOP to inform the other of session status. In addition, ERAM uses this message to inform the user systems (applications) of the sender's redundancy status.

The use of these commands and responses is described below. Any future message codes (MsgCode) will utilize unused hexadecimal values.

E.2.1.1 Information Transfers to ERAM

ERAM will send a zero length MC_XFR_OUT message with the Read CC in the status field to any input device that is configured when ERAM is ready to accept input data. After ERAM sends the MC_XFR_OUT message indicating that it can accept data, ERAM will receive and process an MC_XFR_IN message as application data.

Any message sent to ERAM from the ATM IPOP in an MC_XFR_IN message is accepted by ERAM only if ERAM has previously sent the zero length MC_XFR_OUT message with the Read CC in the status field. If no zero length MC_XFR_OUT message with the Read CC in the status field has been sent, ERAM will immediately SAR record and discard the message.

E.2.1.2 Information Transfers from ERAM

An EIP header containing an MC_XFR_OUT message type prefaces data messages from ERAM. The message length is set to the number of data bytes sent by ERAM and the Write CC is in the status field.

E.2.1.3 ERAM to ATM IPOP Information Transfers

Information transferred from the ERAM to the ATM IPOP consists of the following elements:

- Addressing - LDA/PDA
- Command Codes – Read, Write
- Control – Activate, Deactivate, Selective Reset
- Health/Status – Operational ERAM, Standby ERAM
- Data – Application specific (ERAM to ATM IPOP).

The following messages are transferred across the ERAM to ATM IPOP interface:

- MR_REG
- MC_CTL_DEV
- MC_XFR_OUT
- MC_HEALTH.

See the detailed format of each of these message types starting in Section E.2.1.3.1. A description of each of these message types follows:

E.2.1.3.1 MR_REG

An MR_REG message is sent from ERAM to the ATM IPOP in response to an MC_REG message if the registration of the ATM IPOP has been successful (See Section E.1.3). The MR_REG message will return a configuration parameter in the flags field that informs the ATM IPOP whether it should respond to MC_XFR_OUT messages with MR_XFR_OUT messages.

E.2.1.3.2 MC_CTL_DEV

Not required for ERAM.

E.2.1.3.3 MC_XFR_OUT

An MC_XFR_OUT message with a READ command is sent from ERAM to the ATM IPOP when IFPA is ready to accept data. An MC_XFR_OUT with a WRITE command is used to transfer data from ERAM to ATM IPOP. The Read and Write (data) messages are differentiated by the Channel Command (CC) contained in the message’s status field. Each ATM IPOP may have its own set of CCs unique to that ATM IPOP. If the message is of zero length and it is not a READ command, then the flags field should be checked for a Selective Reset indicator.

Receipt of the READ command signals to the ATM IPOP that ERAM has posted a READ command and is expecting data from the ATM IPOP.

In order for the ATM IPOP to successfully transmit data to ERAM, the ATM IPOP must use the TCP/IP socket on which the READ command was received.

If the ATM IPOP has not received a READ command MC_XFR_OUT message, any MC_XFR_IN message it generates will be discarded by ERAM, as no READ command has been posted by ERAM.

Responses to MC_XFR_OUT messages (MR_XFR_OUT) are required for ERAM except for a MC_XFR_OUT message containing a READ command.

E.2.1.3.4 MC_HEALTH

An MC_HEALTH message is sent from ERAM to all connected ATM IPOPs at a regular interval of one second. ERAM expects to receive an MC_HEALTH message from each connected ATM IPOP at adaptable intervals. If ERAM does not receive an MC_HEALTH message from the ATM IPOP within a specified period, that ATM IPOP socket is closed, its status is marked down and the ATM IPOP is considered to be in a failed state.

The MC_HEALTH message is used for two purposes. The first reason is to check the viability of the TCP connection to each ATM IPOP. Due to the nature of TCP processes, it will take relatively long periods of time before the TCP process in ERAM responds with a bad status if the socket remains viable, but the application on the other side of the socket is not responding.

The other purpose of the MC_HEALTH message is to inform the ATM IPOP of the operational/standby status of FDP. Since ERAM is expecting an MC_HEALTH message from the ATM IPOP, the ATM IPOP may generate its own MC_HEALTH message or simply echo back the MC_HEALTH message on the same socket it came from.

E.2.1.4 ATM IPOP to ERAM Information Transfers

Information transferred from the ATM IPOP to ERAM consists of the following:

- Device Name – Alphanumeric string
- Sense/Status – Application status
- Data – Application-specific (ATM IPOP to ERAM).

The following messages are transferred across the ATM IPOP to ERAM interface:

- MC_REG
- MR_CTL_DEV
- MR_XFR_OUT

- MC_XFR_IN
- MC_HEALTH.

See the detailed descriptions of each of these messages starting in Section E.2.1.5.

E.2.1.4.1 MC_REG

The ATM IPOP sends ERAM an MC_REG message as soon as the TCP/IP connection to ERAM has been established. Contained in the data portion of the MC_REG message is an ASCII string specifying the ATM IPOP identification name. This name must identically match the DEVICE_NAME in ERAM's adaptation file. Failure to send the MC_REG message to ERAM within one second of establishing the TCP/IP connection will cause ERAM to close the connection.

E.2.1.4.2 MR_CTL_DEV

Not required for ERAM.

E.2.1.4.3 MR_XFR_OUT

The ATM IPOP responds to an MC_XFR_OUT message, except for a MC_XFR_OUT containing a Read command (0x02), with an MR_XFR_OUT message. **Note**: a Transfer Data Inbound command, MC_XFR_IN, may be received prior to the Acknowledgment, MR_XFR_OUT, for a previous Write command, MC_XFR_OUT.

E.2.1.4.3.1 MR_XFR_OUT Timer

When ERAM sends an MC_XFR_OUT with a write status (0x01) to the ATM IPOP, it starts a timer. If the timer times out before receiving MR_XFR_OUT, ERAM will send a health check, MC_HEALTH, designating the alternate path as primary and resend the current CBTP over the new path. The timeout value is a preset values. For the ERAM/ATM IPOP interface, the MR_XFR_OUT Timer will be set to eight seconds. The timer will not be interrupted by receipt of a Transfer Data Inbound command, MC_XFR_IN.

E.2.1.4.4 MC_XFR_IN

An MC_XFR_IN is generated from the ATM IPOP when it has data to send to ERAM or when the ATM IPOP wants to report sense status to ERAM. Any MC_XFR_IN message received by ERAM must have a Read posted by ERAM for it to be processed. If a Read is not posted, ERAM will discard all MC_XFR_IN messages it receives. The Read CC will be propagated to the ATM IPOP in the status field of a zero length MC_XFR_OUT message.

The ATM IPOP can report sense data by placing the sense byte in the status field of the MC_XFR_IN message.

A MC_XFR_IN, containing an Information Reject (IR), can be received either before or after the MR_XFR_OUT depending upon when the error in the MC_XFR_IN message is detected.

E.2.1.4.5 MC_HEALTH

Each ERAM sends an MC_HEALTH message to each connected socket to determine the viability of the communication path and to inform the ATM IPOP which ERAM is Operational and which ERAM is in Standby mode. In response, the ATM IPOP is required to send an MC_Health message to ERAM to keep the session alive. The ATM IPOP can generate the MC_HEALTH message, or simply echo the ERAM MC_HEALTH message back to the originating ERAM socket.

If an ERAM does not receive an MC_HEALTH message from a registered ATM IPOP within an adaptable period of time since receiving the last MC_HEALTH message, ERAM will close the TCP/IP socket for that ATM IPOP.

Each MC_HEALTH message generated from an ERAM contains ERAM's Operational or Standby status in the *flags* field.

E.2.1.5 MC_REG (0x21) - Register ATM IPOP with ERAM

FROM:	ATM IPOP
TO:	ERAM
PURPOSE:	This message is sent to the ERAM within one second after the TCP/IP connection has been made. The data portion contains the ATM IPOP's identifying name. This ID name is an ASCII string consisting of no more than 16 characters. This ID name should match ERAM's adaptation item, DEVICE_NAME, for this particular ATM IPOP.

MC_REG Message Format					
		00 … 07	08 … 15	16 … 23	24 … 31
Offset	Length	Byte 0	Byte 1	Byte 2	Byte 3
0	4	MsgLen (2-16)		RESERVED (0)	
4	4	DestAddr (0)		SrcAddr (0)	
8	4	MsgCode (MC_REG)	Status (0)	Flags (0)	RESERVED (0)
12	4	Timestamp (0)			
16	Variable	Data (ASCII string – 16 characters max.)			

Figure E-4. MC_REG Message Format

E.2.1.6 MR_REG (0xA1) - Register Response

FROM:	ATM IPOP
TO:	ERAM
PURPOSE:	This message is sent to the ATM IPOP in response to an MC_REG message if the registration of the ATM IPOP is successful. If registration was unsuccessful, ERAM closes the socket.

MR_REG Message Format					
		00 … 07	08 … 15	16 … 23	24 … 31
Offset	Length	Byte 0	Byte 1	Byte 2	Byte 3
0	4	MsgLen (0)		RESERVED (0)	
4	4	DestAddr		SrcAddr	
8	4	MsgCode (MR_REG)	Status (0)	Flags (See Flag Byte Definitions)	RESERVED (0)
12	4	Timestamp (0)			
Flag Byte Definitions					
Bit	Define	Description			
2^{0-7}	Non-Zero	Bits 0-7 must be non-zero to indicate MR_XFR_OUT, MR_CTL_DEV Required			

Figure E-5. MR_REG Message Format

E.2.1.7 MC_CTL_DEV (0x20) - Device Control Message

FROM:	ERAM
TO:	ATM IPOP
PURPOSE:	This message is used to activate, deactivate, or issue a test message to ATM IPOP.
RESPONSE:	MR_CTL_DEV (0xA0)

MC_CTL_DEV Message Format					
		00 … 07	08 … 15	16 … 23	24 … 31
Offset	Length	Byte 0	Byte 1	Byte 2	Byte 3
0	4	MsgLen (0-4)		RESERVED (0)	
4	4	DestAddr		SrcAddr	
8	4	MsgCode (MC_CTL_DEV)	Status (0)	Flags (See Flag Byte Definitions)	RESERVED (0)
12	4	Timestamp (Timestamp when message was generated)			

Flag Byte Definitions		
Bit	Define	Description
2^0	DEV_ACT	Activate the device.
2^1	DEV_DEACT	Deactivate the device.
2^2	DEV_RESET	Reset the device.
2^3		
2^4		
2^5		
2^6		
2^7		

Message Data Definitions		
Bytes	Define	Description
0-3	NAS_DEV_ADDR	Logical Address of the device to be activated/deactivated.

Figure E-6. MC_CTL_DEV Message Format

E.2.1.8 MR_CTL_DEV (0xA0) - Device Control Response

FROM:	ATM IPOP
TO:	ERAM
PURPOSE:	This message is a response to MC_CTL_DEV. It is sent from the ATM IPOP to ERAM upon completion of the processing of the command.

MR_CTL_DEV Message Format					
		00 … 07	08 … 15	16 … 23	24 … 31
Offset	Length	Byte 0	Byte 1	Byte 2	Byte 3
0	4	MsgLen (4)		RESERVED (0)	
4	4	DestAddr		SrcAddr	
8	4	MsgCode (MR_CTL_DEV)	Status (See Table)	Flags (0)	RESERVED (0)
12	4	Timestamp (Timestamp when response was generated)			
16	0-3	Data (See Table)			

Status Bit Definitions		
Bit	Define	Description
2^0	DEV_INVAL	Invalid device address.
2^1	DEV_FAILED	Device control failed.
2^2		
2^3		
2^4		
2^5		
2^6		
2^7		

Message Data Definitions		
Bytes	Define	Description
0-3	NAS_DEV_ADDR	Logical Address of the device activated/deactivated.

Figure E-7. MR_CTL_DEV Message Format

E.2.1.9 MC_XFR_OUT (0x50) - Transfer Data Outbound

FROM:	ERAM
TO:	ATM IPOP
PURPOSE:	This message is sent by ERAM in order to transfer data to the ATM IPOP.
RESPONSE	MR_XFR_OUT (0xD0)

MC_XFR_OUT Message Format					
		00 … 07	08 … 15	16 … 23	24 … 31
Offset	Length	Byte 0	Byte 1	Byte 2	Byte 3
0	4	MsgLen (variable)		RESERVED (0)	
4	4	DestAddr		SrcAddr	
8	4	MsgCode (MC_XFR_OUT)	Status (CC Code)	See Flag Byte Def'n	RESERVED (0)
12	4	Timestamp (When message was generated by ERAM)			
16	Variable	Data			

Status Bit Definitions		
Value	Define	Description
0x01	CCW_WRITE	A data message from ERAM. Respond with MR_XFR_OUT.
0x02	CCW_READ	A read posted by ERAM. Do not respond with MR_XFR_OUT.
0x21	CCW_TWRITE	A Test Write by ERAM; provides data to be returned to ERAM in response to Test Read. Respond with MR_XFR_OUT
0x61	CCW_TWRITET	Same as Test Write.

0x22	CCW_TREAD	A Test Read by ERAM; return data provided in test write. Respond with MC_XFR_IN containing data provided in MC_XFR_OUT containing CCW_TWRITE or CCW_TWRITET.
0x62	CCW_TREADT	Same as Test Read.
Flag Bit Definitions		
Value	Define	Description
2^0	HIO	Halt the current I/O and send MR_XFR_OUT response when done.
2^1	SEL RESET	Halt the current I/O and no response is required.
2^2		
2^3	XFR_FLAG_NORESP	Ignore response indicator in MR_REG message: Do not respond with MR_XFR_OUT
2^4		
2^5		
2^6		
2^7		
Message Data Definitions		
Length	Define	Description
Variable	OUTPUT_DATA	Up to 4K Bytes (less the 16-byte header) of data from the ATM IPOP system.

Figure E-8. MC_XFR_OUT Message Format

E.2.1.10 MR_XFR_OUT (0XD0) - Response To Transfer Data Outbound

FROM:	ATM IPOP
TO:	ERAM
PURPOSE:	This message is sent from the ATM IPOP to ERAM in order to report the status and completion of an MC_XFR_OUT message.

MR_XFR_OUT Message Format					
		00 … 07	08 … 15	16 … 23	24 … 31
Offset	Length	Byte 0	Byte 1	Byte 2	Byte 3
0	4	MsgLen (0)		RESERVED (0)	
4	4	DestAddr		SrcAddr	
8	4	MsgCode (MR_XFR_OUT)	Status (See Status Bit Definitions)	Flags (See Flags Definitions)	RESERVED (0)
12	4	Timestamp (When message was generated by ERAM)			
16	0	Data (N/A)			
Status Bit Definitions					
Bit	Define	Description			
2^{0-7}	Zero	Good Status			
2^{0-7}	Non-Zero	Indication to check Flags Field			

Flag Byte Definitions		
Bit	Define	Description
2^3	Attention	Optional response to MR_REG message. Indicates to ERAM that the end user device has recovered from a failure condition and is now available.
2^4	Device Failed	Device has failed.
2^5	Device Down	Device is down.

Figure E-9. MR_XFR_OUT Message Format

E.2.1.11 MC_XFR_IN (0x51) - Transfer Data Inbound

FROM:	ATM IPOP
TO:	ERAM
PURPOSE:	This message is sent by the ATM IPOP to transfer data and or status to ERAM.

MC_XFR_IN Message Format					
		00 07	08 15	16 23	24 31
Offset	Length	Byte 0	Byte 1	Byte 2	Byte 3
0	4	MsgLen (variable)		RESERVED	
4	4	DestAddr		SrcAddr	
8	4	MsgCode (MC_XFR_IN)	Status (Device Sense Data)	Flags (See Flag Byte Definitions)	RESERVED (0)
12	4	Timestamp (When message was generated by the ATM IPOP)			
16	variable	Data (See Message Data Bit Definitions)			

Status Bit Definitions		
Bit	Define	Description
2^0	CR	Command Reject
2^1	IR	Intervention Required
2^2	BOC	Bus Out Check
2^3	EC	Equipment Check
2^4	Device Status 4	Optionally set by ATM IPOP
2^5	Device Status 5	Optionally set by ATM IPOP
2^6	Device Status 6	Optionally set by ATM IPOP
2^7	Device Status 7	Optionally set by ATM IPOP

Flag Byte Definitions		
Value	Define	Description
2^{4}	Device Failed	Device has failed
2^{5}	Device Down	Device is down
Message Data Definitions		
Length	Define	Description
variable	INPUT_DATA	Up to 4K Bytes (less 16 byte header) of data that is to be sent to ERAM.
Note: If a READ has not been posted by ERAM for that ATM IPOP, ERAM will discard the message.		

Figure E-10. MC_XFR_IN Message Format

E.2.1.12 MC_HEALTH (0x0D) - Health Message

FROM:	ERAM or ATM IPOP
TO:	ATM IPOP or ERAM
PURPOSE:	This message is used to determine the availability of the TCP/IP connection and the responsiveness of the ATM IPOP/ERAM. Failure of the ATM IPOP to send MC_HEALTH messages to ERAM in a timely fashion will result in ERAM marking the ATM IPOP as "down". If the MC_HEALTH message is generated from ERAM, the flags field contains the No Status/Redundant/Operational/Inactive/Test state of ERAM.

MC_HEALTH Message Format					
		00 07	08 15	16 23	24 31
Offset	Length	Byte 0	Byte 1	Byte 2	Byte 3
0	4	MsgLen (0)		RESERVED(0)	
4	4	DestAddr		SrcAddr	
8	4	MsgCode (MC_HEALTH)	Status (0)	Flags (See Flag Byte Definitions)	RESERVED (0)
12	4	Timestamp (When message was generated by the ERAM/ATM IPOP)			
Flag Byte Definitions					
Value	Description				
2^{0-7}	Non-zero (any bit set): ERAM is Operational.				
2^{0-7}	Zero (no bit set): ERAM is Standby.				

Figure E-11. MC_HEALTH Message Format

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