



Traffic Flow Management System-to-Aeronautical Radio Inc. (TFMS-to-ARINC MQ) Interface Control Document (ICD) for the Traffic Flow Management-Modernization (TFM-M) Program



Final, Release 9

CACR, Phase 2

Contract Number: DTFAWA-04-C-00045
CDRL: E05

February 11, 2013

Prepared for:
U.S. Federal Aviation Administration

Prepared by:
CSC
North American Public Sector – Civil Group
15245 Shady Grove Road
Rockville, MD 20850



**Traffic Flow Management System-to-Aeronautical
Radio Inc. (TFMS-to-ARINC MQ) Interface Control
Document (ICD) for the Traffic Flow Management-
Modernization (TFM-M) Program**

Final, Release 9

CACR, Phase 2

Contract Number: DTFAWA-04-C-00045
CDRL: E05

February 11, 2013

Prepared for:
U.S. Federal Aviation Administration

Prepared by:
**CSC
North American Public Sector – Civil Group
15245 Shady Grove Road
Rockville, MD 20850**

CSC/TFMM-11/1397
Draft, Release 9
February 11, 2013

INTERFACE CONTROL DOCUMENT
APPROVAL SIGNATURE PAGE
TFMS / ARINC MQ

APPROVAL SIGNATURES

PARTICIPANT	NAME	DATE

Document History Record

Release	Date	Comment
Draft	September 21, 2007	Draft delivery
Revised Draft	November 21, 2007	Revised to address FAA comments received and the following Change Requests (CRs): <ul style="list-style-type: none"> • TFMMP00002069 • TFMMP00002609 • TFMMP00003609 • TFMMP00003910
Final	May 13, 2008	Revised to address FAA comments received and the following CRs: <ul style="list-style-type: none"> • TFMMP00006210 • TFMMP00006611
Draft, Release 3	October 2, 2008	Revised to address received FAA comments and the following CRs: <ul style="list-style-type: none"> • TFMMP00006210 • TFMMP00006577 • TFMMP00006611 • TFMMP00007551
Revised Draft, Release 3	January 8, 2009	Revised to address received FAA comments and the following CR: <ul style="list-style-type: none"> • TFMMP00006824
Final, Release 3	August 24 , 2009	Revised to address received FAA comments and the following CRs: <ul style="list-style-type: none"> • TFMMP00009758 • TFMMP00009761
Draft, Release 5	May 24, 2010	Contractual delivery. Addresses Release 5 Interface Design. This version reflects significant restructuring of the Release 3 Final Revision to improve the flow of information and also to enhance easy maintenance. <ul style="list-style-type: none"> • Added Appendix C in which CDM Message Protocol file is embedded as a document link. • Added Appendix D in which Advisories and General Messages file is embedded as a document link. • Added UDP Bridging Update Message to the list of Unsolicited Messages • Added Hold/Release All Slots Message to Unsolicited Messages • Added the UBRG control type

Release	Date	Comment
Final, Release 5	August 5 2010	Delivery to address FAA comments <ul style="list-style-type: none"> • Table 3-XVIII: Clarified the definitions for the following Control Types: ABRG, ADPT, DAS, GAAP and RCTL • Revised CDM Messages Protocol V 1.0 posted in Appendix C • Revised Advisories & General Messages V 1.1 posted in Appendix D • Revised Section 3.2.1.3.2.10, item e to clarify that GAAP message is applicable to UDP slot assignments (FAA comment# 15)
Final, Release 5, Revision 1	March 1, 2011	Addresses the following CRs: <ul style="list-style-type: none"> • TFMMP00032363 • TFMMP00032463 • TFMMP00032566 • TFMMP00032688
Draft, Release 7	September 30, 2011	This delivery addresses the following: <ul style="list-style-type: none"> • Updated the CDM Message Protocol attachment in Appendix C to incorporate the CTOP message protocol • Updated to address CR 34893 to illustrate the ARINC interface with the Disaster Recovery Center (DRC)
Final, Release 7	November 11, 2011	Contractual delivery. Because no FAA comments were received, the draft documents have been updated to reflect a Final delivery.
Final, Release 9	February 11, 2013	Contractual delivery. Reflects the new CTOP TMI related enhancements to TFMS-ARINC interface: <ul style="list-style-type: none"> • 3 new CTOP Advisories that are sent from TFMS to CDM clients via ARINC are discussed • Unsolicited messages resulting from the CTOP TMI, sent from TFMS to CDM clients via ARINC are discussed

Formatted: Bulleted + Level: 1 + Aligned at: 0.25" + Indent at: 0.5", Tab stops: 0.43", Left + Not at 2"

Table of Contents

1	Scope.....	1-1
1.1	Scope and Purpose.....	1-1
1.2	Subsystem Responsibility List.....	1-1
1.3	Document Organization.....	1-1
2	Applicable Documents.....	2-1
2.1	Government Documents.....	2-1
2.2	Nongovernment Documents.....	2-2
2.3	Document Sources.....	2-3
2.3.1	Source of FAA Documents.....	2-3
2.3.2	Request for Comment (RFC) Documents.....	2-3
2.3.3	ISO, IEEE, and ANSI Documents.....	2-3
2.4	IATA Documents.....	2-3
2.5	IBM.....	2-4
3	Interface Characteristics.....	3-1
3.1	General Characteristics.....	3-1
3.2	Functional Design Characteristics.....	3-2
3.2.1	Application Processes (APs).....	3-2
3.2.1.1	Identification of Application Processes.....	3-2
3.2.1.2	Category of Services Required by the AP.....	3-2
3.2.1.3	Information Units.....	3-5
3.2.1.3.1	Information Code.....	3-5
3.2.1.3.2	Information Structure.....	3-5
3.2.1.3.2.1	Oceanic Position Reports.....	3-10
3.2.1.3.2.2	Free-Formatted Advisories and General Messages.....	3-21
3.2.1.3.2.3	Formatted GDP Advisory.....	3-21
3.2.1.3.2.4	Formatted Re-Route Advisory.....	3-22
3.2.1.3.2.5	Formatted CTOP Advisories.....	3-22
3.2.1.3.2.6	Flight Data Messages.....	3-23
3.2.1.3.2.7	Flight Data Message Responses.....	3-37
3.2.1.3.2.8	Substitution Messages.....	3-42
3.2.1.3.2.9	Substitution Message Responses.....	3-48
3.2.1.3.2.10	Requests and Responses.....	3-51
3.2.1.3.2.11	Unsolicited Messages.....	3-65
3.2.1.3.3	Information Unit Segmentation.....	3-96
3.2.1.3.4	Direction of Information Flow.....	3-96
3.2.1.3.5	Frequency of Transmission.....	3-96
3.2.1.3.6	Responses.....	3-96
3.2.1.4	Quality of Service.....	3-96
3.2.1.5	AP Error Handling.....	3-96
3.2.1.6	Interface Summary Table.....	3-97
3.2.2	Protocol Implementation.....	3-105
3.2.2.1	Application Services.....	3-106
3.2.2.2	Network Services.....	3-106
3.2.2.2.1	Packet Routing.....	3-107

3.2.2.3	Naming and Addressing.....	3-107
3.2.3	Security.....	3-108
3.2.4	Interface Design Characteristics Table	3-108
3.3	Physical Design Characteristics	3-111
3.3.1	Electrical Power and Electronic Characteristics	3-112
3.3.1.1	Connectors	3-113
3.3.1.2	Wire/Cable.....	3-113
3.3.1.3	Electrical Power/Grounding	3-113
3.3.1.4	Fasteners.....	3-113
3.3.1.5	Electromagnetic Compatibility	3-113
4	Verification Provisions.....	4-1
4.1	Responsibility for Verification.....	4-1
4.1.1	Pre-OT&E	4-1
4.1.2	OT&E	4-1
4.1.3	KSAT	4-1
4.2	Test Environments	4-1
5	Preparation for Delivery	5-1
6	Notes	6-1
6.1	Definitions.....	6-1
6.2	Abbreviations and Acronyms.....	6-1
Appendix A Error Codes and Messages		A-1
Appendix B Websphere MQ Option Usage.....		B-1
Appendix C CDM Message Protocol.....		C-1
Appendix D Advisories and General Messages.....		D-1
Appendix E Interface Control Document for CTOP		E-1

List of Tables

Table 3-I.	TFMS-to-ARINC MQ Interface Messages	3-5
Table 3-II.	Fixed Field Position (POS) Report.....	3-11
Table 3-III.	Oceanic Clearance Request Report (RCL)	3-14
Table 3-IV.	Non-POS, Non-RCL Message.....	3-17
Table 3-V.	“dots_sm” Keywords File.....	3-19
Table 3-VI.	Flight Data Fields	3-25
Table 3-VII.	Flight Create (FC) Message Fields.....	3-29
Table 3-VIII.	Flight Modify (FM) Message Fields	3-30
Table 3-IX	Flight Cancel (FX) Message Fields	3-32
Table 3-X.	EI Packet Header	3-34
Table 3-XI.	EI Packet Body (FP Message).....	3-35
Table 3-XII	Flight Data Good Response	3-38
Table 3-XIII.	Flight Data Error and Warning Response	3-40
Table 3-XIV.	Slot Create (SC) Message	3-43
Table 3-XV.	Slot Credit Substitution (SCS) Message	3-46
Table 3-XVI.	HOLD ALL SLOTS Message.....	3-48
Table 3-XVII.	Release All Slots Message.....	3-48
Table 3-XVIII.	Unused.....	3-48

Table 3-XIX. Substitution Good Response Message	3-49
Table 3-XX. Report Request.....	3-51
Table 3-XXI. EDCT LIST Request.....	3-52
Table 3-XXII. EDCT List.....	3-53
Table 3-XXIII. EDCT SUB SHOW Request.....	3-57
Table 3-XXIV. EDCT Sub Show	3-58
Table 3-XXV. EDCT SLIST Request.....	3-60
Table 3-XXVI. EDCT SLIST.....	3-61
Table 3-XXVII. EDCT UNASSIGNED SLOTS Request.....	3-62
Table 3-XXVIII. EDCT UNASSIGNED SLOTS	3-63
Table 3-XXIX. BRIDGING ON Request	3-64
Table 3-XXX. Bridging On Response	3-64
Table 3-XXXI. BRIDGING OFF Request Message.....	3-65
Table 3-XXXII. BRIDGING OFF Response Message.....	3-65
Table 3-XXXIII. Unsolicited Messages Data Fields	3-67
Table 3-XXXIV. Substitution Status Message.....	3-73
Table 3-XXXV. EDCT Purge Message.....	3-74
Table 3-XXXVI. EDCT Update Message.....	3-75
Table 3-XXXVII. DAS Delay Message.....	3-76
Table 3-XXXVIII. GAAP Slot Assignment Message.....	3-77
Table 3-XXXIX. SCS Bridging Update Message	3-78
Table 3-XL. UDP Bridging Update Message.....	3-80
Table 3-XLI. SCS Status Message.....	3-81
Table 3-XLII. DROPOUT FLIGHT Message	3-82
Table 3-XLIII. RECONTROL Message.....	3-84
Table 3-XLIV. Substitution Message	3-85
Table 3-XLV. TIMEOUT CANCEL Flight Message.....	3-87
Table 3-XLVI. REINSTATED FLIGHT Message.....	3-88
Table 3-XLVII FLIGHT ID CHANGE Message.....	3-89
Table 3-XLVIII. DIVERSION CANCEL and DIVERSION RECOVERY Message.....	3-91
Table 3-XLIX. ADAPTIVE COMPRESSION Update Message	3-92
Table 3-L. SCOPE REDUCTION Message.....	3-94
Table 3-LI. ADAPTIVE COMPRESSION ON Message.....	3-95
Table 3-LII. ADAPTIVE COMPRESSION OFF Message.....	3-95
Table 3-LIII. TFMS-to-ARINC Interface Summary	3-97
Table 3-LIV. Interface Design Characteristics – TFMS-to-ARINC MQ Interface.....	3-108
Table A-I. Error Codes/Messages	A-1
Table B-I. Websphere MQ Options	B-1

List of Figures

Figure 3-1. TFMS-to-ARINC MQ Interface Block Diagram.....	3-2
Figure 3-2. OSI Layer Functional Interface Connectivity Diagram for TFMS-to-ARINC3-106	
Figure 3-3. TFMS-to-ARINC MQ Physical Diagram	3-112

1 Scope

This section identifies the scope, purpose, and organization of this Interface Control Document (ICD) and identifies the subsystem responsibility list.

1.1 Scope and Purpose

This ICD provides the design characteristics of the interface between the Traffic Flow Management System (TFMS) and the Aeronautical Radio Inc. Message Queue (ARINC MQ). This ICD satisfies the interface design requirements contained in the Traffic Flow Management System Interface Requirements Specification (IRS) for Traffic Flow Management Modernization (TFM-M), Release 8, Revision 6.0, RAPT, December 7, 2012. The IRS is a companion document to the System/Subsystem Specification (SSS) for the Traffic Flow Management–Modernization (TFM-M) Program, Release 8, Revision 9.0, RAPT, December 7, 2012. This ICD was prepared under guidance from FAA-STD-025e, dated August 9, 2002 and the TFMM-ENGR-05(E05), Traffic Flow Management Modernization (TFM-M), Data Item Description (DID) for ICDs.

The purpose of this ICD is to specify:

- Interface connectivity between the TFMS and ARINC MQ
- Format of messages that are transmitted between ARINC MQ and the TFMS

1.2 Subsystem Responsibility List

The following list provides the TFMS external system interface and identifies the responsible Federal Aviation Administration (FAA) organizations:

- TFMS - FAA-ATO-R
- ARINC MQ - FAA-ATO-R

1.3 Document Organization

This ICD is organized in six sections and two appendices:

Section 1, **Scope**, describes the purpose and scope of this ICD.

Section 2, **Applicable Documents**, provides a listing of referenced government and non-government documents, and document sources researched and used by this ICD.

Section 3, **Interface Characteristics**, identifies and describes the general characteristics, functional design, and physical design characteristics for this ICD.

Section 4, **Verification Provisions**, contains verification provisions for this ICD.

Section 5, **Preparation for Delivery**, contains any specific preparations required by this ICD.

Section 6, **Notes**, provides a list of definitions, abbreviations, and acronyms used in this ICD.

Appendix A, **Error Codes and Messages**, provides a list of the error codes and messages generated by the TFMS when one or more errors are detected in a message received from an ARINC client.

Appendix B, **Websphere MQ Option Usage**, provides a description of those options used to ensure proper message handling and delivery between the TFMS and ARINC MQ clients.

Appendix C, **CDM Message Protocol**, details the application, connectivity and the protocols used by TFMS to exchange messages via the CDM participant (AOCNet, FSM, and ARINC) client interface.

Appendix D, **Advisories and General Messages**, provides a list of various advisories that are Free Formatted and advisories associated with Delay Programs and Re-Routes that are sent via the CDM participant client interface.

2 Applicable Documents

The following documents form part of this ICD to the extent specified herein.

2.1 Government Documents

FAA Standards:

FAA-STD-025e	Preparation of Interface Documentation, August 9, 2002
FAA-STD-039b	Open Systems Architecture and Protocols, May 1, 1996
FAA-STD-043b	Open System Interconnect Priority, 1996
FAA-STD-045	OSI Security Architecture, Protocol and Mechanisms, 1994

FAA Orders:

FAA Order 1830.2	Telecommunication Standards, Selection and Implementation Policy, August 1987
FAA Order 1370.82A	Information Systems Security Program, September 11, 2006
FAA Order 7210.3U	Facility Operations and Administration, Change 3, August 30, 2007

National Airspace System (NAS) Documents

NAS-IR-241400001	Traffic Flow Management System (TFMS) Interface Requirements Document (IRD) for Traffic Flow Management Modernization (TFM-M) Version 1.0, August 14, 2006
NAS-MD-312	National Airspace System En Route Configuration Management Document, Computer Program Functional Specifications, Route Conversion and Posting, Model A5f1.5, October 4, 2004

Request For Comments (RFC) Documents:

RFC 791	Internet Protocol, Sep 1981
RFC 793	Transmission Control Protocol, Sep 1983

Other Government Documents:

CDM Memorandum	Protocol for Submission of Early Intent Messages to ETMS, Version 1.3, November 3, 2003
CSC/TFMM-04/0025	System/Subsystem Specification (SSS) for the Traffic Flow Management–Modernization (TFM-M) Program, Release 8, Revision 9.0, RAPT, December 7, 2012
CSC/TFMM-11/1431	Final Systems Security Plan (SSP), Fiscal Year (FY) 2012 for Traffic Flow Management–Modernization (TFM-M), January 25, 2012
CSC/TFMM-05/0121	Interface Requirements Specification (IRS) for the Traffic Flow Management – Modernization (TFM-M) Program, Release 8, Revision 6.0, RAPT, December 7, 2012
CSC/TFMM-10/1077	TFMS ICD for Substitutions during GDPs, GSs and AFPs, Version 3.3, January 10, 2011
CSC/TFMM-10/1077	Advisories and General Messages Specification, Version 1.3, November 16, 2012
TFMM-ENGR-05(E05)	Traffic Flow Management Modernization (TFM-M), Data Item Description (DID), updated
VNTSCD-TFM-ICD-OMP-001	Offshore Message Processor: Interface Control Document, Version 1.0, June 29, 2005

2.2 Nongovernment Documents

International Organization for Standardization (ISO):

ISO/IEC 7498-1	Information Processing Systems – Open Systems Interconnect – Basic Reference Model, 1993
----------------	--

Institute of Electrical and Electronics Engineers (IEEE)

IEEE 802.3	IEEE Standard for Information Technology — Telecommunications and Information Exchange Between Systems, 2000
------------	--

American National Standards Institute (ANSI)

ANSI X3.4	American National Standard Code for Information Interchange (ASCII), Rev. 1992
-----------	--

International Air Transport Association (IATA)

International Air Transport Association (IATA)
Systems and Communications Reference Vol. 1,
Version 1.2, January 1998

IBM

GC34-6058-00 IBM WebSphere MQ V5.3, Clients, June 28, 2002
SC34-6062-03 IBM WebSphere MQ V5.3, Application Programming
Reference, March 2003

ARINC

20932 Rev. B Air/Ground Terminal Voice Message Format
Specification, ARINC, February 18, 2004

2.3 Document Sources

This subsection provides sources for FAA and International Organization for Standardization (ISO) documents.

2.3.1 Source of FAA Documents

Copies of FAA specifications, standards, and publications may be obtained from the Contracting Officer, Federal Aviation Administration, 800 Independence Avenue S.W., Washington, DC, 20591. Requests should clearly identify the desired material by number and date and state the intended use of the material.

In addition, the FAA Order 7210.3T, Facility Operations and Administration, is available in an on-line version at the following website address:

<http://www.faa.gov/ATPubs/FAC/INDEX.htm>

2.3.2 Request for Comment (RFC) Documents

RFC documents are available from the reference area electronically at the following Web address:

<http://www.faqs.org/rfcs/>

2.3.3 ISO, IEEE, and ANSI Documents

Copies of ISO, IEEE, and ANSI standards may be obtained from the American National Standards Institute, 11 West 42nd Street, New York, NY, 10036.

2.4 IATA Documents

International Air Transport Association documents may be obtained from the Customer and Distribution Services, International Air Transport Association, IATA Centre, Route de l'Aéroport 33, P.O. Box 416, CH-1215 Geneva 15 Airport, Switzerland. Note that the International Air Transport Association (IATA) Systems

and Communications Reference Vol. 1, Version 1.2, is considered a proprietary document and will require justification to obtain.

2.5 IBM

IBM WebSphere documentation can be ordered online from IBM. Requests should be made to the IBM Publication Center, using reference number GC34-6058-00. The IBM Publications center can be accessed at the following web address:

<http://www.elink.ibm.com/public/applications/publications/cgi-bin/pbi.cgi>

3 Interface Characteristics

This section provides the general, functional, and physical interface characteristics for the TFMS interface with ARINC MQ.

3.1 General Characteristics

The ARINC network provides users with a customized network for transmitting and receiving certain aviation data.

ARINC MQ performs the role of data communications medium, acting as a message switching service between the TFMS, Airlines, and the Air Traffic Control System Command Center (ATCSCC). Messages communicated over the ARINC MQ interface include General Messages, Advisory Messages, Airline Flight Data Messages, GDP Messages, Report Request and Slot Data Messages, Simplified Substitution Messages, Unsolicited ATCSCC [and CTOP](#) Messages, and Oceanic Position Reports.

This interface provides data transfer from ARINC MQ to TFM Production Center (TPC) and the Disaster Recovery Center (DRC). The data transfer to the TPC takes place via ARINC furnished communications router collocated at the TPC.

The DRC receives the data from the ARINC MQ via the NAS Enterprise Security Gateway (NESG-OEX). The communication flow to both the TPC and the DRC are illustrated in Figure 3-1, TFMS-to-ARINC MQ Interface Block Diagram. Refer to Section 3.3 for full physical breakout of the TFMS-to-ARINC MQ interface. Note – The Demarcation Point is illustrated as black dots in Figure 3-1.

The TFMS to ARINC interface is illustrated in Figure 3-1, TFMS-to-ARINC MQ Interface Block Diagram.

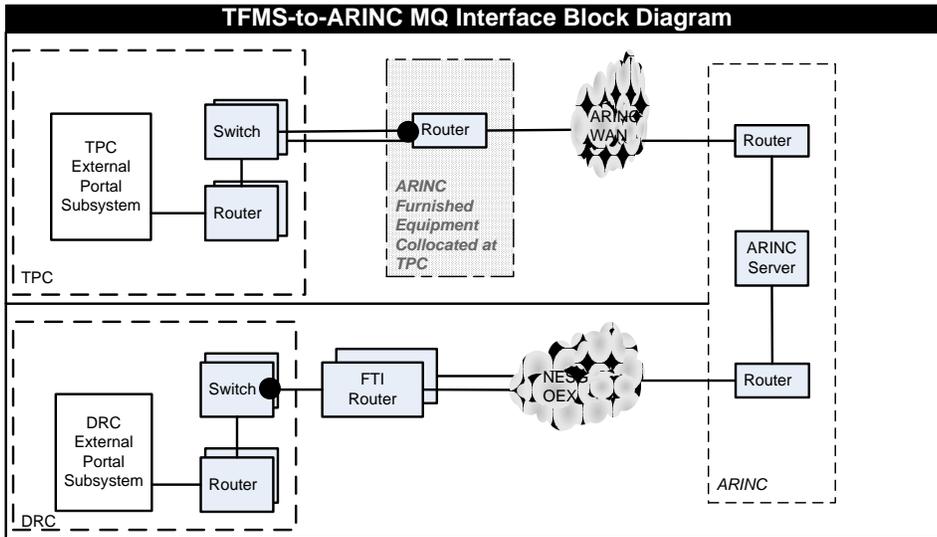


Figure 3-1. TFMS-to-ARINC MQ Interface Block Diagram

3.2 Functional Design Characteristics

This subsection describes the functional design characteristics of the TFMS and ARINC MQ.

3.2.1 Application Processes (APs)

This subsection identifies each application process and the applicable services, including performance characteristics (information units, quality of service, error handling, and responses).

3.2.1.1 Identification of Application Processes

The TFMS uses the External Portal Message Interface Server within the External Portal Subsystem to receive data from ARINC MQ.

The corresponding AP is the ARINC MQ Server AP, resident on the ARINC Server.

3.2.1.2 Category of Services Required by the AP

The TFMS-to-ARINC MQ interface transfers the following data:

- Oceanic Reports
 - Fixed Field Report
 - Oceanic Clearance Request
 - Non-POS/Non-RCL Report

- Formatted Delay Program Advisories
 - Ground Delay Program Advisory – Proposed
 - Ground Delay Program Advisory – Actual
 - Airspace Flow Program Advisory – Proposed
 - Airspace Flow Program Advisory – Actual
 - Ground Delay Program Cancel – Proposed
 - Ground Delay Program Cancel – Actual
 - Airspace Flow Program Cancel – Proposed
 - Airspace Flow Program Cancel – Actual
 - Ground Stop Advisory – Proposed
 - Ground Stop Advisory – Actual
 - Ground Stop Cancel – Proposed
 - Ground Stop Cancel – Actual
 - Ground Delay Program/Airspace Flow Program Compression – Proposed
 - Ground Delay Program/Airspace Flow Program Compression – Actual
 - Ground Delay Program Blanket Advisory – Proposed
 - Ground Delay Program Blanket Advisory – Actual
- Formatted Reroute Advisories
- Formatted CTOP Advisories
 - CTOP Advisory – Proposed
 - CTOP Advisory – Actual
 - CTOP Cancel – Actual
- General and Advisory messages
 - ATCSCC Advisories
 - International Advisories
 - General Message
- Flight Data Messages
 - Flight Create Message
 - Flight Modify Message
 - Flight Cancel Message
 - Early Intent Message
- Flight Data Message Responses

- Flight Data Good Message Response
- Flight Data Error Message Response
- Simplified Substitution Messages
 - Slot Create Message
 - Slot Credit Substitution Message
 - Hold All Slots Message
 - Release All Slots Message
- Substitution Message Responses
 - Substitution Message Good Response
 - Substitution Message Error Response
- Requests and Response Messages
 - Report Request
 - EDCT List
 - EDCT Substitution Status
 - EDCT Slot List
 - EDCT Unassigned Slots
 - Bridging On Message
 - Bridging Off Message
- Unsolicited Messages
 - Slot List
 - Substitution Status Message
 - GDP Termination Message (Via EDCT PURGE)
 - EDCT Update Message
 - DAS Delay Message
 - GAAP Slot Assignment Message
 - SCS Bridging Update Message
 - UDP Bridging Update Message
 - ECR Update Message
 - SCS Status Message
 - DROPOUT FLIGHT Message
 - RECONTROL Message
 - SUBSTITUTION Message

- TIMEOUT CANCEL Flight Message
- REINSTATED FLIGHT Message
- FLIGHT ID CHANGE Message
- DIVERSION CANCEL/DIVERSION RECOVERY Message
- ADAPTIVE COMPRESSION Update Message
- SCOPE REDUCTION Message
- EDCT ADAPTIVE COMPRESSION ON Message
- EDCT ADAPTIVE COMPRESSION OFF Message

The loss of this interface will cause impairment to full system operation, but will not cause total system failure, due to the ability of other communication pathways to obtain a portion of the data. This interface is designated 'essential' IAW NAS-SR-1000 standards.

3.2.1.3 Information Units

This subsection describes the formats of the data transferred between ARINC MQ and the TFMS.

3.2.1.3.1 Information Code

Messages transmitted between the TFMS and the ARINC MQ Server use the American Standard Code for Information Interchange (ASCII) character set in accordance with ANSI X3.4, American National Standard Code for Information Interchange (ASCII), Rev. 1992.

3.2.1.3.2 Information Structure

Table 3-I, TFMS-to-ARINC MQ Interface Messages, identifies the TFMS-to-ARINC MQ Interface Messages by full message name and message mnemonic along with a subsection reference. The subsections referenced by Table 3-I provide the detailed layout of the messages passed between the TFMS and ARINC users via the ARINC MQ interface.

ARINC limits line lengths to 68 characters. Due to line length constraints, all ARINC messages from TFMS are truncated to contain 68 characters per line.

Table 3-I. TFMS-to-ARINC MQ Interface Messages

Message Name	Product Mnemonic	ICD Subsection
Oceanic Position Reports – Section 3.2.1.3.2.1		
Fixed Field Position Report	POS	3.2.1.3.2.1 - a
Oceanic Clearance Request	RCL	3.2.1.3.2.1 - b
Non-POS/Non-RCL Report	N/A	3.2.1.3.2.1 - c

Message Name	Product Mnemonic	ICD Subsection
Formatted Delay Program Advisories – Section 3.2.1.3.2.3 and Appendix D, Section 1.2		
Ground Delay Program Advisory – Proposed	GDP	3.2.1.3.2.3 and Appendix D Section 1.2 - a
Ground Delay Program Advisory – Actual	GDP	3.2.1.3.2.3 and Appendix D Section 1.2 - b
Airspace Flow Program Advisory – Proposed	AFP	3.2.1.3.2.3 and Appendix D Section 1.2 - c
Airspace Flow Program Advisory – Actual	AFP	3.2.1.3.2.3 and Appendix D Section 1.2 - d
Ground Delay Program Cancel – Proposed	GDP CANCEL	3.2.1.3.2.3 and Appendix D Section 1.2 - e
Ground Delay Program Cancel – Actual	GDP CANCEL	3.2.1.3.2.3 and Appendix D Section 1.2 - f
Airspace Flow Program Cancel – Proposed	AFP CANCEL	3.2.1.3.2.3 and Appendix D Section 1.2 - g
Airspace Flow Program Cancel – Actual	AFP CANCEL	3.2.1.3.2.3 and Appendix D Section 1.2 - h
Ground Stop Advisory – Proposed	GS	3.2.1.3.2.3 and Appendix D Section 1.2 - i
Ground Stop Advisory – Actual	GS	3.2.1.3.2.3 and Appendix D Section 1.2 - j
Ground Stop Cancel – Proposed	GS CANCEL	3.2.1.3.2.3 and Appendix D Section 1.2 - k
Ground Stop Cancel – Actual	GS CANCEL	3.2.1.3.2.3 and Appendix D Section 1.2 - l
Ground Delay Program/Airspace Flow Program Compression – Proposed	GDP/AFP COMPRESSION	3.2.1.3.2.3 and Appendix D Section 1.2 - m
Ground Delay Program/Airspace Flow Program Compression – Actual	GDP/AFP COMPRESSION	3.2.1.3.2.3 and Appendix D Section 1.2 - n
Ground Delay Program Blanket Advisory – Proposed	GDP BLANKET	3.2.1.3.2.3 and Appendix D Section 1.2 - o
Ground Delay Program Blanket Advisory – Actual	GDP BLANKET	3.2.1.3.2.3 and Appendix D Section 1.2 - p
Formatted Reroute Advisory Section 3.2.1.3.2.4		
<u>Formatted CTOP Advisories – Section 3.2.1.3.2.5</u>		
<u>CTOP Advisory– Proposed</u>	<u>N/A</u>	<u>3.2.1.3.2.5 and Appendix D Section 1.4 - a</u>

Message Name	Product Mnemonic	ICD Subsection
CTOP Advisory– Actual	N/A	3.2.1.3.2.5 and Appendix D Section 1.4 - b
CTOP Cancel– Actual	N/A	3.2.1.3.2.5 and Appendix D Section 1.4 - c
Free-Formatted Advisories and General Messages – Section 3.2.1.3.2.2		
ATCSCC Advisories	N/A	3.2.1.3.2.2
International Advisories	N/A	3.2.1.3.2.2
General Message	N/A	3.2.1.3.2.2
Flight Data Messages – Section 3.2.1.3.2.6		
Flight Create Message	FC	3.2.1.3.2.6 - a
Flight Modify Message	FM	3.2.1.3.2.6 - b
Flight Cancel Message	FX	3.2.1.3.2.6 - c
Early Intent Message	EI	3.2.1.3.2.6 - d
Flight Data Message Responses – Section 3.2.1.3.2.7		
Flight Data Good Message Response	N/A	3.2.1.3.2.7 - a
Flight Data Error Message Response	N/A	3.2.1.3.2.7 - b
Substitution Messages – Section 3.2.1.3.2.8		
Slot Create Message	SC	3.2.1.3.2.8 - a
Slot Credit Substitution Message	SCS	3.2.1.3.2.8 - b
Hold All Slots Message	N/A	3.2.1.3.2.8 - c
Release All Slots Message	N/A	3.2.1.3.2.8 - d
Substitution Message Responses – Section 3.2.1.3.2.9		
Substitution Message Good Response	N/A	3.2.1.3.2.9 - a
Substitution Message Error Response	N/A	3.2.1.3.2.9 - b
Requests and Response Messages – Section 3.2.1.3.2.10		
Report Request	N/A	3.2.1.3.2.10 - a
EDCT List	EDCT LIST	3.2.1.3.2.10 - b
EDCT Substitution Status	EDCT SUB SHOW	3.2.1.3.2.10 - c
EDCT Slot List	EDCT SLIST	3.2.1.3.2.10 - d
EDCT Unassigned Slots	EDCT UNASSIGNED SLOTS	3.2.1.3.2.10 - e
Bridging On Message	EDCT BRIDGING ON	3.2.1.3.2.10 - f

Message Name	Product Mnemonic	ICD Subsection
Bridging Off Message	EDCT BRIDGING OFF	3.2.1.3.2.10 - g
Unsolicited Messages – Section 3.2.1.3.2.11		
Slot List	N/A	3.2.1.3.2.11 - a
Substitution Status Message	N/A	3.2.1.3.2.11 - b
GDP Termination Message (Via EDCT PURGE)	N/A	3.2.1.3.2.11 - c
EDCT Update Message	N/A	3.2.1.3.2.11 - d
DAS Delay Message	N/A	3.2.1.3.2.11 - e
GAAP Slot Assignment Message	N/A	3.2.1.3.2.11 - f
SCS Bridging Update Message	N/A	3.2.1.3.2.11 - g
UDP Bridging Update Message	N/A	3.2.1.3.2.11 - h
ECR Update Message	N/A	3.2.1.3.2.11 - i
SCS Status Message	N/A	3.2.1.3.2.11 - j
DROPOUT FLIGHT Message	N/A	3.2.1.3.2.11 - k
RECONTROL Message	N/A	3.2.1.3.2.11 - l
SUBSTITUTION Message	N/A	3.2.1.3.2.11 - m
TIMEOUT CANCEL Flight Message	N/A	3.2.1.3.2.11 - n
REINSTATED FLIGHT Message	N/A	3.2.1.3.2.11 - o
FLIGHT ID CHANGE Message	N/A	3.2.1.3.2.11 - p
DIVERSION CANCEL/DIVERSION RECOVERY Message	N/A	3.2.1.3.2.11 - q
ADAPTIVE COMPRESSION Update Message	N/A	3.2.1.3.2.11 - r
SCOPE REDUCTION Message	N/A	3.2.1.3.2.11 - s
EDCT ADAPTIVE COMPRESSION ON Message	N/A	3.2.1.3.2.11 - t
EDCT ADAPTIVE COMPRESSION OFF Message	N/A	3.2.1.3.2.11 - u

Note - There are general syntax conventions used within the Tables that follow:

- L – represents one upper-case letter
- d – represents one numeric digits
- a – represents one alphanumeric (either number or upper-case letter)
- **BOLD** indicates a static entry
- *Italics* indicate an optional entry
- [] – means the characters enclosed are optional. Any characters not within brackets are required. For example, Ldd [aa] would indicate an upper-case letter,

followed by two digits, and then zero, one, or two optional alphanumeric characters.

These conventions apply to all UNIT/FORMAT columns in the Tables throughout the document.

Packet Header Conventions and Return Address Specification

For Flight Data messages, Substitution messages, and Requests/Responses (including Report Requests and Responses), the interface uses message packets to exchange data. A message packet begins on the line immediately after the ARINC MQ addressing header and has the following additional characteristics:

1. The first line in the message packet is the packet header, consisting of packet type.

The packet types are as follows:

FD – Flight Data packet

EI – Early Intent packet

SS – Simplified Substitution packet

RQ – Request/Response packet

For packet types of FD, EI, and SS the packet type is followed by a unique packet identifier separated by one or more spaces, optionally followed by a return address and/or the “no acknowledgment” keyword.

The packet ID consists of:

- 3-letter user code
- 10-digit transmission date/time (month, day, hour, minute, second)
- two digits for uniqueness (i.e., the extra two digits differentiate when multiple messages are generated in the same second)

making the format for the packet ID: LLLddddddddd.dd. Some examples of the packet header with no optional parameters are:

FD SWA0206122217.01

SS ABC0626021029.01

The return address may be any valid ARINC address (i.e., 7 characters). If a return address is included, it must be the first field following the packet ID. If no return address is specified, the reply is sent to the sending ARINC address, if sent over ARINC. Some examples of a packet header with a return address are:

FD SWA0206122217.01 ABCDEFG

SS ABC0626021029.01 ABCDEFG

The “no acknowledgment” keyword is NOACK. The presence of the keyword means that no acknowledgment reply is generated if no errors or warnings are detected while processing the message contents. The NOACK keyword must be the last field on this line when present. An example packet header with the “no acknowledgment” keyword is:

```
FD SWA0206122217.01 NOACK
```

An example packet header with a return address and the “no acknowledgment” keyword is:

```
FD SWA0206122217.01 ABCDEFG NOACK
```

For the RQ packet type, only the packet type appears in the packet header. No other information is provided in the header for this type of packet.

2. Messages within a packet are terminated by either a carriage return/line feed combination (hex: 0D0A) or a single line feed (hex: 0A).
3. Continuation messages must be resolved within a single message packet. That is, the last message in a message packet cannot contain a line continuation character.
4. Due to ARINC limitations, the practical limit for a packet sent over ARINC is 3840 characters.
5. For messages sent over ARINC, the replies are sent by default to the return address provided by ARINC (i.e., the address from which the packet was sent). If an alternate ARINC return address is specified in the packet header line, the acknowledgment is sent only to that ARINC address.

3.2.1.3.2.1 Oceanic Position Reports

There are three types of Oceanic Position Reports described in this section, identified by the 3-character standard message ID (SMI) field in the case of the first two message types, or by a designated token in the third instance:

- Fixed Field Position Report (POS)
- Oceanic Clearance Request Report (RCL)
- Non-POS and Non-RCL Report (Token-indicated)

a. Fixed Field Position Report (POS)

The “POS” character sequence indicates a fixed field position report. This type of position report begins and ends in round brackets – () – and is indicated by the keyword “POS”. It is terminated with a carriage return (CR). There are three possible formats in which the POS message will be represented:

1. Position – Altitude – Position
2. Altitude – Position – Position
3. Position – Position – Altitude

The syntax of a fixed field position report is as follows:

Sample Fixed Field Position (POS) Report

```

Format 1:
(POS-<acid>-<pos1>/<eta1> [Letter]<alt> <pos2>/<eta2> NEXT <pos3>/<eta3>-CR
[other data]CR)
Format 2:
(POS-<acid>-[Letter]<alt> <pos1>/<eta1> <pos2>/<eta2> NEXT <pos3>/<eta3>-CR
[other data]CR)
Format 3:
(POS-<acid>-<pos1>/<eta1> <pos2>/<eta2> [Letter]<alt> NEXT <pos3>/<eta3>-CR
[other data]CR)

(POS-DAL125-47N50W/1500 F350 RONPO/1506 NEXT COLOR-{CR}
FUEL 58.7{CR}
CYQXR 13205{CR}
1269/AT/82/15000{CR}
    
```

In the example of the Format 1 above, the following fields are detailed:

- (POS – Indicates this message is a POS report
- -DAL125 - <acid> The aircraft identifier
- -47N50W – Aircraft position, in this instance, a lat/long pair
- /1500 – Time over this position
- [space]
- F350 – Altitude at this position. Preceded by an “F” (which is not used by TFMS)
- [space]
- RONPO – Position fix name
- /1506 – Time of this position fix
- NEXT – Indicates there is a third position fix. This fix is optional.
- [space]
- COLOR - Position fix name
- - - Indicates no fix time entered.

The format of the POS report is described in Table 3-II.

Table 3-II. Fixed Field Position (POS) Report

Field	Function	Unit/Format	Description	Bytes
-------	----------	-------------	-------------	-------

Field	Function	Unit/Format	Description	Bytes
POS	Message Type Identifier	POS	Three letters, fixed field – “POS” (Static entry)	3
acid	Aircraft Identifier	La[a][a][a][a] [a]	2 to 7 characters in length with first character being an uppercase letter.	2 - 7
pos1	Initial Position Fix	ddddL/dddddL <i>or</i> LLLLL	Fix represented as latitudes/longitudes pairs or fix names.	5 - 12
eta1	Initial Position Estimated Time of Arrival	dddd	Estimated time of arrival (ETA) for the Initial Position Fix. The ETA is a 4-digit number representing hours and minutes (hhmm). The first two digits represent the hour and must be between 00 to 23. The last two digits represent the minute and must be between 00 to 59. An invalid time is ignored.	4
[space]	Spacer		Provides a break between entries	1
alt1	Initial Position Altitude	Lddd[d][d][d] [d]	The Initial Position Altitude is a numeric value between 3 and 8 digits. This entry is preceded by a single letter (A, C, D, F, or L), which is not used in processing to the TO message.	4-9
[space]	Spacer		Provides a break between entries	1
pos2	Second Position Fix	ddddL/dddddL <i>or</i> LLLLL	Fix represented as latitudes/longitudes pairs or fix names.	5 - 12
eta2	Second Position Estimated Time of Arrival	dddd	Estimated time of arrival (ETA) for Second Position Fix. This follows the same rules as above.	4
[space]	Spacer		Provides a break between entries	1
<i>NEXT</i>	Indicator - Third Position Fix	NEXT	Static Entry: NEXT	4
[space]	Spacer		Provides a break between entries	1
pos3	Third Position Fix	ddddL/dddddL	Fix represented as	5 - 12

Field	Function	Unit/Format	Description	Bytes
		<i>or</i> LLLLL	latitudes/longitudes pairs or fix names.	
<i>eta3</i>	Third Position Estimated Time of Arrival	dddd	Estimated time of arrival (ETA) for Third Position Fix. This follows the same rules as above.	4
CR	Carriage Return	--		--
Other Data	Data not used by TFMS		Variable amount of data used by other systems, but not utilized by TFMS.	
CR	Carriage Return	--		--

b. Oceanic Clearance Request (RCL)

This character sequence indicates an Oceanic Clearance Request. This is processed the same way as a “POS” message, except for a possible altitude entry defined at the end (“_alt”). If this occurs, this altitude value will replace the previous one. The syntax of an RCL report is as follows:

Sample Oceanic Clearance (RCL) Request

```
(RCL-<acid>-<pos1>/<eta1> F<alt> <pos2>/<eta2> NEXT <pos3>/<eta3>
[letter]<_alt>-CR...)CR

(RCL-DAL125-47N50W/1500 F350 RONPO/1506 NEXT COLOR/1513 F390{CR}
FUEL 58.7{CR}
CYQXR 13205{CR}
1269/AT/82/15000{CR}
```

In the example above, the following fields are detailed:

- (RCL – Indicates this message is a RCL report
- -DAL125 - <acid> The aircraft identifier
- -47N50W – Aircraft position, in this instance, a lat/long pair
- /1500 – Time over this position
- [space]
- F350 – Altitude at this position. Preceded by an “F” (which is not used by TFMS)
- [space]
- RONPO – Position fix name
- /1506 – Time of this position fix
- NEXT – Indicates there is a third position fix. This fix is optional.

- [space]
- COLOR - Position fix name
- /1513 - Time of this position fix
- F390 – Indicates new altitude defined at this position fix

The format of the RCL report is described in Table 3-III.

Table 3-III. Oceanic Clearance Request Report (RCL)

Field	Function	Unit/Format	Description	Bytes
RCL	Message Type Identifier	RCL	Three letters, fixed field – “RCL” (Static entry)	3
acid	Aircraft Identifier	La[a][a][a][a] [a]	2 to 7 characters in length with first character being an uppercase letter.	2 - 7
pos1	Initial Position Fix	ddddL/dddddL <i>or</i> LLLLL	Fix represented as latitudes/longitudes pairs or fix names.	5 - 12
eta1	Initial Position Estimated Time of Arrival	dddd	Estimated time of arrival (ETA) for the Initial Position Fix. It is a 4-digit number representing hours and minutes (hhmm). The hour must be between 00 to 23. The minute must be between 00 to 59. An invalid time is ignored.	4
[space]	Spacer		Provides a break between entries	1
alt1	Initial Position Altitude	Lddd[d][d][d] [d]	The Initial Position Altitude is a numeric value between 3 and 8 digits. This entry is preceded by a single letter (A, C, D, F, or L), which is not used in processing to the TO message.	4-9
[space]	Spacer		Provides a break between entries	1
pos2	Second Position Fix	ddddL/dddddL <i>or</i> LLLLL	Fix represented as latitudes/longitudes pairs or fix names.	5 - 12
eta2	Second Position Estimated Time of Arrival	dddd	Estimated time of arrival (ETA) for Second Position Fix. This follows the same rules as above.	4
[space]	Spacer		Provides a break between entries	1

Field	Function	Unit/Format	Description	Bytes
<i>NEXT</i>	Indicator - Third Position Fix	NEXT	Static Entry: NEXT	4
<i>[space]</i>	Spacer		Provides a break between entries	1
<i>pos3</i>	Third Position Fix	ddddL/dddddL or LLLLL	Fix represented as latitudes/longitudes pairs or fix names.	5 - 12
<i>eta3</i>	Third Position Estimated Time of Arrival	dddd	Estimated time of arrival (ETA) for Third Position Fix. This follows the same rules as above.	4
CR	Carriage Return	--		--
<i>alt3</i>	Third Position Altitude	Lddd[d][d][d] [d]	The Third Position Altitude is a numeric value between 3 and 8 digits. This entry is preceded by a single letter (A, C, D, F, or L), which is not used in processing to the TO message.	4-9
Other Data	Data not used by TFMS		Variable amount of data used by other systems, but not utilized by TFMS.	
CR	Carriage Return	--		--

c. Non-POS and Non-RCL Type Messages

The oceanic message received may be something other than a POS or RCL report. Non-POS/Non-RCL messages do not follow a set format, as the previous Oceanic Position reports did. Instead, they are comprised of various Keyword tokens. These Keyword tokens are examined and used as a processing guide. When processing the Non-POS/Non-RCL message, the system follows the following procedure:

- The first Keyword token in the message is examined by TFMS External Portal Message Interface Server and parsed if it meets the following defined conditions:
 - The first Keyword token is not an “FI” (see below)
 - The first Keyword token matches one of the token listed in the ‘dots_smi’ file (see below)
- If the first Keyword token does not match either of these, then the message is ignored.
- Once the initial conditions for the message are met, the message is processed further by examining Keyword tokens, until one of the following occurs:
 - An error is encountered (garble, invalid data, etc.)
 - There are no more Keyword tokens

- There is sufficient data to construct the TO message
- The Keyword token “DT” is encountered, indicating the end of the message.

The following shows the typical syntax of non-POS and non-RCL position report messages and a sample (sample broken down by entry in Table 3-IV):

Sample Non-POS and Non-RCL Report

```
<SMI_keyword>CR
FI <acid>/[tok1] <pos1> <eta1> <alt1>/[tok2] <pos2> <eta2> <alt2>/[tok3]
<pos3> <eta3> <alt3>CR
/[tok] <data>/[tok] <data> (etc)CR
DT <other data>CR
CR

POS(Cr)
FI AJX1052/OV 33N 170E 1459 F380/EO 30N 180W 1604/NP TALON(Cr)
TA MS58/WV 310045/FB 528/TB CODE 01C(Cr)
DT SFO SC B 151500 12 (Cr)
(Cr)
```

In the example above, the following fields are detailed (Note – the entries in italics are not processed by TFMS, and are simply ignored by the system):

- POS – Indicates this message is a position report (differentiated from the standard POS message by the fields following)
- Carriage Return
- AJX1052 – <acid> The aircraft identifier
- /OV 33N 170E 1459 F380 – <tok1> <pos1> <eta1> <alt1> – Aircraft current position (in this instance, a lat/long pair), Time, and Flight Level in thousands of feet
- /EO 30N 180W 1604 – <tok2> <pos2> <eta2> Estimated To Be Over a Position , (in this instance, a lat/long pair), at a Designated Time, and Flight Level in thousands of feet
- /NP TALON – <tok> <data> - Next Position (In this case, a Fix Name)
- Carriage Return
- TA MS58 – <tok> <data> *Static Air Temperature (in degrees Celsius)*
- /WV 310045 – <tok> <data> *Wind direction and speed at flight level*
- /FB 528 – <tok> <data> *Fuel on Board (in pounds)*
- /TB CODE 01C – <tok> <data> *Turbulence (in coded figure)*
- Carriage Return

- DT SFO SC B 151500 12 – <DT <other data> Position Report terminator. All data beyond the letters “DT” is ignored by TFMS.
- Carriage Return
- Carriage Return

The format of the Non-POS, Non-RCL message is described in Table 3-IV.

Table 3-IV. Non-POS, Non-RCL Message

Field	Function	Unit/Format	Description	Bytes
SMI	SMI Keyword	LLL	Keyword indicating the type of message following. See Table 3-V for full breakout.	3
/FI	Aircraft Identifier	/FI Ld[d][d][d] [d][d]	The FI field defines the aircraft ID (ACID). It must be two to seven characters in length. The first character must be an uppercase letter, with all other characters uppercase letters or numbers. The ACID is stored in the “acid” field of the flight record. Any errors in this entry will result in the flight record being invalid.	6-11
/OV	Present Location	/OV ddL[]dddL ddd [FL][A][ddd] (For lat long entries) or /OV LLLL ddd [FL][A][ddd] (for name string entries)	The OV field defines information for the first fix (present location). The position is processed, either as a single name string or a lat/long pair. If given as a lat/long pair, it can be values separated by a space or no space. The position is stored into the “pos1” field of the flight record. The ETA is given as a 4-digit time and defined as <i>hhmm</i> where “hh” are hours from 0 to 23 and “mm” are minutes from 00 to 59. The ETA is stored in the “eta1” field of the flight record. The altitude is optional and is parsed by removing the “A” or “F” preceding the entry. It is stored in the “alt1” field of the flight record.	14-23
/EO	Estimated To Be Over a	/EO	The EO field defines	15-17

Field	Function	Unit/Format	Description	Bytes
	Position at a Time	ddL[]dddL dddd (For lat long entries) or /EO LLLLL dddd (for name string entries)	information for the second fix, (second position). The position is processed, either as a single name string or a lat/long pair. If given as a lat/long pair, it can be values separated by a space or no space. The position is stored into the "pos2" field of the flight record. The ETA is given as a 4-digit time and defined as <i>hhmm</i> where "hh" are hours from 0 to 23 and "mm" are minutes from 00 to 59. The ETA is stored in the "eta2" field of the flight record.	
/NP		/NP ddL[]dddL (For lat long entries) or /NP LLLLL (for name string entries)	The NP field defines information for the third fix, (last position). The position is processed, either as a single name string or a lat/long pair. If given as a lat/long pair, it can be values separated by a space or no space. The position is stored into the "pos3" field of the flight record.	9-12
/DA	Departure Aerodrome	/DA aaa[a]	The DA field defines the departure airport. The name must be either 3 or 4 characters in length. This is stored in the "dept" field of the flight record. Any errors in this entry will result in the flight record being invalid.	7-8
/DS	Destination Aerodrome	/DS aaa[a] [ddd]	The DS field defines the destination aerodrome. The name must be either 3 or 4 characters in length. This is stored in the "dest" field of the flight record. An estimated time of arrival (ETA) is optional in this case. The ETA is defined as (hhmm) where "hh" are hours from 0 to 23 and "mm" are minutes from 00 to 59.	7-13

Field	Function	Unit/Format	Description	Bytes
			This ETA value is stored in the "dest_eta" field of the flight record. Any errors in this entry will result in the flight record being invalid.	
/OF	Time Off	/OF dddd	The OF field defines the departure field time. A valid time must be 4 digits in the form (hhmm) where "hh" are hours from 00 to 23 and "mm" are minutes from "00" to "59". The time value is stored in the "dept_Time" field of the flight record. An invalid time is ignored.	8
/DT	Position Report Terminator	/DT *	The DT field signifies the end of the message. Everything after this is ignored by TFMS External Portal Message interface server, which proceeds with the creation of the TO message based on all of the data gathered.	Vrbl
Note – There are five additional tokens which may appear, but are not processed by the system: <ul style="list-style-type: none"> • /TA - Static Air Temperature • /WV - Wind Information • /WX - Weather • /FB - Fuel On Board • /TB – Turbulence 				

Table 3-V shows the "dots_smi" file that defines the valid SMIs. Any other entry in the SMI Keyword position will be rejected.

Table 3-V. "dots_smi" Keywords File

SMI	SMI Number*	REPORT TYPE
AEP	01	Position With Weather
AGM	07	Miscellaneous Air/Ground Message
AID	36	Airborne Instrumentation Data System
ALR	05	Alerting Message
ARI	40	Fuel/Close-Out Report
ARR	04	Arrival

SMI	SMI Number*	REPORT TYPE
AVR	19	Air Crew Originated Voice Request
CHO	15	Changeover Or In-Range Report
CLK	20	Airborne GMT Clock Reset
CLR	08	Flight Clearance
CMD	26	ACARS Avionics Memory Load Or Diagnostic Function
CNL	13	Cancellation Of Flight
CPL	10	Current Flight Plan
DEP	03	Departure
DFD	35	ACARS Digital Flight Data Acquisition Unit
DIV	41	Aircraft Diversion Message
DLA	12	Flight Delay
ENG	38	Aircraft Engine Data
ETA	17	Estimated Time Of Arrival
ETR	32	Aircrew Initiated Revision To Previously Advised Estimated Time Of Arrival
FAM	14	Flight Movement Advisory Message
FML	33	ACARS Flight Management Computer - Left
FMR	34	ACARS Flight Management Computer - Right
FPL	09	Filed Flight Plan
FPR	24	Aircraft Originated Request For Flight Plan Update Via ACARS
FPU	23	Ground Originated Flight Plan Update To Aircraft Via ACARS
GVR	18	Ground Originated Voice Request
HJK	39	Aircraft Hijacked
LIF	22	Ground Originated Aircraft Load Information
MVT	16	Flight Movement
OAT	21	Airborne Optional Auxiliary Data Terminal/Device
PDM	42	Possible Duplicate Message
POS	02	Position Without Weather
PSN	10	Aircrew Initiated Position Report With/Without Weather Information
RDO	25	ACARS Avionics Memory Readout
RTN	29	ACARS Equipped Aircraft Return To Gate
SPL	11	Supplemental Flight Plan
SVC	37	ACARS Communications Service Message
THR	31	Air Crew Initiated Or Auto Sensed Take Off Thrust

SMI	SMI Number*	REPORT TYPE
TIS	06	Airport Terminal Information Service
WXO	28	Weather Observation Report
WXR	27	Weather Observation Request
Note – SMI Number is not used by the system.		

3.2.1.3.2.2 Free-Formatted Advisories and General Messages

A free-formatted advisory is an advisory message that is disseminated electronically by the ATCSCC, International systems, or other originators. An advisory contains information pertaining to the National Airspace System, and are normally used for the following reasons (Note – this list is not all-inclusive):

- Ground stops
- Ground Delay Programs
- Route and reroute information
- Planning Telecon (PT) advisories
- Facility outages
- Special Traffic Management Programs (STMP)

This list is not all-inclusive. Any time there is information that may be beneficial to a large number of customers, an advisory may be sent. There may be times when an advisory is not sent due to workload or the short duration of the activity.

ATCSCC uses free-form advisories to pass important information on a variety of items. While these messages are free text, they do follow a designated header and signature information pattern. The detailed description of ATCSCC free form advisory is presented in Appendix D

3.2.1.3.2.3 Formatted GDP Advisory

Formatted Delay Program Advisories are used to notify users that a Ground Delay Program (GDP), Airspace Flow Program (AFP), or Ground Stop (GS) is being considered or has been implemented. There are 16 Advisories described in this section:

- Ground Delay Program (GDP) Advisory – Proposed
- Ground Delay Program (GDP) Advisory – Actual
- Airspace Flow Program (AFP) Advisory – Proposed
- Airspace Flow Program (AFP) Advisory – Actual
- Ground Delay Program (GDP) Cancel – Proposed
- Ground Delay Program (GDP) Cancel – Actual
- Airspace Flow Program (AFP) Cancel – Proposed

- Airspace Flow Program (AFP) Cancel – Actual
- Ground Stop (GS) Advisory – Proposed
- Ground Stop (GS) Advisory – Actual
- Ground Stop (GS) Cancel – Proposed
- Ground Stop (GS) Cancel – Actual
- Ground Delay Program/Airspace Flow Program (GDP/AFP) Compression – Proposed
- Ground Delay Program/Airspace Flow Program (GDP/AFP) Compression – Actual
- Ground Delay Program (GDP) Blanket Advisory – Proposed
- Ground Delay Program (GDP) Blanket Advisory – Actual

Since advisories are formatted in accordance with Airline Proprietary Standards, Version 1.2, IATA Type B, using Alphabet 5, the following restrictions of this message type apply to the formatted GDP advisory:

- A maximum of 68 upper case alphanumeric characters per line
- Only the “/”, “-”, and “.” Punctuations
- Text must be positioned using spaces, no tabs are permitted.

The above types of formatted GDP advisories are discussed in detail in Appendix D.

3.2.1.3.2.4 Formatted Re-Route Advisory

Description of the Reroute Advisory message contained in this section is extracted from the FAA Order 7210.3U, Facility Operations and Administration, Section 17, February 16, 2006. Note – Any spaces contained in a line are included in the byte counts. Appendix D provides details of this message.

3.2.1.3.2.5 Formatted CTOP Advisories

Formatted CTOP advisories are used to notify users that a Collaborative Trajectory Options Program is being considered or has been implemented. There are 3 advisories described in this section:

- Collaborative Trajectory Options Program (CTOP) Advisory – Proposed
- Collaborative Trajectory Options Program (CTOP) Advisory – Actual
- Collaborative Trajectory Options Program (CTOP) Cancel – Actual

All advisories contain an additional line with the date, time, desk location, and phone number of the workstation that transmitted the advisory. This line, added during the advisory transmission process, is not depicted in the samples provided in this document because it is a transmission addendum and is not related to the primary purpose of the advisory.

Since advisories are in some cases transmitted as IATA Type B messages, the following restrictions of this message type apply to the formatted CTOP advisories:

- A maximum of 68 upper case alphanumeric characters per line are permitted
- Only the “/”, “-”, and “:” Punctuations are permitted
- Text must be positioned using spaces, no tabs are permitted.

The above types of formatted CTOP advisories are discussed in detail in Appendix D.

3.2.1.3.2.53.2.1.3.2.6 Flight Data Messages

This section describes the message formats that participating NAS users can send to the TFMS as part of the Collaborative Decision Making (CDM) data exchange. The goal of this data exchange is to improve the data that the FAA uses to detect and manage traffic management problems by sending automated updates from the NAS user's database system to the TFMS. In exchange for this data feed, NAS users are given access to aggregate demand data and other FAA-provided data that enhances the NAS user's ability to run its operation.

The messages described in this section are:

- Flight Create (FC) – Used by a NAS user to create a new flight
- Flight Modify (FM) – Used by a NAS user to modify an existing flight (can also be used in a simplified substitution packet for modifying flight-slot assignments during a delay program.)
- Flight Cancel (FX) – Used by a NAS user to cancel an existing flight (can also be used in a simplified substitution packet for modifying flight-slot assignments during a delay program.)
- Early Intent (EI) - The EI message is also used by NAS Users to provide TFMS with an early intent flight plan for a flight. The EI message is transmitted to the TFMS via an Early Intent (EI) packet.

General Rules for FC, FM, and FX Flight Message Processing

Message Formatting:

The following general rules apply to all message types.

1. Every flight message shall contain the following five fields for the purpose of flight identification. These five fields must appear in order at the beginning of each message separated by spaces.
 - a. Message Type
 - b. Call Sign
 - c. Departure Airport
 - d. Arrival Airport
 - e. UTC Departure Date/Time
2. Message fields shall be separated by one or more spaces.

3. Any flight data fields in addition to the five mandatory fields shall be explicitly identified by field reference number. The field reference number shall precede the field value and be separated from the value by a space. For example, a Gate Departure Time would appear as: T1 101227. (Note: The SCS message contains fixed format fields that are only used on that message that do not have reference numbers.)
4. Optional fields that are not being included shall be omitted. There is no format for a blank field.
5. A message may be continued on additional lines if too long to enter on one line. A line continuation shall be indicated by a dash character (hex 2D). The line continuation character shall appear as a separate field and must be the last field on a line; i.e., it must be separated from the preceding field by a space and followed by a new line sequence (specified in item 10, below). A line continuation character is not allowed in the middle of a field.
6. Maximum message length for an individual flight message shall be 1024 characters.

Flight Data Fields

The Flight Data messages are composed from a set of pre-defined data fields. Certain fields are required on each message type; these are generally provided in a fixed format. Other optional fields are provided in a variable format, with each field being identified by a reference number. Existing NAS field formats and definitions are used wherever possible.

The possible fields that can be used in an FC, FM, or FX flight data message are defined in Table 3-VI below. Individual messages are composed of combinations of these fields. A field reference number is defined for each flight data field. The field definitions are divided into two lists: those currently implemented and those planned for future use. Each field is described by its reference number, name, the syntax, a text explanation of the field, and one or more examples.

Syntax is specified in a manner similar to that used in NAS-MD-311 Appendix E, where:

- L – represents one upper-case letter in ASCII
- d – represents one numeric digits in ASCII
- a – represents one alphanumeric (either number or upper-case letter) in ASCII
- () – means the characters enclosed are optional. Any characters not within ellipses are required. For example, Ldd(aa) would indicate an upper-case letter, followed by two digits, and then zero, one, or two optional alphanumeric characters.
- Other characters — literals (i.e., the characters should appear exactly as specified).

For example, the syntax “Ld(a)” indicates a field that must start with an upper-case letter followed by a digit, and can optional have a third character which can be any alphanumeric.

Other conventions of the following messages and their definitions should be noted:

- All dates and times are in UTC.
- Fields identified by integers correspond to NAS fields and their syntax matches (or is a subset of) that specified in NAS–MD–311 Appendix E.
- The fields designated by reference numbers of the form A1, A2, ... and T1, T2, ... are new CDM fields not defined in NAS.

Table 3-VI. Flight Data Fields

Field	Designation	Unit/Format	Description	Bytes
Field 02	Flight Identification	La(a)(a)(a)(a) (a)	The flight call sign, also commonly referred to as Flight ID or ACID. Only the aircraft identification portion of the NAS syntax is accepted (i.e., the computer IDs are not used here). Flight IDs must match the NAS flight plan exactly. IDs consisting of a three-letter code and a flight number should use leading zeros on the flight number only if they will be filed that way on the flight plan (ex - if the flight plan will show ABC001, the CDM message should not show ABC1)	2-7
Field 03	Aircraft Type	(d)(L)/La(a)(a)/ (L)	Aircraft equipment specification. The optional prefix number is the number of aircraft. The optional prefix letter specifies whether flight is: <ul style="list-style-type: none"> • T/ - TCAS equipped • H/ - Heavy • B/ - Both Required middle portion is FAA published aircraft type code. The optional suffix is equipment type: <ul style="list-style-type: none"> • /A - DME altitude enc • /B - DME no altitude enc 	2 - 9
Field 26	Departure Airport	aaa(a)	The ICAO identifier for the airport of origin for this	3 - 4

Field	Designation	Unit/Format	Description	Bytes
			particular flight leg. Note - TFMS also accepts published FAA 3-letter designator for CONUS airports.	
Field 27	Arrival Airport	aaa(a)	ICAO identifier for the destination airport for this particular flight leg. TFMS also accepts published FAA 3-letter designator for CONUS airports.	3 - 4
Field A1	UTC Departure Date/Time	ddddddd	Time the flight leg was originally scheduled to depart the gate. Format is <i>MMddhhmm</i> (zero padded as necessary). This field is used as part of the unique identification of a flight leg. Note - This time field should never change under normal circumstances.	8
Field A2	Assigned Arrival Slot	(L)LLLdddd L	Unique identifier of the arrival slot designated flight is currently assigned to. This entry is only applicable if a delay program is in place. Format is: <ul style="list-style-type: none"> • Arrival Airport - First three or four letters • Date/Time – In format DDhhmm (zero padded as necessary) • Unique Identifier - final letter is used by TFMS/FSM to assure that each slot has a unique name. 	10-11
Field A6	Slot Hold Flag	L	For a cancelled flight, indicates whether the airline would like to hold the slot during the next FAA compression. Only applies for a flight that is controlled as part of a ground delay program (GDP), Airspace Flow Programs (AFP), Ground Stops (GS) or Unified Delay Programs (UDP). May only be sent on an FX or FM message. Two inputs: <ul style="list-style-type: none"> • H (Hold) • R (Release) 	1

Field	Designation	Unit/Format	Description	Bytes
Field A7	Remark	DVRSN	This entry requests priority handling for the flight and posts the flight on the diversion recovery web page. Currently, the only entry is DVRSN (static entry) Note – this may be expanded in the future.	5
Field A8	Original Flight Identification	La(a)(a)(a)(a)(a)	Original Flight ID for planned flight supplanted by diversion recovery. This field only on an FC message, and means that this is a diversion recovery flight with respect to any ground delay programs (GDPs) , Airspace Flow Programs (AFP), Ground Stops (GS) or Unified Delay Programs (UDP). It must be accompanied by field A9. Note - Formatting follows all the rules for field 02.	2-8
Field A9	Original UTC Departure Date/Time	ddddddd	Date and time the originally planned flight was scheduled to depart the gate. This field is only on an FC message and means this is a diversion recovery flight with respect to any ground delay programs (GDPs) , Airspace Flow Programs (AFP), Ground Stops (GS) or Unified Delay Programs (UDP). It must be accompanied by field A8. Formatting follows all the rules for field A1.	8
Field T1	Predicted Runway Departure Time	dddddd	Date and time the flight departs the runway. Format is <i>DDhhmm</i> (zero padded as required).	6
Field T2	Predicted Runway Arrival Time	dddddd	Date and time the flight will touch down on the arrival runway. Format is <i>DDhhmm</i> (zero padded as required).	6
Field T3	Predicted Gate Departure Time	dddddd	Date and time the flight will push back from the departure gate. Format is <i>DDhhmm</i> (zero padded as required).	6
Field T4	Predicted Gate Arrival Time	dddddd	Date and time the flight will pull in at the arrival gate. Format is	6

Field	Designation	Unit/Format	Description	Bytes
			<i>DDhhmm</i> (zero padded as required).	
Field T5	Controlled Departure Time	dddddd	Date and time the flight will have to leave the departure runway to make its controlled arrival time (EDCT). This is valid only if a delay program is in effect. Format is <i>DDhhmm</i> (zero padded as required).	6
Field T6	Controlled Arrival Time	dddddd	Date and time the flight must arrive to meet the goals of an FAA delay program (CTA). This is valid only if a delay program is in effect. Format is <i>DDhhmm</i> (zero padded as required).	6
Field T7	Earliest Runway Departure Time	dddddd	Date and time of the earliest runway departure time a user is willing to accept for a flight. This is only used if a delay program is in effect. Format is <i>DDhhmm</i> (zero padded as required).	6
Field T8	Earliest Runway Arrival Time	dddddd	Date and time of the earliest runway arrival time a user is willing to accept for a flight. This is only used if a delay program is in effect. Format is <i>DDhhmm</i> (zero padded as required).	6
Field T11	Actual Runway Time of Departure	dddddd	Date and time flight actually lifted off the departure runway (Off Time). Format is <i>DDhhmm</i> (zero padded as required).	6
Field T12	Actual Runway Time of Arrival	dddddd	Date and time flight actually touched down on the arrival runway (On Time). Format is <i>DDhhmm</i> (zero padded as required).	6
Field T13	Actual Gate Time of Departure	dddddd	Date and time flight actually pushed back from the departure gate (Out Time). Format is <i>DDhhmm</i> (zero padded as required).	6
Field T14	Actual Gate Time of Arrival	dddddd	Date and time flight actually stopped at the arrival gate (In	6

Field	Designation	Unit/Format	Description	Bytes
			Time). Format is <i>DDhhmm</i> (zero padded as required).	

a. Flight Create (FC) Message

An individual flight is added to the TFMS database using a *Flight Create* (FC) message containing the fields specified in Table 3-VII. The message fields of the FC message are specified in Table 3-VII below.

Table 3-VII. Flight Create (FC) Message Fields

Field	Designation	Required/Optional
Fixed Fields - The fixed fields must appear as the first five fields of the message in the order listed below. No field types should appear for these fields.		
Field 01	Message type (FC)	Required
Field 02	Call Sign	Required
Field 26	Departure Airport	Required
Field 27	Arrival Airport	Required
Field A1	UTC Departure Date/Time	Required
Variable Fields - The variable fields may appear in any order after the fixed fields. The field type (i.e., T1, A9, etc.) will precede each value. By convention, these fields usually appear in the order presented below.		
Field 03	Aircraft Type	Required
Field A6	Slot Hold Flag	Optional
Field A7	Remark	Optional
Field A8	Original Flight Identification	Optional
Field A9	Original UTC Departure Date/Time	Optional
Field T1	Runway Departure Time	Optional, but desired. Required if T2 is present
Field T2	Runway Arrival Time	Optional, but desired. Required if T1 is present.
Field T3	Gate Departure Time	Required
Field T4	Gate Arrival Time	Required
Field T7	Earliest Runway Departure Time	Optional
Field T8	Earliest Runway Arrival Time	Optional

Sample Flight Create (FC) Messages

```
FC TWA804 ORD JFK 02211450 03 T/B727 T1 210918 T2 211109 T3 210900
T4 211117 T7 210918 T8 211115

FC AAL2824 LGA DFW 02061225 03 B757 T3 061500 T4 061824
```

In addition, there are other notes that provide guidance on FC messages:

- The FC message is used to re-instate a flight that has previously been cancelled.
- TFMS will reject an FC if a previous FC or FM has already been processed for the same flight with the flight not cancelled.
- TFMS uses information from the FC message to overwrite OAG schedule information in the TFMS database, provided it is the first message received from the NAS user for the flight.
- TFMS does **not** use information from the FC to overwrite NAS flight plan data. Data not specified on the NAS flight plan (i.e. NAS user predicted departure and arrival times, earliest arrival and departure times) are saved, even if the flight already exists. A warning is then sent to the NAS user that the flight already exists in the database.
- An FC message is allowed only in an FD packet. It is not allowed in an SS packet. (See SS packet data below)
- If the flight being created is a recovery of a diverted flight, fields A8 and A9 should be used to identify the original diverted flight (for which this flight is the recovery).

b. Flight Modify (FM) Message

A *Flight Modify* (FM) message may be used to modify any field associated with a flight. An FM message uses the fields specified in Table 3-VIII

Table 3-VIII. Flight Modify (FM) Message Fields

Field	Designation	Required/Optional
Fixed Fields - The fixed fields must appear in the order listed below, as the first five fields of the message. No field types should appear for these fields.		
Field 01	Message type (FM)	Required
Field 02	Call Sign	Required
Field 26	Departure Airport	Required
Field 27	Arrival Airport	Required
Field A1	UTC Departure Date/Time	Required
Variable Fields - Any fields except the following may appear in the variable section:		
<ul style="list-style-type: none"> • Field 01 • Field A2 • Field T5 • Field T6 • Field A8 • Field A9 		

Field	Designation	Required/Optional
Any other element may appear in any order (subject to pairing rules as previously stated i.e. T1 and T2)		

Sample Flight Modify (FM) Messages

```
FM AAL2824 LGA DFW 06141200 T3 141241 T1 141257 T2 141611 T4 141625
FM UAL123 ORD BOS 02211725 02 UAL123A 03 B757
```

In addition, there are other notes that provide guidance on FM messages:

- Any field may be modified except for Field 01 – Message Type.
- If fields 02, 26, 27, or A1 are modified, the new value should be used in the fixed portion of any subsequent message for that flight.
- The predicted time fields must always be paired with a time for the corresponding event. For example, a predicted gate pushback time (T3) must be accompanied by a gate arrival time (T4). When updating the prediction of an arrival event (T2 or T4), the paired time can be either a predicted time (T1, T3) or an actual time (T11, T13). The following time field pairings are allowed when updating an predicted event time:
 - T3 – T4
 - T13 – T4
 - T1 – T2
 - T11 – T2
- Actual time fields (T11 – T14) may be sent either as a pair or by themselves. For example, an FM with a single time field that is a T13.
- Fields T5, T6, and A2 are only allowed within an SS packet. These three fields must always appear together. Any FM in an SS packet must have these three fields.
- Any number of fields in one message may be modified, up to the maximum message length.
- When modifying field 03, Aircraft Type, the entire previous specification is replaced with the new value. For example, if the FC had a field 03 of T/B727, and a subsequent FM shows a field 03 of B757, TFMS drops the TCAS indicator for that flight.
- TFMS processes an FM for a flight that is not already in the TFMS database if the message includes the required fields from an FC: 02, 26, 27, A1, 03, T3, T4. TFMS creates a new entry for the flight in this case.
- TFMS does not use information from the FM to overwrite NAS flight plan data. Data that is not specified on the NAS flight plan (user predicted departure and arrival times, earliest arrival and departure times) is updated even if the flight already exists. A warning is sent to the user that the flight already exists in the

database. It is the user’s responsibility to see that any changes are filed with NAS, once the flight plan is filed.

c. Flight Cancel (FX) Message

An individual flight in the TFMS database is cancelled by using a *Flight Cancel* (FX) message. An FX message uses the fields specified in Table 3-IX, in the indicated order.

Table 3-IX Flight Cancel (FX) Message Fields

Field	Designation	Required/Optional
Fixed Fields - The fixed fields must appear in the order listed below, as the first five fields of the message. No field types should appear for these fields.		
Field 01	Message type (FX)	Required
Field 02	Call Sign	Required
Field 26	Departure Airport	Required
Field 27	Arrival Airport	Required
Field A1	UTC Departure Date/Time	Required
Variable Fields - Only one variable field is allowed on an FX message.		
<i>Field A6</i>	<i>Slot Hold Flag</i>	<i>Optional</i>

Sample Flight Cancel (FX) Messages

```
FX AAL2824 LGA DFW 06141735
FX COA 1630 ORF EWR 01112350 A6 H
```

In addition, there are other notes that provide guidance on FX messages:

- The FX message is allowed in either an FD or SS packet.

d. Early Intent (EI) Message

Early Intent messages provide a way for airlines to submit preliminary flight planning data directly to TFMS, prior to the time when a Flight Plan is formally filed with the NAS Host. Early Intent messages can be submitted anytime up to 24 hours prior to a flight’s departure, and for traffic planning purposes will be handled by TFMS in much the same way that a filed Flight Plan is handled. However, the Early Intent message differs from the standard Flight Plan in two main ways:

- Early Intent message are processed only by TFMS. The Enroute computer at the ARTCC will never see them.
- Flight Plan data filed with the Host and forwarded by the Enroute computer to TFMS will always take precedence over Early Intent data.

Early Intent messages can be submitted over the ARINC MQ. To simplify coding requirements for the airlines, Early Intent messages are sent as EI packets and with the packet body having the same format as Flight Plan (FP) messages submitted by airlines to the Enroute computer.

EI messages (i.e., EI packets) are formatted according to one of the following two options.

- Option 1 (preferred): The body of the message is an EI packet header followed by the EI packet body, which is a single FP message. The format for the entire EI packet is as follows:

Sample Early Intent (EI) Message – Option 1
(Line Numbers for Reference Only)

```
(1)  QU TFMSADD
(2)  USERADD 072303
(3)  EI RYN0506060017.01
(4)  FP RYN218 B727 0471 DAY P1215 290 DAY..PSB.J49.ALB..PSM/0129
```

Line 1 – The priority type (QU mandatory) and ARINC address for TFMS (represented here by TFMSADD. This is not the real address for sending the messages.)

Line 2 – The address of the user that submitted the message (represented here by USERADD).

Line 3 – The EI packet header. This is described later in this section.

Line 4 – Contains the EI packet body (i.e., a single FP message). This is described later in this section.

- Option 2: The body of the message may be simply a single FP message. No EI packet header need be included. The format for the entire packet is as follows:

Sample Early Intent (EI) Message – Option 2
(Line Numbers for Reference Only)

```
(1)  QU TFMSADD
(2)  USERADD 072303
(3)  FP RYN218 B727 0471 DAY P1215 290 DAY..PSB.J49.ALB..PSM/0129
```

Line 1 – The priority type (QU mandatory) and ARINC address for TFMS (represented here by TFMSADD. This is not the real address for sending the messages.)

Line 2 – The address of the user that submitted the message (represented here by USERADD).

Line 3 – Contains a single FP. This is described later in this section.

EI Packet Header

The standard EI message (i.e., EI packet) consists of two lines: the EI packet header and EI packet body (the FP message). The packet header is shown in the example below and detailed in Table 3-X.

Sample Early Intent (EI) Message Headers

Standard Header

EI RYN0506060017.01<NL>

NOACK Header

EI RYN0506060017.01 NOACK<NL>

Alternate Return Address Header

EI RYN0506060017.01 ALTNADD<NL>

Alternate Return Address and NOACK Header

EI RYN0506060017.01 ALTNADD NOACK<NL>

Table 3-X. EI Packet Header

Field	Designation	Unit/Format	Description	Bytes
Type	Packet type	EI	The first position on the header line is the static entry EI	2
Space	Space	[]	One space separating the Type from the Sender ID	1
Sender	Sender ID code	aaa	3-character code of the data sender (An airline with an FAA-assigned 3-letter code will use that code in the packet header; e.g., AAL, FDX. A data provider that is sending data for N-number flights will use the 3-letter code assigned by FAA especially for this purpose.)	3
DTG	Date /Time Group	ddddddddd	10-digit transmission date and time (month, day, hour, minute, and second) in the format: <i>MMDDhhmmss</i>	10
Period	Separator period	.	One period, separating the DTG from the Unique ID.	1

Field	Designation	Unit/Format	Description	Bytes
Unique	Unique identifier	dd	2 digits for uniqueness (in case multiple messages are generated in the same second)	2
<i>Space</i>	<i>Options space</i>	<i>[]</i>	<i>(Optional) Space required if optional alternate address is used.</i>	<i>1</i>
ALTN ADD	Alternate Address	aaaaaaa	(Optional) The client can optionally direct TFMS to send the reply to an address other than the return address. This is done by including the alternate return address on the EI packet header line as shown in the third example. (Represented here by ALTNADD)	7
<i>Space</i>	<i>Options space</i>	<i>[]</i>	<i>(Optional) Space required if optional NOACK is used.</i>	<i>1</i>
NOACK	No Acknowledgement code	NOACK	(Optional) The client can optionally direct TFMS to send a reply only if there is an error. This is done by including the "NOACK" keyword in the header line as shown in the second example above. If the NOACK keyword is not present, TFMS will send a reply for every EI message.	5

EI Packet Body

An EI packet body consists of a single FP message, as shown in the example below. The FP message is detailed in Table 3-XI (refer to NAS MD-311, Appendix E for additional explanations of each individual field).

Sample Early Intent (EI) Packet Body (FP Message)

FP RYN218 B727 0471 DAY P1215 290 DAY..PSB.J49.ALB..PSM/0129 |NRP

Table 3-XI. EI Packet Body (FP Message)

Field	Designation	Unit/Format	Description	Bytes
01	Message Type	FP	Message Type - Static entry FP	2
02	Call Sign	La[a][a][a][a] [a]	Flight Identifier or call sign (Ex – RYN218)	2-7

Field	Designation	Unit/Format	Description	Bytes
03	Aircraft Type	[d][L]/La[a][a] /[L]	Aircraft equipment designator (Ex - B7272)	2-9
05	Airspeed	dd[d][d] or [L]dd[d] or LL	Aircraft cruising speed (EX -0471)	2-4
06	Departure Airport	aaa[a]	Airport that originated flight (EX - DAY)	3-4
07	Departure Time	Pddd	Departure time in format <i>hhmm</i> . Prefix P indicates proposed departure time. (EX - P1215)	5
09	Cruising Altitude	dd[d][L][L][L][L][L]/dd[d]	Planned cruising altitude in hundreds of feet. (EX - 290)	2-3
10	Route of Flight/Estimated Time Enroute	*	The planned route of flight expressed as a series of fixes and routes connecting the departure airport and the arrival airport. This sequence is ended with a slash (/) separating the estimated time enroute, in <i>hhmm</i> format. (EX - DAY..PSB.J49. ALB..PSM/0129)	*

Field	Designation	Unit/Format	Description	Bytes
11	Remarks		<p>Remarks (optional); separated by a vertical bar (EX - NRP) The allowable remarks at this time are:</p> <ul style="list-style-type: none"> • NRP – National Route Program Flight • LIFEGUARD – Lifeguard/MEDEVAC Flight • CATIII – Cat III Landing Minimums Flight • ALTREV – Altitude Reservation Flight • SWAP – SWAP flight • DVRSN – Diversion Recovery Flight • ADCUS – Advise Customs • FCA – Flow Constrained Area • WXRTE – Severe Weather Reroute • HAR – High Altitude Redesign • PTP – High Altitude Point-to-point 	4-71
<p>*Note – For further details on NAS flight plan format for flight route, refer to NAS MD-312.</p>				

3.2.1.3.2.63.2.1.3.2.7 Flight Data Message Responses

Multiple flight messages may be buffered into a single message packet for transmission to TFMS. Conventional Flight Data update messages are sent in a Flight Data (FD) packet. The TFMS may send a response to each received FD packet as described below.

a. Flight Data Message Good Response

TFMS positively acknowledges each successful FD packet only if the NOACK keyword is not present on the packet header line. TFMS always sends a packet acknowledgment when an error or warning is detected while processing the packet. When no errors are detected, a packet acknowledgment is sent unless the keyword NOACK appears in the header line.

The acknowledgment message returns the unique packet identifier, the number of messages:

- Processed correctly
- With errors
- With warnings.

These three numbers add up to the total number of messages received in the FD packet. The acknowledgment message is formatted as shown in the following example, if there are no errors received in the FD packet (Refer to Table3-XII below for complete details):

Sample Flight Data Good Response

FD SWA0206122217.01 PROCESSED. 21 OK, 0 ERRORS, 0 WARNINGS

Table 3-XII Flight Data Good Response

Field	Designation	Unit/Format	Description	Bytes
Type	Message Type	FD	Message Type - Static entry FD	2
Space	Space	[]	One space separating the Type from the Sender ID	1
Sender	Sender ID code	aaa	3-character code of the data sender (An airline with an FAA-assigned 3-letter code will use that code in the packet header; e.g., AAL, FDX. A data provider that is sending data for N-number flights will use the 3-letter code assigned by FAA especially for this purpose.)	3
DTG	Date /Time Group	ddddddddd	10-digit transmission date and time (month, day, hour, minute, and second) in the format: <i>MMDDhhmmss</i>	10
Period	Separator period	.	One period, separating the DTG from the Unique ID.	1
Unique	Unique identifier	dd	2 digits for uniqueness (in case multiple messages are generated in the same second)	2
Space	Space	[]	One space separating the Unique code from the Processed entry	1
Processed	Processed	PROCESSED	Static Entry - PROCESSED	9
Space	Spacing characters	.[]	Spacing characters period followed by a blank space	2

Field	Designation	Unit/Format	Description	Bytes
OK	Successful Messages	dd[d] OK ,	Successful Message count in two or three digits, followed by a space, then the letters OK and a comma	7-8
Errors	Error Message Count	0 ERRORS ,	Number of errors detected in the message packet as 0	10
Warnings	Warning Message Count	0 WARNINGS	Number of warnings detected in the message packet as 0	10

b. Flight Data Message Error Response

If TFMS encounters errors or warnings in processing Flight Data Messages, it will do the following:

- Error – If TFMS encounters an ERROR in processing an FD packet, a packet is returned to the NAS user, including the message(s) that caused the errors, and explanatory text describing the error. TFMS generates an error whenever a flight message is not processed. Each message/error text pair is separated by an extra linefeed for readability.
- Warning - If TFMS generates any WARNINGS while processing an FD packet, a packet is returned including the message(s) that caused the warnings, and explanatory text describing the warning, in the same manner as with error packets. TFMS generates warning messages only in cases where the flight message is processed but some condition is detected that the NAS users should know about.

Each message/error text pair is separated by an extra linefeed for readability. The message is formatted as in the following example:

Sample Flight Data Error and Warning Responses

```
FD SWA0206122217.01 PROCESSED. 19 OK, 2 ERRORS, 0 WARNINGS
FC AAL2824 LGA DFW 02061225 03 B757 T3 061500 T4 061824
ERR001: FLIGHT ALREADY CREATED. USE FM
FC AAL2825 LGA ORD 02061225 03 B759 T3 061500 T4 061824
ERR324: UNKNOWN AIRCRAFT TYPE
```

```
FD SWA0206122217.01 PROCESSED. 20 OK, 0 ERRORS, 1 WARNINGS
FC AAL2824 LGA DFW 02061225 03 B757 T3 061500 T4 061824
WARN001: FLIGHT NOT FOUND. CREATED FLIGHT.
```

Refer to Appendix A, which presents the complete list of error and warning messages. Table XIII below presents a breakout of the Flight Data Error and Warning Response.

Table 3-XIII. Flight Data Error and Warning Response

Field	Designation	Unit/Format	Description	Bytes
Type	Message Type	FD	Message Type - Static entry FD	2
Space	Space	[]	One space separating the Type from the Sender ID	1
Sender	Sender ID code	aaa	3-character code of the data sender (An airline with an FAA-assigned 3-letter code will use that code in the packet header; e.g., AAL, FDX. A data provider that is sending data for N-number flights will use the 3-letter code assigned by FAA especially for this purpose.)	3
DTG	Date /Time Group	ddddddddd	10-digit transmission date and time (month, day, hour, minute, and second) in the format: <i>MMDDhhmmss</i>	10
Period	Separator period	.	One period, separating the DTG from the Unique ID.	1
Unique	Unique identifier	dd	2 digits for uniqueness (in case multiple messages are generated in the same second)	2
Space	Space	[]	One space separating the Unique code from the Processed entry	1
Processed	Processed	PROCESSED	Static Entry	9
Space	Spacing characters	.[]	Spacing characters period followed by a blank space	2
OK	Successful Messages	dd[d] OK,	Successful Message count in two or three digits, followed by a space, then the letters OK and a comma	7-8
Errors	Error Message Count	d[d] ERRORS,	Number of errors detected in the message packet in one or two digits	10-11
Warnings	Warning Message Count	d[d] WARNINGS	Number of warnings detected in the message packet in one or two digits	10-11
SOURCE ERROR LINE (*)				
Type	Message Type	FL	One of the following: <ul style="list-style-type: none"> • FC • FX • FM 	3

Field	Designation	Unit/Format	Description	Bytes
			In which the error was detected	
ACID	Flight Identification	La[a][a][a][a] [a]	Flight call sign (Flight ID) as it appears in the OAG and/or subsequently will be filed on the NAS flight plan.	2-7
Dept Apt	Departure Airport	aaa[a]	Origin Airport ICAO identifier for this flight leg. TFMS also accepts published FAA 3-letter designator for CONUS airports.	3 - 4
Arr Apt	Arrival Airport	aaa[a]	Destination Airport ICAO identifier for this flight leg. TFMS also accepts published FAA 3-letter designator for CONUS airports.	3 - 4
Dept DTG	Departure Date/Time	ddddddd	Date and time the flight leg was originally scheduled to depart the gate. Format is <i>DDhhmmss</i> (zero padded as required).	8
Field	Field Number	03	Standard Field number 03	3
Acft Type	Aircraft Type	[d][L]/La[a][a]/ [L]	Aircraft equipment specification. The optional prefix number is the number of aircraft. The optional prefix letter specifies whether flight is: <ul style="list-style-type: none"> • T/ - TCAS equipped • H/ - Heavy • B/ - Both Required middle portion is FAA published aircraft type code. The optional suffix is equipment type: <ul style="list-style-type: none"> • /A - DME altitude enc • /B - DME no altitude enc 	2 - 9
<i>Field</i>	<i>Optional Fields</i>	**	<i>Optional Fields. See Table 3-VI for full entry descriptions.</i>	**
ERROR CODE /TEXT LINES (EITHER ERROR OR WARNING)				
Err Code	Error Code	ERR ddd:	Error Code and Detailed message. See Appendix A for the full listing.	22-87***
Warn Code	Warning Code	WARN ddd:	Warning Code and Detailed message. See Appendix A for the full listing.	24-55***
*Note – Optional. Not present if no errors. If there are errors, Source Error Line is followed by 1 or				

Field	Designation	Unit/Format	Description	Bytes
more Error Code/text. Repeated for every FD message containing 1 or more errors **Note – A number of fields may be entered for these fields, depending on the type of message the error occurred in ***Note – There may be multiple Field and Err Code entries.				

3.2.1.3.2.73.2.1.3.2.8 Substitution Messages

The SC, SCS, HOLD ALL SLOTS, and RELEASE ALL SLOTS messages are exchanged in a Simplified Substitution (SS) packet for modifying flight-slot assignments during a ground delay program. For the conventions of the SS packet, see section 3.2.1.3.2, under **Packet Header Conventions and Return Address Specification**. The formatting of these messages when used for SS packets is included here. The FM and FX messages can also be exchanged in SS packets. For the format of the FM and FX messages, refer to Section 3.2.1.3.2.5, Flight Data Messages.

Although not considered a Substitution message, the TFMS sends a Slot List to users whenever a delay program (GDP, GS, or AFP) is issued or revised. Due to length constraints, the Slot List sent via the ARINC MQ interface is a shortened version of the Slot List sent by the TFMS via the AOCNET interface. The Slot List is not sent in a message packet. It is sent as an unsolicited message. See Section 3.2.1.3.2.10 for a description of the Slot List message.

a. Slot Create (SC) Message

The SC message is used to create a slot for an existing un-controlled flight. The first field defines the message type. The next four fields uniquely identify the flight that is being modified. The remaining fields provide the CTD, CTA, and arrival slot for the flight. Table 3-XIV details the layout of a Slot Create message. A sample SC message for a GDP has the following format:

Table 3-XIV. Slot Create (SC) Message

Field	Designation	Unit/Format	Description	Bytes
Field 01	Message type	SC	Static Entry - SC	2
Field 02	Flight Identification	La[a][a][a][a] [a]	Flight call sign (Flight ID) as it appears in the OAG and/or subsequently will be filed on the NAS flight plan. Only the aircraft identification portion of the NAS syntax is accepted (computer IDs are not used here). Flight IDs must match the NAS flight plan exactly. IDs consisting of a 3-letter code and a flight number should use leading zeros on the flight number only if they will be filed that way on the flight plan.	2-7
Field 26	Departure Airport (NAS Departure Point)	aaa[a]	ICAO identifier for the airport of origin for this flight leg. TFMS also accepts published FAA 3-letter designator for CONUS airports.	3 - 4
Field 27	Arrival Airport (NAS Destination)	aaa[a]	ICAO identifier for the destination airport for this flight leg. TFMS also accepts published FAA three-letter designator for CONUS airports.	3 - 4
Field A1	UTC Departure Date/Time	ddddddd	Date/and time when the flight leg was originally scheduled to depart the gate. Format is <i>MMDDhhmm</i> , and must be 8 digits, zero padded. This field is used as part of the unique identification of a flight leg.	8
A2	Assigned Arrival Slot	aaa[a].ddddddL or FCAaaa.ddddd L	The time slot that has been reserved at the airport or FCA for this flight to arrive. It consists of: <ul style="list-style-type: none"> Name – airport of FCA name. An airport name can be three or four characters and can include letters and numbers. An FCA name must be the entry FCA followed by three alphanumeric characters. Date/Time – Slot date and 	11-12 or 14

Field	Designation	Unit/Format	Description	Bytes
			time in the format The format is DDhhmm (padded as necessary) <ul style="list-style-type: none"> Suffix Letter - The suffix letter is used to ensure that slot name is unique. Note - An FCA name must be six characters starting with the literal letters "FCA". The remaining characters can be either digits, upper-case letters, dash ("-"), or underscore ("_"). An FCA name cannot end with an underscore.	
T5	Controlled Time of Departure (EDCT)	dddddd	Date and time the flight will have to leave the departure runway to make its controlled arrival time. Format is <i>DDhhmm</i> , zero padded if necessary	6
T6	Controlled Time of Arrival	dddddd	Date and time the flight must arrive to make its arrival slot. <ul style="list-style-type: none"> For a GDP or GS, the CTA is the arrival time at the airport For an AFP, the CTA is the arrival time at the FCA Format is <i>DDhhmm</i> , zero padded if necessary	6

Sample Slot Create Message for a GDP

SC ABC999 STL LGA 06260315 T5 260328 T6 260552 A2 LGA.260552Q

A sample SC message for an AFP has the following format:

Sample Slot Create Message for an AFP

SC ABC999 STL LGA 06260315 T5 260328 T6 260552 A2 LGA.260552Q

The sample messages are decoded as follows:

- SC – Message type. (Required)
- ABC999 – Flight identifier (a.k.a. call sign) of the flight being modified. (Required)
- STL – Origin airport for the flight. (Required)
- LGA – Destination airport for the flight. (Required)
- 06260315 – Original gate departure date and time for the flight (0315Z on June 26th). (Required)
- T5 – Field identifier for CTD. (Required)
- 260328 – New value of CTD requested for this flight (0328Z on the 26th). (Required)
- T6 – Field identifier for CTA. (Required)
- 260552 – New value of CTA requested for this flight (0552Z on the 26th). (Required)
- A2 – Field identifier for assigned arrival slot. (Required)
- LGA.260552Q – Name of arrival slot requested for this flight. (NOTE: TFMS creates suffixes using the early part of the alphabet and also uses Z. By choosing a suffix that is later in the alphabet but not Z, the user increases the changes that the slot name will be unique.) (Required)

In addition, there are other notes that provide guidance on SC messages:

- The SC message is allowed only in an SS packet.

b. Slot Credit Substitution (SCS) Message

A slot credit substitution request can be submitted to TFMS using the SCS message. An SCS is a unique type of request that does not fit the FM message format that is used for normal substitutions. The format of the SCS message differs from the other CDM messages in that the format is completely fixed. Special fields are used in the SCS that cannot be modified in an FM message. This was done because the additional fields in an SCS message are not flight attributes that are stored by TFMS. Rather, they are temporary values used only in the processing of the request.

An SCS message uses the fields specified in Table 3-XV, in the indicated order.

Table 3-XV. Slot Credit Substitution (SCS) Message

Field	Designation	Unit/Format	Description	Bytes
Field 01	Message type	SCS	Static Entry - SCS	3
Field 02	Flight Identification	La[a][a][a][a] [a]	Flight call sign (Flight ID) as it appears in the OAG and/or subsequently will be filed on the NAS flight plan. Only the aircraft identification portion of the NAS syntax is accepted (computer IDs are not used here). Flight IDs must match the NAS flight plan exactly. IDs consisting of a 3-letter code and a flight number should use leading zeros on the flight number only if they will be filed that way on the flight plan.	2-7
Field 26	Departure Airport (NAS Departure Point)	aaa[a]	ICAO identifier for the airport of origin for this flight leg. TFMS also accepts published FAA 3-letter designator for CONUS airports.	3 - 4
Field 27	Arrival Airport (NAS Destination)	aaa[a]	ICAO identifier for the destination airport for this flight leg. TFMS also accepts published FAA three-letter designator for CONUS airports.	3 - 4
Field A1	UTC Departure Date/Time	ddddddd	Date/and time when the flight leg was originally scheduled to depart the gate. Format is <i>MMDDhhmm</i> , and must be 8 digits, zero padded. This field is used as part of the unique identification of a flight leg.	8
No tag	Yielded Slot	Laaaaaa Or FCAaaaaa a	Slot designator. The format is a concatenation of: <ul style="list-style-type: none"> • Airport name: 3 or 4 characters or FCA name : FCA followed by up to 3 characters • Slot date and time: Format is <i>DDhhmm</i>, and must be 6 digits, zero padded. • 1-letter suffix: The suffix letter is used to ensure that slot name is unique 	10-14

Field	Designation	Unit/Format	Description	Bytes
No tag	Earliest Acceptable Time	dddddd	Earliest acceptable time the aircraft will take. Format is <i>DDhhmm</i> , and must be 6 digits, zero padded.	6
No tag	Latest Acceptable Time	dddddd	Latest acceptable time the aircraft will take. Format is <i>DDhhmm</i> , and must be 6 digits, zero padded.	6

Sample Slot Credit Substitution (SCS) Message for a GDP

SCS UNA1277 DFW SFO 03241701 SFO.242040A 242050 242120

Sample Slot Credit Substitution (SCS) Message for an AFP

SCS UNA1277 DFW SFO 03241701 FCAA02.242040A 242050 242120

The fields contained in the above examples have the following meaning:

- SCS – This is an SCS request message type. (Required)
- UNA1277 – The ID of the flight to be subbed into the new slot. (Required)
- DFW – The origin of the flight. (Required)
- SFO – The destination of the flight. (Required)
- 03241701 – The original departure date/time for the flight. (Required)
- SFO.242040A – The yielded slot. (Required)
- 242050 – The earliest acceptable time for the new slot. (Required)
- 242120 – The latest acceptable time for the new slot. (Required)

In addition, there are other notes that provide guidance on SCS messages:

- The SCS message is allowed only in an SS packet.

c. HOLD ALL SLOTS Message

The HOLD ALL SLOTS message holds all open slots belonging to a user for a particular GDP or AFP. A sample message illustrates the message format as follows:

Sample HOLD ALL SLOTS Message (for a GDP)

HOLD ALL SLOTS FOR LGA

Table 3-XVI below presents a breakout of the Hold All Slot message

Table 3-XVI. HOLD ALL SLOTS Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	Hold All Slots	HOLD ALL SLOTS FOR Laa[a]	Hold All Slots for a specific airport in three or four digits	22-23

d. RELEASE ALL SLOTS Message

The RELEASE ALL SLOTS message releases all open slots belonging to a user for a particular GDP or AFP. A sample message illustrates the message format as follows:

Sample RELEASE ALL SLOTS Message (for an AFP)

RELEASE ALL SLOTS FOR FCAA02

Table 3-XVII below presents a breakout of the RELEASE ALL SLOTS message

Table 3-XVII. Release All Slots Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	Release All Slots	RELEASE ALL SLOTS FOR Laa[a]	Release All Slots for a specific airport in three or four digits	25-26

Table 3-XVIII. Unused

The original contents of Table 3-XVIII have been moved to Table XXXIII. To preserve the overall structure of the tables in this document, this table number is retained.

3.2.1.3.2.83.2.1.3.2.9 Substitution Message Responses

The TFMS will send a response to every SS message packet. The response is sent to the return address on the incoming message. The format of the response is the same regardless of what types of messages were sent in the SS packet.

a. Substitution Message Good Response

If no errors are detected in the SS packet, the TFMS database is updated to reflect the changes requested by the airlines. The response to the airline includes the packet identifier, a message indicating it was successfully processed, and an updated slot list for each flight affected by the message.

**Sample Substitution Good Response
(Line Numbers for Reference Only)**

```
(1)  SS ABC0625121029.01 ACCEPTED.
(2)  SLOT LIST for LGA
(3)
(4)  ACID  ASLOT      DEP  ARR  CTD   CTA   TYPE EX CX  IGTD
(5)  ABC1234 LGA.260400A  DCA  LGA  260300 260400 GDP - - 260245
(6)  ABC5678 LGA.260500A  IAD  LGA  260400 260500 GDP - - 260145
```

Table 3-XIX below presents a breakout of the Substitution Good Response

Table 3-XIX. Substitution Good Response Message

Field	Designation	Unit/Format	Description	Bytes
Packet Type	Initial Packet Type Identifier	LL	Identifies the initial packet type being replied to	3
Sender	Sender ID code	aaa	3-character code of the data sender (An airline with an FAA-assigned 3-letter code will use that code in the packet header; e.g., AAL, FDX. A data provider that is sending data for N-number flights will use the 3-letter code assigned by FAA especially for this purpose.)	3
DTG	Date /Time Group	ddddddddd	10-digit transmission date and time in the format: <i>MMDDhhmmss</i>	10
Period	Separator period	.	One period, separating the DTG from the Unique ID.	1
Unique	Unique identifier	dd	2 digits for uniqueness (in case multiple messages are generated in the same second)	2
Space	Space	[]	One space separating the Unique code from the Processed entry	1
Accepted	Accepted	ACCEPTED	Shows the identifier of the packet that is being replied to. The word ACCEPTED indicates that the processing of the packet was successful.	8
Data ID	Data Identifier	ATCSCC EDCT FLOW CONTROL DEPARTURE TIME	Static Entry - ATCSCC EDCT FLOW CONTROL DEPARTURE TIME	39
Headers	Slot List Data Header	ACID ASLOT	Header for the following Slot List data fields:	64

Field	Designation	Unit/Format	Description	Bytes
		DEP ARR CTD CTA TYPE EX CX IGTD	<ul style="list-style-type: none"> • ACID – Aircraft identifier • ASLOT – Arrival Slot • DEP – Departure Airport • ARR - Arrival Airport • CTD – Controlled Time of Departure • CTA –Controlled Time of Arrival • TYPE – Type of Entry • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • IGTD - Initial Gate Time of Departure 	
4 - n	Slot List Data Fields		Refer to Table 3-XXXIII for detailed breakout.	
*Note – There may be multiple rows of data under the header.				

b. Substitution Message Error Response

If errors are detected in the SS packet, the entire packet is rejected and the TFMS database is not updated. The response to the airline includes the packet identifier, a message indicating it was rejected, and the number of errors. For each error, the response shows the SS message that triggered the error and the reason for the error.

Sample Substitution Error Response

```
SS ABC0625121029.01 REJECTED. 1 ERROR.
FM ABC1234 DCA LGA 06260145 T5 260400 T6 260430 A2 LGA260500A
ERR453: SCS MESSAGE FAILED TO UPDATE FLIGHT
```

The meaning of the sample response is as follows:

Line 1: Shows the identifier of the packet that is being replied to. The word “REJECTED” indicates that the processing of the packet was successful. The number of errors is shown.

Line 2: blank

Line 3: The SS message that triggered the error.

Line 4: The error code and message. In the example above , it was Error 453, indicating the flight specified on an SCS message could not be updated in the TFMS database. For complete listing of Error messages, refer to Table A-I.

3.2.1.3.2.93.2.1.3.2.10 Requests and Responses

NAS Users can make requests for data as well as requests that control aspects of substitution process. Request have two forms: report requests and bridging requests.

Four reports are available to the NAS Users:

- EDCT LIST
- EDCT SUB SHOW
- EDCT SLIST
- EDCT UNASSIGNED SLOTS

Report requests are transmitted to the Air Traffic Control System Command Center (ATCSCC) by the requestor, using the ATCSCC ARINC address (TFMBSYA).

Additionally, two Bridging requests are available to the NAS Users:

- EDCT Bridging On
- EDCT Bridging Off

a. Report Request

When sending a report request over ARINC MQ, the request must include the “RQ” packet header. A sample report request has the following format:

**Sample Report Request
(Line Numbers for Reference Only)**

```
(1)  RQ
(2)  EDCT LIST
(3)  EDCT SUB SHOW
(4)  EDCT SLIST LGA (or) EDCT SLIST FCA002
(5)  EDCT UNASSIGNED SLOTS FCA002 (or) EDCT UNASSIGNEDSLOTS FCA002 (or)
EDCT UNASSIGNED SLOTS LGA (or) EDCT UNASSIGNEDSLOTS LGA
```

Table 3-XX below presents a breakout of the Report Request

Table 3-XX. Report Request

Field/Line	Designation	Unit/Format	Description	Bytes
1	Initial Packet Type Identifier	RQ	Packet header: static entry RQ	2
Line 2-n: Request(s). The packet can include one or more requests. Each requested report comes back as a separate message. Possible request types are listed below				
2	EDCT LIST	EDCT LIST	Returns a list of all airports that currently have GDPs and FCAs in AFPs and in active CTOPs . (See 3.2.1.3.2.9 - b below)	9

Field/Line	Designation	Unit/Format	Description	Bytes
3	EDCT SUB SHOW	EDCT SUB SHOW	Returns the substitution status (on or off) at all airports that currently have GDPs (sub status is also part of the EDCT LIST report) (See 3.2.1.3.2.9 - c below)	13
4	EDCT SLIST	EDCT SLIST Laa[a] or FCAXXX	Returns a slot list for the requested airport or the FCA. Unlike the slot lists when the GDP is issued, the EDCT SLIST report returns a single list that includes all flights affiliated with the requesting airline. That is, the reply can include different 3-letter airline codes in one report. (See 3.2.1.3.2.9 - d below)	15-17
5	EDCT UNASSIGNED SLOTS	EDCT UNASSIGNED SLOTS aaaa or FCA[aaa]	Returns a list of unassigned slots for the requested airport or the FCA, similar to the ADL UNASSIGNED_SLOTS block. (See 3.2.1.3.2.9 - e below)	25-28

b. EDCT LIST

This message returns a list of all airports that currently have GDPs. [The EDCT List response includes FCAs in AFPs and in active CTOPs. For the FCAs in active CTOPs, the SUBS and the SCS fields will always be set to “OFF” and the Bridging Status will always be set to “OFF”.](#) When sending a LIST request over ARINC MQ, the request must include the “RQ” packet header. A sample message has the following format:

Sample EDCT LIST Request Message

```
RQ
EDCT LIST
```

Table 3-XXI below presents a breakout of the EDCT LIST request.

Table 3-XXI. EDCT LIST Request

Field/Line	Designation	Unit/Format	Description	Bytes
1	Initial Packet Type Identifier	RQ	Packet header: the letters “RQ”.	2
2	EDCT LIST	EDCT LIST	EDCT LIST Request for airport	9

Field/Line	Designation	Unit/Format	Description	Bytes
			in three or four digits	

A sample EDCT LIST has the following format:

Sample EDCT LIST
(Line Numbers for Reference Only)

```

(1)  Number of airports currently controlled: 3
(2)
(3)  DEST    TIMES    CONTROL  FLIGHTS    SUBS    SCS
(4)  -----
(5)  EWR     /19/01/  EDCT+DAS  255        ON      ON
(6)  JFK     /20/23/  GS        47         OFF     OFF
(7)
(8)  Bridging status at EWR:
(9)    - Carriers which turned bridging OFF:
(10)    USA
(11)  Bridging status at JFK: ON.
(12)
(13)  Number of FCAs currently controlled: 1
(14)
(15)  FCA     TIMES    CONTROL  FLIGHTS    SUBS    SCS
(16)  -----
(17)  FCAA02  /18/23/  EDCT+DAS  24         ON      ON
(18)
(19)  Bridging status at FCAA02: ON.
(20)
(21)  Bridging turned OFF permanently for non-CDM general aviation and
      military.
(22)
(23)  Printer:  $fsa.//wkstn32
    
```

Table 3-XXII below presents a breakout of the EDCT List

Table 3-XXII. EDCT List

Field/Line	Designation	Unit/Format	Description	Bytes
1	Number of Controlled Airports	NUMBER OF AIRPORTS CURRENTLY CONTROLLED: d[d]	The number of airports that currently have GDPs or GSs.	42-43
2	Blank Line Separator		Blank line separating data	1
3	Headers	DEST TIMES CONTROL FLIGHTS SUBS SCS	Column Headers: <ul style="list-style-type: none"> • DEST – Destination Airport • TIMES – GDP/GS Time range • CONTROL – Type of Control issued • FLIGHTS – Number affected 	49

Field/Line	Designation	Unit/Format	Description	Bytes
			<ul style="list-style-type: none"> • SUBS – Substitution Status • SCS - Slot Credit Substitutions Status 	
4	Dashed Line Separator	----- -----	Dashed line separator	49
5	Destination	Laa[a]	Destination airport in three or four character identifier. This entry is padded with spaces to equal 8 bytes.	8
5	Times	/dd/dd	Start and end times of the GDP or ground stop in the following format: /hh/hh (hour start and hour end in sequence) This entry is padded with spaces to equal 9 bytes.	9
5	Control	LL[LL...LLL]	Control Type issue: May be more than one entry. If so, each entry will be joined by a plus sign. This entry is padded with spaces to equal 12 bytes.	12
5	Flights	d[d][d][d]	Number of flights that are affected by the Control. In as many digits are necessary to detail. This entry is padded with spaces to equal 10 bytes.	10
5	Sub Status	ON <i>or</i> OFF	Status of substitutions: One of two entries: <ul style="list-style-type: none"> • ON • OFF This entry is padded with spaces to equal 7 bytes.	7
5	SCS Status	ON <i>or</i> OFF	Status of Slot Credit Substitutions. One of two entries: <ul style="list-style-type: none"> • ON • OFF 	2-3
6 – #n			Multiple entries are possible containing the items listed as Field/Line 5.	48-49 per line
7	Blank Line Separator		Blank line separating data	1
8	Bridging Status	BRIDGING STATUS AT Laa:	Status of bridging for individual GDPs.	23

Field/Line	Designation	Unit/Format	Description	Bytes
9	Bridging Off	- CARRIERS WHICH TURNED BRIDGING OFF:	If bridging is off, the report lists each carrier that currently has bridging off for that GDP. This field is led by two blank spaces.	39
10	Carrier List	LLL [LLL]	Carriers which have turned Bridging off. This field is led by 4 blank spaces.	3-68
11	Bridging Status	BRIDGING STATUS AT Laa: ON	Status of bridging for individual GDPs, indicating Bridging is ON.	28
12	Blank Line Separator		Blank line separating data	1
13	Number of Controlled FCAs	NUMBER OF FCAS CURRENTLY CONTROLLED: d[d]	Number of controlled FCAs. In one or two digits	38-39
14	Blank Line Separator		Blank line separating data	1
15	Headers	FCA TIMES CONTROL FLIGHTS SUBS SCS	Column Headers: <ul style="list-style-type: none"> • FCA – FCA Identifier • TIMES – AFP or FCA control time range • CONTROL – Type of Control issued • FLIGHTS – Number affected • SUBS – Substitution Status • SCS - Slot Credit Substitutions Status 	49
16	Dashed Line Separator	----- -----	Dashed line separator	49
17	FCA Identifier	FCAaaa	FCA in six character identifier. This entry is padded with spaces to equal 8 bytes.	8
17	Times	/dd/dd	Start and end times of the AFP or the Controlled time period of the FCA included in a CTOP , in the following format: /hh/hh (hour start and hour end in sequence) This entry is padded with spaces to equal 9 bytes.	9
17	Control	LL[LL...LLL]	Control Type issue: May be more than one entry. If so, each	12

Field/Line	Designation	Unit/Format	Description	Bytes
			entry will be joined by a plus sign. This entry is padded with spaces to equal 12 bytes.	
17	Flights	d[d][d][d]	Number of flights that are affected by the Control. In as many digits are necessary to detail. This entry is padded with spaces to equal 10 bytes.	10
17	Sub Status	ON <i>or</i> OFF	Status of substitutions: One of two entries: <ul style="list-style-type: none"> • ON • OFF This entry is padded with spaces to equal 7 bytes.	7
17	SCS Status	ON <i>or</i> OFF	Status of Slot Credit Substitutions. One of two entries: <ul style="list-style-type: none"> • ON • OFF 	2-3
17- #n			Multiple entries are possible containing the items listed as Field/Line 17.	48-49 per line
18	Blank Line Separator		Blank line separating data	1
19	Bridging Status	BRIDGING STATUS AT FCAaaa: ON	Status of bridging for individual AFPs.. Same format as for GDPs	23
20	Blank Line Separator		Blank line separating data	1
21	System Bridging Status	BRIDGING TURNED OFF PERMANENTLY FOR NON-CDM GENERAL AVIATION AND MILITARY.	Status of bridging for the system. This applies to both GDPs and AFPs. (NOTE: This line continues out past the right margin.)	74
22	Blank Line Separator		Blank line separating data	1
23	Printer	PRINTER: aaaa./aaaaaaaa	Location of the printer at the command center. (NOTE: This is of no use for the NAS user.)	24

c. EDCT SUB SHOW

This message returns the substitution status (on or off) at all airports that currently have GDPs (sub status is also part of the EDCT LIST report) as well as the substitution status for all FCAs that have AFPs. When sending a SUB SHOW request over ARINC MQ, the request must include the "RQ" packet header. A sample message has the following format:

Sample EDCT SUB SHOW Request Message

```
RQ
EDCT SUB SHOW
```

Table 3-XXIII below presents a breakout of the EDCT SUB SHOW request.

Table 3-XXIII. EDCT SUB SHOW Request

Field/Line	Designation	Unit/Format	Description	Bytes
1	Initial Packet Type Identifier	RQ	Packet header: the letters "RQ".	2
2	EDCT SUB SHOW	EDCT SUB SHOW	EDCT SUB SHOW Request for airport in three or four digits	13

A sample EDCT SUB SHOW report has the following format:

**Sample EDCT SUB SHOW
 (Line Numbers for Reference Only)**

```
(1) Current Time: 18:06:17 on 7/29/2005
(2)
(3) Airport SUB Processing Activated SCS Processing Activated
(4) -----
(5) EWR Yes Yes
(6) JFK No No
(7)
(8) Bridging status at EWR:
(9) - Carriers which turned bridging OFF:
(10) USA
(11) Bridging status at JFK: ON.
(12)
(13) FCA SUB Processing Activated SCS Processing Activated
(14) -----
(15) FCAA02 Yes Yes
(16)
(17) Bridging status at FCAA02: ON.
(18)
(19) Bridging turned OFF permanently for non-CDM general aviation ...
(20)
(21) Printer: $fsa.//wkstn32
```

Table 3-XXIV below presents a breakout of the EDCT Sub Show

Table 3-XXIV. EDCT Sub Show

Field/Line	Designation	Unit/Format	Description	Bytes
1	Current Time and Date	CURRENT TIME: dd:dd:dd ON d[d]/d[d]/dddd	Current Time and Date of message in format <i>hh:mm:ss</i> on <i>M[M]/D[D]/YYYY</i> <ul style="list-style-type: none"> • hh – hour • mm – minute • ss – second • M[M] – Month in one or two digits • D[D] – day in one or two digits • YYYY – Year 	40
2	Blank Line Separator		Blank line separating data	1
3	GDP Headers	AIRPORT SUB PROCESSING ACTIVATED SCS PROCESSING ACTIVATED	Column Headers: <ul style="list-style-type: none"> • Airport – Destination Airport • Sub Processing Activated– Substitution Processing on or off • SCS Processing Activated – Slot Control Substitution Processing on or off 	59
4	Dashed Line Separator	----- -----	Dashed line separator	49
5	Airport	Laa[a]	Destination airport in three or four character identifier. This entry is padded with spaces to equal 11 bytes.	11
5	Sub Processing	YES <i>or</i> NO	Substitution Processing Status. One of two entries: <ul style="list-style-type: none"> • YES • NO This entry is padded with spaces to equal 26 bytes.	26
5	SCS Processing	YES <i>or</i> NO	Substitution Processing Status. One of two entries: <ul style="list-style-type: none"> • YES • NO 	2-3
6 – #n			Multiple entries are possible containing the items listed as Field/Line 5.	48-49 per line
7	Blank Line Separator		Blank line separating data	1

Field/Line	Designation	Unit/Format	Description	Bytes
8	Bridging Status	BRIDGING STATUS AT Laa:	Status of bridging for individual GDPs.	23
9	Bridging Off	- CARRIERS WHICH TURNED BRIDGING OFF:	If bridging is off, the report lists each carrier that currently has bridging off for that GDP. This field is led by two blank spaces.	39
10	Carrier List	LLL [LLL]	Carriers which have turned Bridging off. This field is led by 4 blank spaces.	3-68
11	Bridging Status	BRIDGING STATUS AT Laa: ON	Status of bridging for individual GDPs, indicating Bridging is ON.	28
12	Blank Line Separator		Blank line separating data	1
13	FCA Header	FCA SUB PROCESSING ACTIVATED SCS PROCESSING ACTIVATED	Column Headers: <ul style="list-style-type: none"> • FCA – FCA Number • Sub Processing Activated– Sub Processing on or off • SCS Processing Activated – Slot Control Substitution processing on or off 	59
14	Dashed Line Separator	----- ----- -----	Dashed line separator	49
15	FCA Identifier	FCAaaa[d]	FCA in six or seven character identifier. This entry is padded with spaces to equal 8 bytes.	8
15	Sub Processing	YES <i>or</i> NO	Substitution Processing Status. One of two entries: <ul style="list-style-type: none"> • YES • NO This entry is padded with spaces to equal 26 bytes.	26
15	SCS Processing	YES <i>or</i> NO	Substitution Processing Status. One of two entries: <ul style="list-style-type: none"> • YES • NO 	2-3
15– #n			Multiple entries are possible containing the items listed as Field/Line 17.	48-49 per line
16	Blank Line Separator		Blank line separating data	1

Field/Line	Designation	Unit/Format	Description	Bytes
17	Bridging Status	BRIDGING STATUS AT FCA add: ON	Status of bridging for individual AFPs.. Same format as for GDPs.	23
18	Blank Line Separator		Blank line separating data	1
19	System Bridging Status	BRIDGING TURNED OFF PERMANENTLY FOR NON-CDM GENERAL AVIATION AND MILITARY.	Status of bridging for the system. This applies to both GDPs and AFPs. (NOTE: This line continues out past the right margin.)	74
20	Blank Line Separator		Blank line separating data	1
21	Printer	PRINTER: aaaa./aaaaaaaa	Location of the printer at the command center. (NOTE: This is of no use for the NAS user.)	24

d. EDCT SLIST

The EDCT SLIST request returns the same format used to issue a GDP/AFP, or to reply to an SS message. When sending a SLIST request over ARINC MQ, the request must include the “RQ” packet header. A sample message has the following format:

Sample EDCT SLIST Request Message

```
RQ
EDCT SLIST LGA (or) EDCT SLIST FCA002
```

Table 3-XXV below presents a breakout of the EDCT SLIST request.

Table 3-XXV. EDCT SLIST Request

Field/Line	Designation	Unit/Format	Description	Bytes
1	Initial Packet Type Identifier	RQ	Packet header: the letters “RQ”.	2
2	EDCT SLIST	EDCT SLIST Laa[a] or FCA[aaa]	EDCT SLIST Request for an airport or an FCA	15-17

A sample EDCT SLIST report (for an AFP) has the following format:

**Sample EDCT SLIST (for an AFP)
(Line Numbers for Reference Only)**

```
(1) SLOT LIST FOR FCAA02
(2)
(3) ACID    ASLOT      DEP  ARR  CTD   CTA   TYPE EX CX  IGTD
(4) ABC1234 FCAA02.260400A DCA  LGA  260300 260400 AFP  -  -  260245
    ABC5678 FCAA02.260500A IAD  BOS  260400 260500 AFP  -  -  260145
    ABC360  FCAA02.260323A CYYZ LGA  260206 260323 AFP  Y  -  260150
    ABC3522 FCAA02.260311A DCA  BOS  260215 260311 AFP  -  -  260145
    ABC39   FCAA02.260353A ROC  LGA  260246 260353 AFP  -  Y  260235
```

For an FCA in an Active CTOP, the EDCT SLIST request will only be available on an FCA basis. This implies that a request can be done for an FCA in an active CTOP but not for the CTOP. A sample EDCT SLIST report (for an FCA in an Active CTOP) has the following format:

**Sample EDCT SLIST (for an FCA in an Active CTOP)
(Line Numbers for Reference Only)**

```
(1) SLOT LIST FOR FCAA02
(2)
(3) ACID    ASLOT      DEP  ARR  CTD   CTA   TYPE EX CX  IGTD
(4) ABC1234 FCAA02.260400Z DCA  LGA  260300 260400 UPD  -  -  260245
    ABC5678 FCAA02.260500Z IAD  BOS  260400 260500 UPD  -  -  260145
    ABC360  FCAA02.260323Z CYYZ LGA  260206 260323 UPD  -  -  260150
    ABC3522 FCAA02.260311Z DCA  BOS  260215 260311 UPD  -  -  260145
    ABC39   FCAA02.260353Z ROC  LGA  260246 260353 UPD  -  -  260235
```

Table 3-XXVI below presents a breakout of the EDCT SLIST

Table 3-XXVI. EDCT SLIST

Field/Line	Designation	Unit/Format	Description	Bytes
1	Slot List Identifier	SLOT LIST FOR FCAaaa <i>or</i> SLOT LIST FOR aaa	Identifies airport or FCA that the slot list is for.	17-20
2	Blank Line Separator		Blank line separating data	1
3	Slot List Data Headers	ACID ASLOT ARR DEP CTD CTA TYPE EX CX	Header for the following Slot List data fields: <ul style="list-style-type: none"> • ACID – Aircraft identifier • ASLOT – Arrival Slot • DEP – Departure Airport 	64

Field/Line	Designation	Unit/Format	Description	Bytes
		IGTD	<ul style="list-style-type: none"> • ARR – Arrival Airport • CTD – Controlled Time of Departure • CTA – Controlled Time of Arrival • TYPE – Type of Entry • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • IGTD - Initial Gate Time of Departure 	
4 - n	Slot List Data Fields		Refer to Table 3-XXXIII for detailed breakout.	

e. EDCT UNASSIGNED SLOTS

The EDCT UNASSIGNED SLOTS will contain a list of unassigned slots that have not yet been allocated to flights. When sending an UNASSIGNED SLOTS request over ARINC MQ, the request must include the “RQ” packet header. A sample message has the following format:

Sample EDCT UNASSIGNED SLOTS Request Message

```
RQ
EDCT UNASSIGNED SLOTS FCA002 (or)
EDCT UNASSIGNEDSLOTS FCA002 (or)
EDCT UNASSIGNED SLOTS LGA (or)
EDCT UNASSIGNEDSLOTS LGA
```

Table 3-XXVII below presents a breakout of the EDCT UNASSIGNEDSLOTS request.

Table 3-XXVII. EDCT UNASSIGNED SLOTS Request

Field/Line	Designation	Unit/Format	Description	Bytes
1	Initial Packet Type Identifier	RQ	Packet header: the letters “RQ”.	2
2	EDCT UNASSIGNEDSLOTS	EDCT UNASSIGNED SLOTS aaaa or FCA[aaa]	EDCT UNASSIGNEDSLOTS Request for an airport or an FCA	25-28

A sample EDCT UNASSIGNEDSLOTS report (for an Airport) has the following format. An example is provided below, followed by a detailed breakout in Table XXVIII.

Sample Unassigned Slots Blocks

```
(1) EDCT UNASSIGNED SLOTS
(2)
(3) EWR.191233A EWR.191234A EWR.191235A EWR.191236A EWR.191237A EWR.191238A
(4) EWR.191241A EWR.191242A EWR.191243A EWR.191442A EWR.191245A EWR.191246A
(5) EWR.191249A EWR.191250A EWR.191251A EWR.191252A EWR.191253A EWR.191254A

(1) EDCT UNASSIGNED SLOTS
(2)
(3) FCA027.191233A FCA027.191234A FCA027.191235A FCA027.191236A FCA027.191237A
(4) FCA027.191241A FCA027.191242A FCA027.191243A FCA027.191442A FCA027.191245A
(5) FCA027.191249A FCA027.191250A FCA027.191251A FCA027.191252A FCA027.191253A
```

Table 3-XXVIII. EDCT UNASSIGNED SLOTS

Line	Function	Unit/Format	Description	Bytes
1	Unassigned Slots title	EDCT UNASSIGNED SLOTS	Static Entry: EDCT UNASSIGNED SLOTS	21
2	Blank Line		Blank Line Separator	1
3-n	Unassigned Slot entries	LLL.dddddd (GDP) or FCAaaa.ddddda (AFP) or NONE (Empty)	The block contains a list of unassigned slots that have not yet been allocated to flights. Two different entries are used: <ul style="list-style-type: none"> ▪ GDP – The formatting for GDP is <ul style="list-style-type: none"> - Airport Name – three letters - Slot number – six digits, followed by one alphanumeric character. ▪ AFP – The formatting for AFP is <ul style="list-style-type: none"> - FCA Identifier – three letters FCA followed by three digits - Slot number – six digits, followed by one alphanumeric character. 	15-75
*Note – Each line may consist of up to 50 entries. The maximum stated here is for a single data line. There may be multiple lines of data.				

f. BRIDGING ON Request message

The BRIDGING ON message restores the use of flights for the sending airline from being used as part of an SCS bridge in a particular GDP. When sending a Bridging request over ARINC MQ, the request must include the “RQ” packet header. A sample message has the following format:

Sample BRIDGING ON Request Message

RQ
EDCT BRIDGING ON LGA

Table 3-XXIX below presents a breakout of the Bridging On request.

Table 3-XXIX. BRIDGING ON Request

Field/Line	Designation	Unit/Format	Description	Bytes
1	Initial Packet Type Identifier	RQ	Packet header: the letters “RQ”.	2
2	Bridging On	EDCT BRIDGING ON Laa[a]	BRIDGING ON indicator for airport in three or four digits	20-21

The BRIDGING ON Request is confirmed by the TFMS issuing a response. The response has the following format:

Sample BRIDGING ON Response Message

Turned BRIDGING ON for AAL at LGA.

Table 3-XXX below presents a breakout of the BRIDGING ON Response.

Table 3-XXX. Bridging On Response

Field/Line	Designation	Unit/Format	Description	Bytes
1	Bridging On Indicator	Turned BRIDGING ON for LLL at Laa[a]	BRIDGING ON indicator for a specific airline at a specific airport in three or four digits	34-35

g. BRIDGING OFF Request Message

The BRIDGING OFF Request message temporarily disables flights for the sending airline from being used as part of an SCS bridge in a particular GDP. When sending a BRIDGING OFF Request over ARINC MQ, the request must include the “RQ” packet header. A sample message has the following format:

Sample BRIDGING OFF Request

RQ
EDCT BRIDGING OFF LGA

Table 3-XXXI below presents a breakout of the Bridging Off Request.

Table 3-XXXI. BRIDGING OFF Request Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	Initial Packet Type Identifier	RQ	Packet header: the letters "RQ". No packet identifier is required for ARINC MQ messages.	2
2	Bridging Off	EDCT BRIDGING OFF Laa[a]	Bridging Off indicator for airport in three or four digits	21-22

The BRIDGING OFF Request message is confirmed by the TFMS issuing a response. The response has the following format:

Sample BRIDGING OFF Response Message

Turned BRIDGING OFF for AAL at LGA.

Table 3-XXXII below presents a breakout of the BRIDGING OFF Response message.

Table 3-XXXII. BRIDGING OFF Response Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	Bridging Off Indicator	Turned BRIDGING OFF for LLL at Laa[a]	Bridging Off indicator for a specific airline at a specific airport in three or four digits	35-36

3.2.1.3.2.10 3.2.1.3.2.11 Unsolicited Messages

During a GDP, AFP or GS, TFMS will send messages to the airlines when changes are made in the TFMS database, affecting that airline's flights. These messages are:

- a. Slot List
- b. Substitutions Status Message
- c. GDP Termination Message (via EDCT PURGE)
- d. EDCT Update Message
- e. Delay Assignment (DAS) Delay Message
- f. General Aviation Airport Programs (GAAP) Slot Assignment Message

- g. SCS Bridging Update Message
- h. UDP Bridging Update Message
- i. ECR Update Message
- j. SCS Status Message
- k. DROPOUT FLIGHT Message
- l. RECONTROL Message
- m. SUBSTITUTION Message
- n. TIMEOUT CANCEL Flights Message
- o. REINSTATED FLIGHT Message
- p. FLIGHT ID CHANGE Message
- q. DIVERSION CANCEL/DIVERSION RECOVERY Message
- r. ADAPTIVE COMPRESSION Update Message
- s. SCOPE REDUCTION Message
- t. EDCT ADAPTIVE COMPRESSION ON Message
- u. EDCT ADAPTIVE COMPRESSION OFF Message

ARINC limits line lengths to 68 characters. Due to line length constraints, all ARINC messages from TFMS are truncated to contain 68 characters per line.

A CTOP provides more information than just control times for flights, such as an assigned route. A subset of the unsolicited messages will be sent for CTOP flights, only to provide information for the flights in a CTOP that have received an assigned control time. If the additional CTOP information is required, the details for this can be found in Appendix E.

In order to provide CTOP assigned control times to Legacy ARINC clients, the following legacy unsolicited messages will be distributed:

- Slot List Message
- EDCT Update Message
- Delay Assignment (DAS) Delay Message
- Dropout Flight Message
- Recontrol Message
- Timeout Cancelled Flights Message
- Reinstated Flight Message
- Flight ID Change Message
- Scope Reduction Message

For these messages, the Control Type for CTOP flights will be one of the following:

- UPD for any flight initially assigned an EDCT by CTOP or manually assigned EDCT.

Formatted: Space After: 6 pt

- [DAS if the flight is a pop-up or newly included into an existing CTOP](#)
- [RCTL if a flight moves to an Active CTOP from another TMI or from one CTOP to a lower ranking CTOP.](#)

[Within a CTOP, a flight can be assigned an EDCT without an explicit slot assignment or a “NOSLOT” assignment \(for more information on CTOP messages, see Appendix D\). Because the ASLOT is a defined field within a subset of the messages, for any CTOP flight that has a “NOSLOT” indicator or does not have an assigned slot, the ASLOT field will contain the entry time into the flights primary FCA. Additionally, the CTA field for the flight will contain the entry time into that primary FCA based on the flight’s EDCT and the time to fly to its intersection with the primary FCA. In the case where more than one of a CTOP’s FEA/FCAs is intersected by a flight’s trajectory, the first intersected FEA/FCA is considered to be the primary FEA/FCA.](#)

Table 3-XXXIII presents details of data fields shared by the various Unsolicited Messages.

Table 3-XXXIII. Unsolicited Messages Data Fields

Field/Line	Designation	Unit/Format	Description	Bytes
3	Slot List Data Headers	ACID ASLOT DEP ARR CTD CTA TYPE EX CX IGTD	Header for the following Slot List data fields: <ul style="list-style-type: none"> • ACID – Aircraft identifier • ASLOT – Arrival Slot • DEP – Departure Airport • ARR – Arrival Airport • CTD – Controlled Time of Departure • CTA –Controlled Time of Arrival • TYPE – Type of Entry • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • IGTD - Initial Gate Time of Departure 	64
SLOT LIST DATA FIELDS*				
ACID	Flight Identification	Laa[a][a][a][a]	Flight call sign as it appears in the OAG and/or subsequently filed on the NAS flight plan.	8

Field/Line	Designation	Unit/Format	Description	Bytes
			Padded with spaces to equal 8 bytes.	
ASLOT	Arrival Slot	LLL[Laa].dddd ddL or FCAaaa.ddddd dL	<p>The time slot reserved at the airport or FCA for this flight to arrive as follows:</p> <ul style="list-style-type: none"> Name – airport or FCA name. An airport name can be three or four characters and can include letters and numbers. An FCA name must be the entry FCA followed by three alphanumeric characters. The name is separated from the Date/Time by a period for readability Date/Time – Slot date and time. The format is DDhhmm (padded as necessary) Suffix Letter - The suffix letter is used to ensure that slot name is unique. <p>Note - An FCA name must be six characters starting with the literal letters "FCA". The remaining characters can be digits, upper-case letters, dash ("."), or underscore ("_"). An FCA name cannot end with an underscore. Padded with spaces to equal 15 bytes.</p>	15
DEP	Departure Airport	LLL[L]	Departure airport code in standard 3 or 4 letter identifier, padded with spaces to equal 5 bytes	5
ARR	Arrival Airport	LLL[L]	Arrival airport code in standard 3 or 4 letter identifier, padded with spaces to equal 5 bytes. Note - For a GDP, the arrival airport will be the same for every flight; for an AFP, they may differ. It is padded with spaces to equal 5 bytes	5
CTD	Controlled Time of Departure	dddddd	The time the flight should take off in the format is <i>DDhhmm</i> ,	7

Field/Line	Designation	Unit/Format	Description	Bytes
			padded with spaces to equal 7 bytes	
CTA	Controlled Time of Arrival	dddddd	The time the flight should arrive at the controlled airport or FCA in the format <i>fDDhmm</i> , padded with spaces to equal 7 bytes	7
TYPE	Control Type	LLL[L]	<p>The source of the current control times for this flight (e.g. GDP). The control types that can appear in a slot list for a GDP or AFP are:</p> <ul style="list-style-type: none"> • ABRG – Control times were assigned when the flight was utilized to create a bridge in order to adaptively compress a slot. • ADPT – control time assigned when the flight was adaptively compressed by the TFMS adaptive compression process (AFP and GDP) • AFP – Control times were computed as part of an initial AFP, a revision to an AFP, or an extension to an AFP. • BLKT – Control times were computed by a blanket program. • COMP – Control times were computed by compression. • DAS – Control time which resulted from the assignment of the average delay to a pop-up flight which did not receive an unassigned slot in an AFP or GDP. For DAS based programs this is used for the initial delay assignments to all pop-up flights. For GAAP and UDP based programs, this control type is used only if no unassigned slot is available for the pop-up. This control 	5

Field/Line	Designation	Unit/Format	Description	Bytes
			<p>type is not used for re-controlled flights. (AFP and GDP)</p> <ul style="list-style-type: none"> • ECR – Control times were assigned by an FAA ECR request. • GAAP - Control times are the result of a GAAP or UDP based AFP or GDP if a pop-up or a re-control flight is allocated to an unassigned slot. This occurs for all pop-up flights in a GAAP or UDP based program when an unassigned slot is available for the flight. However, only some classes of re-controlled flights in a GAAP or UDP are assigned to unassigned slots. (e.g., those that occur after dropping out of an AFP). (AFP and GDP) • GDP – Control times were computed as part of an initial GDP, a revision to a GDP, or an extension to a GDP. • GS – Control times were computed by a ground stop. • RCTL – Control time which resulted from the assignment of the average delay to a flight that was at some point controlled by a GDP or AFP, which was then purged or the flight dropped out and was re-controlled in another AFP <u>or</u> <u>CTOP</u>. For DAS programs this is used for the initial delay assignments to all re-controlled flights. For GAAP and UDP, this control type is used only if no unassigned slot is available for the re-controlled flight or the class 	

Field/Line	Designation	Unit/Format	Description	Bytes
			<p>of re-controlled flight is never assigned to unassigned slots. As opposed to other pop-ups, RCTL flights retain full substitution rights for AFP</p> <ul style="list-style-type: none"> • SBRG – Control times were assigned when creating a bridge for an SCS or ECR request. • SCS – Control times were assigned by a user slot credit substitution message. • SUB – Control times were assigned by a conventional user substitution message. • UBRG – Control times were assigned when creating a bridge for pop-up flight assignment during UDP. Performed automatically by the TFMS Core (AFP and GDP) • UPD – Control times are from an FAA “EDCT UPDATE” command. <p>This entry is padded with spaces to equal 5 bytes.</p>	
EX	Exempt Flag	Y or -	<p>Flag indicating flight was exempt from delays when the GDP or AFP was computed. (one of two entries):</p> <ul style="list-style-type: none"> • Y if true • - if False <p>This entry is padded with spaces to equal 3 bytes</p>	3
CX	Cancel Flag	Y or -	<p>Flag indicating whether the flight is currently cancelled. (one of two entries):</p> <ul style="list-style-type: none"> • Y if true • - if False <p>This entry is padded with spaces to equal 3 bytes</p>	3
IGTD	Initial Gate Time of Departure	dddddd	The original scheduled gate push back time for the flight, used to uniquely identify the	6

Field/Line	Designation	Unit/Format	Description	Bytes
			flight. In the format <i>DDhhmm</i> .	
*Note – There may be multiple rows of data under the header.				

a. Slot List

When a GDP, GS, AFP or CTOP is issued or revised, the CDM Participant can receive Slot Lists via AOCNET. The Slot Lists provide a complete list of the controlled flights with an EDCT involved in the GDP, GS, AFP or an FCA in a CTOP for that user. For a GDP, GS or AFP, the slot list will also include flights that have been cancelled. If the user performs substitutions for any affiliates using different three-letter codes (e.g., if user ABC also subs for user DEF), their list will include all flights for which they can substitute.

A new, complete set of lists is sent every time the FAA modifies a GDP, GS, or AFP. The user may submit substitution messages only for flights that have been issued in a Slot List. A Slot List is comprised of 2 parts:

The Slot List header – This consists of two lines of text that describe the Slot List as shown in the first section Table 3-XXXIII

The Slot List body – The Slot List body is formatted as a collection of text, where each line describes a flight controlled by the delay program (GDP, AFP or CTOP) identified in the Slot List header. Each line of the Slot List body is comprised of fields that collectively provide data on the slot that the controlled flight has been assigned for the delay program. This is shown in the second section Table 3-XXXIII

Sample Slot List for a GDP

```

FOR LGA
ATCSCC EDCT FLOW CONTROL DEPARTURE TIME
ACID  ASLOT      DEP ARR  CTD   CTA   TYPE EX CX  IGTD
ABC1234 LGA.260400A  DCA  LGA  260300 260400 GDP  -  -  260245
ABC5678 LGA.260500A  IAD  LGA  260400 260500 GDP  -  -  260145
ABC360  LGA.260323A  CYYZ LGA  260206 260323 GDP  Y  -  260150
ABC3522 LGA.260311A  DCA  LGA  260215 260311 GDP  -  -  260145
ABC39   LGA.260353A  ROC  LGA  260246 260353 GDP  -  Y  260235
    
```

Sample Slot List for an AFP

```

FOR FCAA02
ATCSCC EDCT FLOW CONTROL DEPARTURE TIME
ACID  ASLOT      DEP ARR  CTD   CTA   TYPE EX CX  IGTD
ABC1234 FCAA02.260400A DCA  LGA  260300 260400 AFP  -  -  260245
ABC5678 FCAA02.260500A IAD  BOS  260400 260500 AFP  -  -  260145
ABC360  FCAA02.260323A CYYZ LGA  260206 260323 AFP  Y  -  260150
ABC3522 FCAA02.260311A DCA  BOS  260215 260311 AFP  -  -  260145
ABC39   FCAA02.260353A ROC  LGA  260246 260353 AFP  -  Y  260235
    
```

Sample Slot List for a CTOP

```

FOR FCAA02
ATCSCC EDCT FLOW CONTROL DEPARTURE TIME
ACID  ASLOT      DEF  ARR  CTD   CTA   TYPE EX CX  IGTD
ABC1234 FCA002.260400Z DCA  LGA  260300 260400 UPD - - 260245
ABC5678 FCA002.260500Z IAD  LGA  260400 260500 UPD - - 260145
ABC3601 FCA002.260323Z BOS  LGA  260206 260323 UPD - - 260150
ABC3522 FCA002.260311Z DCA  LGA  260215 260311 UPD - - 260145
ABC3994 FCA002.260353Z ROC  LGA  260246 260353 UPD - - 260235
    
```

b. Substitution Status Message

A message is 29+12 sent whenever the FAA turns the substitution processing on or off at an airport or FCA. Airline substitution messages are rejected when substitutions are turned off. This is typically done just before a GDP or AFP is revised so that the TFMS and airline databases will stay synchronized. A sample of each type follows:

Sample Substitution Status Messages

```

EDCT SUB OFF LGA
EDCT SUB ON FCAA02
    
```

Table 3-XXXIV below presents a breakout of the Substitution Status.

Table 3-XXXIV. Substitution Status Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	Substitution Status	EDCT SUB [ON] OFF Laaa or EDCT SUB [ON]OFF FAAddd[d]	Substitution Status indicator for a specific airport in three or four digits or specific FCA in six or seven digits.	16-21

c. GDP Termination Message (via EDCT PURGE)

The FAA terminates a GDP, AFP or GS by using an EDCT PURGE command to clear the controls out of the TFMS database. The airline will get a copy of the EDCT PURGE commands along with a Slot List of that airline's affected flights (i.e., the flights no longer controlled by the terminated delay program). A sample EDCT PURGE message follows:

Sample EDCT Purge Message (for an AFP)

```
EDCT PURGE FCAA02
ACID  ASLOT      DEP ARR  CTD   CTA   TYPE EX CX  IGTD
ABC1234 FCAA02.260400A DCA  LGA  260300 260400 AFP - - 260245
ABC5678 FCAA02.260500A IAD  BOS  260400 260500 AFP - - 260145
ABC360  FCAA02.260323A CYYZ LGA  260206 260323 AFP Y - 260150
ABC3522 FCAA02.260311A DCA  MHT  260215 260311 AFP - - 260145
ABC39   FCAA02.260353A ROC  LGA  260246 260353 AFP - Y 260235
```

Table 3-XXXV below presents a breakout of the EDCT Purge Message.

Table 3-XXXV. EDCT Purge Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	EDCT Purge Identifier	EDCT PURGE FCAaaa <i>or</i> EDCT PURGE aaa	Identifies airport or FCA that the EDCT Purge is for.	14-17
2	Slot List Data Headers	ACID ASLOT DEP ARR CTD CTA TYPE EX CX IGTD	Header for the following Slot List data fields: <ul style="list-style-type: none"> • ACID – Aircraft identifier • ASLOT – Arrival Slot • DEP – Departure Airport • ARR – Arrival Airprot • CTD – Controlled Time of Departure • CTA –Controlled Time of Arrival • TYPE – Type of Entry • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • IGTD - Initial Gate Time of Departure 	64
3 - n	Slot List Data Fields		Refer to Table 3-XXXIII for detailed breakout.	

d. EDCT Update Message

The FAA can manually update the data for a controlled flight using an internal command called EDCT UPDATE. [Additionally, flights in a CTOP can also have EDCTs updated through a manual override. When this occurs, the](#) airline will get an unsolicited message whenever [the EDCT is manually updated](#) (including affiliated airlines). The update is simply a new slot list including the one flight that was changed by FAA.

NOTE: When TFMS creates a slot for a flight in response to an EDCT UPDATE command from the FAA, it uses a letter suffix of “P” or later to ensure that the slot name will not conflict with a slot name created by FSM. FSM assigns suffixes starting with the letter “A”. Unique slot names are required to allow these flights to be substituted. For slots that are generated by the CTOP, the letter “Z” is used.

A sample EDCT UPDATE message has the following format:

Sample EDCT Update Message

```
EDCT UPDATE FOR LGA
ACID  ASLOT      DEP ARR  CTD   CTA   TYPE EX CX IGTD
ABC1593 LGA.252100P ORD  LGA  251641 252100 UPD  -  - 251623
```

Table 3-XXXVI below presents a breakout of the EDCT Update Message.

Table 3-XXXVI. EDCT Update Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	EDCT Update Identifier	EDCT UPDATE FOR FCAaaa or EDCT UPDATE FOR aaa	Identifies airport or FCA that the EDCT Update is for.	19-22
2	Blank Line Separator		Blank line separating data	1
3	Slot List Data Headers	ACID ASLOT DEP ARR CTD CTA TYPE EX CX IGTD	Header for the following Slot List data fields: <ul style="list-style-type: none"> • ACID – Aircraft identifier • ASLOT – Arrival Slot • DEP – Departure Airport • ARR – Arrival Airport • CTD – Controlled Time of Departure • CTA –Controlled Time of Arrival • TYPE – Type of Entry • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • IGTD - Initial Gate Time of 	64

Field/Line	Designation	Unit/Format	Description	Bytes
			Departure	
4 - n	Slot List Data Fields		Refer to Table 3-XXXIII for detailed breakout.	

e. Delay Assignment (DAS) Delay Message

The airline will get this message whenever a DAS delay is applied to one of its flights. The update is simply a new slot list including the one flight that was [assigned a slot by TFMS](#). [Additionally, to support sending EDCTs for CTOP flights on this data feed, the DAS message will be sent for any CTOP flight that is newly included into a CTOP and receives an EDCT. The control type for these flights will set to DAS to reflect that the flight has received an EDCT from a CTOP program, regardless of whether the flight has received a delay assignment from the CTOP.](#)

NOTE: When TFMS creates a slot by assigning a DAS-delay to a pop-up, it uses a letter suffix of “Z” in the slot name. “Z” slots are not assured to be unique. Since a DAS-delayed flight cannot be used in substitutions, the slot name is not required to be unique.

A sample DAS DELAY message for an airline has the following format:

Sample DAS Delay Message

```
DAS DELAY FOR FCAA02
ACID  ASLOT      DEP ARR  CTD   CTA   TYPE EX CX  IGTD
ABC1593 FCAA02.252100Z ORD LGA  251641 252100 DAS - - 251623
```

Table 3-XXXVII below presents a breakout of the DAS Delay Message.

Table 3-XXXVII. DAS Delay Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	DAS Delay Identifier	DAS DELAY FOR FCAaaa <i>or</i> DAS DELAY FOR aaa	Identifies airport or FCA that the DAS Delay is for.	17-21
2	Blank Line Separator		Blank line separating data	1
3	Slot List Data Headers	ACID ASLOT DEP ARR CTD CTA TYPE EX CX IGTD	Header for the following Slot List data fields: <ul style="list-style-type: none"> • ACID – Aircraft identifier • ASLOT – Arrival Slot • DEP – Departure Airport 	64

Field/Line	Designation	Unit/Format	Description	Bytes
			<ul style="list-style-type: none"> • ARR – Arrival Airport • CTD – Controlled Time of Departure • CTA – Controlled Time of Arrival • TYPE – Type of Entry • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • IGTD - Initial Gate Time of Departure 	
4 - n	Slot List Data Fields		Refer to Table 3-XXXIII for detailed breakout.	

f. General Aviation Airport Program (GAAP) Slot Assignment

The user will get this message whenever an unassigned slot is applied to one of its flights in a GAAP or UDP mode program. The update is simply a new slot list including the one flight that was assigned to the slot.

A sample GAAP SLOT message for a user has the following format:

Sample GAAP Slot Assignment Message

```
GAAP SLOT FOR LGA

ACID  ASLOT  DEP  ARR  CTD  CTA  TYPE EX CX IGTD
ABC1593 LGA.252100A ORD LGA 251641 252100 GAAP - - 251623
```

Table 3-XXXVIII below presents a breakout of the GAAP Slot Assignment Message.

Table 3-XXXVIII. GAAP Slot Assignment Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	GAAP Slot Identifier	GAAP SLOT FOR FCAaaa <i>or</i> GAAP SLOT FOR aaa	Identifies airport or FCA that the GAAP slot list is for.	17-21
2	Blank Line Separator		Blank line separating data	1
3	Slot List Data Headers	ACID ASLOT	Header for the following data fields:	64

Field/Line	Designation	Unit/Format	Description	Bytes
		DEP ARR CTD CTA TYPE EX CX IGTD	<ul style="list-style-type: none"> • ACID – Aircraft identifier • ASLOT – Arrival Slot • DEP – Departure Airport • ARR – Arrival Airport • CTD – Controlled Time of Departure • CTA –Controlled Time of Arrival • TYPE – Type of Entry • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • IGTD - Initial Gate Time of Departure 	
4 - n	Slot List Data Fields		Refer to Table 3-XXXIII for detailed breakout.	

g. SCS Bridging Update Message

The airline will get this message whenever one or more of its flights is used to create a bridge for an SCS request. A bridging update will only move a flight to an earlier time.

An SCS request can be initiated in three ways. If the request is sent by a user or by the FAA (using the ECR tool), TFMS will give the bridged flights control types of SBRG. If the request is generated internally by TFMS during adaptive compression, TFMS will give the flights control types of ABRG.

A sample SCS BRIDGING UPDATE message for an airline has the following format:

Sample SCS Bridging Update Message

```
SCS BRIDGING UPDATE FOR FCAA02
ACID  ASLOT      DEP ARR  CTD   CTA   TYPE EX CX IGTD
ABC1593 FCAA02.252100A ORD  LGA  251641 252100 SBRG - - 251623
```

Table 3-XXXIX below presents a breakout of the SCS Bridging Message.

Table 3-XXXIX. SCS Bridging Update Message

Field/Line	Designation	Unit/Format	Description	Bytes
------------	-------------	-------------	-------------	-------

Field/Line	Designation	Unit/Format	Description	Bytes
1	SCS Bridging Identifier	SCS BRIDGING UPDATE FOR FCAaaa <i>or</i> SCS BRIDGING UPDATE FOR aaa	Identifies airport or FCA that the SCS Bridging is for.	27-30
2	Blank Line Separator		Blank line separating data	1
3	Slot List Data Headers	ACID ASLOT DEP ARR CTD CTA TYPE EX CX IGTD	Header for the following Slot List data fields: <ul style="list-style-type: none"> • ACID – Aircraft identifier • ASLOT – Arrival Slot • DEP – Departure Airport • ARR – Arrival Airport • CTD – Controlled Time of Departure • CTA – Controlled Time of Arrival • TYPE – Type of Entry • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • IGTD - Initial Gate Time of Departure 	64
4 - n	Slot List Data Fields		Refer to Table 3-XXXIII for detailed breakout.	

h. UDP Bridging Update Message

The airline will get this message whenever one or more of its flights is used to create a bridge as a result of UDP pop-up processing. A bridging update will only move a flight to an earlier time. A sample UDP BRIDGING UPDATE message for an airline has the following format:

Sample UDP Bridging Update Message

UDP BRIDGING UPDATE FOR FCAA02

ACID ASLOT DEP ARR CTD CTA TYPE EX CX IGTD
ABC1593 FCAA02.252100A ORD LGA 251641 252100 UBRG - - 251623

Table 3-XL below presents a breakout of the UDP Bridging Message.

Table 3-XL. UDP Bridging Update Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	UDP Bridging Identifier	UDP BRIDGING UPDATE FOR FCAaaa <i>or</i> SCS BRIDGING UPDATE FOR aaa	Identifies airport or FCA that the SCS Bridging is for.	27-30
2	Blank Line Separator		Blank line separating data	1
3	Slot List Data Headers	ACID ASLOT DEP ARR CTD CTA TYPE EX CX IGTD	Header for the following Slot List data fields: <ul style="list-style-type: none"> • ACID – Aircraft identifier • ASLOT – Arrival Slot • DEP – Departure Airport • ARR – Arrival Airport • CTD – Controlled Time of Departure • CTA –Controlled Time of Arrival • TYPE – Type of Entry • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • IGTD - Initial Gate Time of Departure 	64
4 - n	Slot List Data Fields		Refer to Table 3-XXXIII for detailed breakout.	

i. ECR Update

When a flight misses its EDCT window, the FAA will request a new EDCT for that flight using the ECR Tool. The ECR Tool allows the traffic manager to first make an SCS request. If that fails, the traffic manager can then make an EDCT Update request. An ECR-generated EDCT Update request looks like any other EDCT Update; the user is notified via the unsolicited EDCT Update message, described earlier in this section. An ECR-generated SCS request, if successful, will look slightly different to the user. The unsolicited message sent will have the same header as the SCS Bridging Update. However, the flight for which the EDCT change was

requested will have a control type of ECR. The slot list may also include flights for that user that were bridged as part of the request. A sample SCS BRIDGING UPDATE message that includes an ECR flight has the following format:

Sample SCS Bridging Update Message that includes an ECR flight

```
SCS BRIDGING UPDATE FOR LGA
ACID  ASLOT      DEP  ARR  CTD   CTA   TYPE EX CX  IGTD
ABC1593 LGA.252100A ORD  LGA  251641 252100 ECR  -  -  251623
ABC264  LGA.252043B DFW  LGA  251737 252043 SBRG -  -  251705
```

Refer to Table 3-XXXIX above for a breakout of the SCS Bridging Message including an ECR flight.

j. SCS Status

A message is sent whenever the FAA turns the SCS processing on or off at an airport. Airline SCS messages are rejected when SCS is turned off. A sample of each type follows:

Sample SCS Status Messages (for a GDP)

```
EDCT SCS OFF LGA
EDCT SCS ON LGA
```

Table 3-XLI below presents a breakout of the Substitution Status message for a GDP or AFP.

Table 3-XLI. SCS Status Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	EDCT SCS Status	EDCT SCS [ON] OFF Laa[a] <i>or</i> EDCT SCS [ON] OFF FCAaaa[a]	EDCT Slot Credit Substitution Status for: <ul style="list-style-type: none"> a specific airport, in three or four digits an FCA in 6 or seven digits 	15-22

k. DROPOUT FLIGHT Message

When a flight drops out of an FCA perhaps due to a reroute, and therefore is no longer controlled by an AFP for that FCA, a message will be sent to the user indicating that the flight is no longer controlled. The message shows the control times and slot at the time the flight was rerouted.

To support CTOP processing, the DROPOUT message will be used when a flight no longer has an EDCT from a CTOP program. This does not necessarily indicate that the flight is no longer controlled by the CTOP, as the flight may still have a route assigned by the CTOP.

NOTE: Once a flight drops-out of an AFP, the slot that belonged to that flight is no longer available for substitution or compression. [The slots assigned by CTOP are marked with a suffix "Z"](#).

A sample DROPOUT FLIGHT message for a user has the following format:

Sample DROPOUT FLIGHT Message (for an AFP)

```
DROPOUT FLIGHT FOR FCAA02
ACID  ASLOT      DEP ARR CTD   CTA   TYPE EX CX IGTD
ABC1593 FCAA02.252100A ORD LGA 251830 252100 AFP Y - 251623
```

Sample DROPOUT FLIGHT Message (for a CTOP)

```
DROPOUT FLIGHT FOR FCAA02
ACID  ASLOT      DEP ARR CTD   CTA   TYPE EX CX IGTD
ABC1593 FCAA02.252100Z ORD LGA 251830 252100 UPD - - 251623
```

Table 3-XLII below presents a breakout of the DROPOUT FLIGHT Message.

Table 3-XLII. DROPOUT FLIGHT Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	Dropout Flight Identifier	DROPOUT FLIGHT FOR FCAaaa <i>or</i> DROPOUT FLIGHT FOR aaa	Identifies airport or FCA that the Dropout Flight is for.	22-25
2	Blank Line Separator		Blank line separating data	1
3	Slot List Data Headers	ACID ASLOT DEP ARR CTD CTA TYPE EX CX IGTD	Header for the following Slot List data fields: <ul style="list-style-type: none"> • ACID – Aircraft identifier • ASLOT – Arrival Slot • DEP – Departure Airport • ARR – Arrival Airport • CTD – Controlled Time of 	64

Field/Line	Designation	Unit/Format	Description	Bytes
			Departure • CTA –Controlled Time of Arrival • TYPE – Type of Entry • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • IGTD - Initial Gate Time of Departure	
4 - n	Slot List Data Fields		Refer to Table 3-XXXIII for detailed breakout.	

I. RECONTROL Message

There are two cases, other than the issuing of a GDP or AFP [or a CTOP](#) in which the control of a flight might transfer from [an AFP or CTOP](#) to another :

- A flight might drop out of one AFP [or CTOP](#) and immediately be eligible for another.
- The controlling program for a flight may be purged, making it eligible for another AFP [or CTOP](#).

In either case, a message will first be sent to the user indicating that the flight is no longer controlled by the original AFP, GDP [or CTOP](#), followed by another message indicating the flight is now controlled by a new element. If the flight was a pop-up in the prior AFP,GDP [and the control does not shift into a CTOP](#), the user will receive a new pop-up message. [If](#) the flight was not a pop-up and could be subbed in the prior GDP or AFP, [and control has shifted into another GDP or AFP](#), a RECONTROL message will be sent, indicating that the flight can be subbed in the new program. The [If a flight’s control shifts from any other control element to a CTOP, a RECONTROL message will be sent, however subbing for CTOP flights is not available on this data feed. The flight will be assigned a control type of “RCTL”.](#)

NOTE: When TFMS creates a slot for a re-controlled flight, it uses a letter suffix of “P” or later to ensure that the slot name will not conflict with a slot name created by FSM. FSM assigns suffixes starting with the letter “A”. Unique slot names are required to allow these flights to be substituted.

[The slots assigned by CTOP are marked with a suffix “Z” and cannot be substituted using this data feed.](#)

A sample RECONTROL message for a user has the following format:

Sample RECONTROL Message (for an AFP)

RECONTROL FOR FCAA02

ACID ASLOT DEP ARR CTD CTA TYPE EX CX IGTD
ABC1593 FCAA02.252100P ORD LGA 251830 252100 RCTL Y - 251623

Sample RECONTROL Message (for a CTOP)

RECONTROL FOR FCAA02

ACID ASLOT DEP ARR CTD CTA TYPE EX CX IGTD
ABC1593 FCAA02.252100Z ORD LGA 251830 252100 RCTL - - 251623

Table 3-XLIII below presents a breakout of the RECONTROL message.

Table 3-XLIII. RECONTROL Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	Re-control Identifier	RECONTROL FOR FCAaaa or RECONTROL FOR aaa	Identifies airport or FCA that the Re control is for.	17-20
2	Blank Line Separator		Blank line separating data	1
3	Slot List Data Headers	ACID ASLOT DEP ARR CTD CTA TYPE EX CX IGTD	Header for the following Slot List data fields: <ul style="list-style-type: none"> • ACID – Aircraft identifier • ASLOT – Arrival Slot • DEP – Departure Airport • ARR – Arrival Airport • CTD – Controlled Time of Departure • CTA –Controlled Time of Arrival • TYPE – Type of Entry • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • IGTD - Initial Gate Time of Departure 	64
4 - n	Slot List Data Fields		Refer to Table 3-XXXIII for detailed breakout.	

m. SUBSTITUTION Message

When a user successfully substitutes flights, TFMS sends a response confirming the new control times for those flights. The person who generated request, and/or the application from which the request was sent, therefore know that these flights have been updated. However, other people from that user’s organization and other applications the user may run do not necessarily know that these flights have changed. In order to allow a person or application to have a single source of all control time changes, TFMS will send a copy of any successful substitution request out as an unsolicited message.

Section 3.2.1.3.2.8 describes the reply format for a successful substitution request. The unsolicited message format contains the same slot list but has a slightly different header to better identify the message and to be consistent with the other unsolicited messages.

A sample SUBSTITUTION message for a user has the following format:

Sample SUBSTITUTION Message (for a GDP)

```

SUBSTITUTION FOR LGA

ACID   ASLOT   DEP  ARR  CTD   CTA   TYPE EX CX  IGTD
ABC1234 LGA.260500A DCA  LGA  260400 260500 SUB - Y 260145
ABC5678 LGA.260400A IAD  LGA  260300 260400 SUB - - 260245
    
```

Table 3-XLIV below presents a breakout of the Substitution message.

Table 3-XLIV. Substitution Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	Substitution Identifier	SUBSTITUTION FOR FCAaaa <i>or</i> SUBSTITUTION FOR aaa	Identifies airport or FCA that the Re control is for.	20-23
2	Blank Line Separator		Blank line separating data	1
3	Slot List Data Headers	ACID ASLOT DEP ARR CTD CTA TYPE EX CX IGTD	Header for the following Slot List data fields: <ul style="list-style-type: none"> • ACID – Aircraft identifier • ASLOT – Arrival Slot • DEP – Departure Airport • ARR – Arrival Airport • CTD – Controlled Time of Departure • CTA –Controlled Time of 	64

Field/Line	Designation	Unit/Format	Description	Bytes
			Arrival <ul style="list-style-type: none"> • TYPE – Type of Entry • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • IGTD - Initial Gate Time of Departure 	
4 - n	Slot List Data Fields		Refer to Table 3-XXXIII for detailed breakout.	

n. TIMEOUT CANCEL Flight Message

When a flight's departure time falls too far into the past (90-minutes for US and Canada departures), TFMS cancels the flight. This can cause a flight to be compressed to the end of a program (GDP or AFP). To help avoid this happening for flights that the user is still planning to operate, TFMS will send a message to the user notifying them that a controlled flight has been timeout cancelled. The message will show the control times for the flight at the time it was cancelled.

A sample TIMEOUT CANCEL message for a user has the following format:

Sample TIMEOUT CANCEL Message (for an AFP)

```

TIMEOUT CANCEL FOR FCAA02
ACID  ASLOT      DEP ARR CTD   CTA   TYPE EX CX IGTD
ABC1593 FCAA02.252100A ORD LGA 251830 252100 AFP  Y  Y  251623
    
```

Sample Timeout Cancelled Flight Message (for a CTOP)

```

TIMEOUT CANCEL FOR FCAA02
ACID  ASLOT      DEP ARR CTD   CTA   TYPE EX CX IGTD
ABC1593 FCAA02.252100Z ORD LGA 251830 252100 UPD  -  Y  251623
    
```

Table 3-XLV below presents a breakout of the TIMEOUT CANCEL message.

Table 3-XLV. TIMEOUT CANCEL Flight Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	Timeout Cancel Identifier	TIMEOUT CANCEL FOR FCAaaa <i>or</i> TIMEOUT CANCEL FOR aaa	Identifies airport or FCA that the Timeout Cancellation is for.	22-25
2	Blank Line Separator		Blank line separating data	1
3	Slot List Data Headers	ACID ASLOT DEP ARR CTD CTA TYPE EX CX	Header for the following Slot List data fields: <ul style="list-style-type: none"> • ACID – Aircraft identifier • ASLOT – Arrival Slot • DEP – Departure Airport • ARR – Arrival Airport • CTD – Controlled Time of Departure • CTA – Controlled Time of Arrival • TYPE – Type of Entry • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • IGTD - Initial Gate Time of Departure 	64
4 - n	Slot List Data Fields		Refer to Table 3-XXXIII for detailed breakout.	

o. REINSTATED FLIGHT Message

If TFMS has sent an unsolicited message indicating a controlled flight has been cancelled, and the flight is reinstated to a status indicating it is expected to operate, TFMS will send a reinstate message to the user.

A sample REINSTATED FLIGHT message for a user has the following format:

Sample REINSTATED FLIGHT Message (for an AFP)

REINSTATED FLIGHT FOR FCAA02

ACID ASLOT DEP ARR CTD CTA TYPE EX CX IGTD
ABC1593 FCAA02.252100A ORD LGA 251830 252100 AFP Y - 251623

Sample REINSTATED FLIGHT Message (for a CTOP)

```

REINSTATED FLIGHT FOR FCAA02
ACID   ASLOT   DEP ARR CTD   CTA   TYPE EX CX IGTD
ABC1593 FCAA02.252100Z ORD LGA 251830 252100 UPD - - 251623
    
```

Table 3-XLVI below presents a breakout of the Reinstated Flight message.

Table 3-XLVI. REINSTATED FLIGHT Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	Timeout Cancel Identifier	REINSTATED FLIGHT FOR FCAaaa <i>or</i> REINSTATED FLIGHT FOR aaa	Identifies airport or FCA that the Timeout Cancellation is for.	25-28
2	Blank Line Separator		Blank line separating data	1
3	Slot List Data Headers	ACID ASLOT DEP ARR CTD CTA TYPE EX CX IGTD	Header for the following Slot List data fields: <ul style="list-style-type: none"> • ACID – Aircraft identifier • ASLOT – Arrival Slot • DEP – Departure Airport • ARR – Arrival Airport • CTD – Controlled Time of Departure • CTA –Controlled Time of Arrival • TYPE – Type of Entry • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • IGTD - Initial Gate Time of Departure 	64
4 - n	Slot List Data Fields		Refer to Table 3-XXXIII for detailed breakout.	

p. FLIGHT ID CHANGE Message

If the flight ID for a controlled flight changes, TFMS continues to maintain the control times and status for the flight, using the new flight ID. A flight ID change

may be initiated by either a user message or an ATC message. To keep the user informed of such changes, TFMS will send a message whenever the ID is changed for a controlled flight. The message will show the current control times for the flight. To help the user correlate the change with the previous data, the message will indicate the former ID for the flight.

A sample FLIGHT ID CHANGE message for a user has the following format:

Sample FLIGHT ID CHANGE Message (for a GDP)

```
FLIGHT ID CHANGE FOR LGA
ACID   ASLOT   DEP ARR CTD   CTA   TYPE EX CX IGTD
ABC593X LGA.252100A ORD LGA 251830 252100 SUB Y - 251623
PREVIOUS ACID: ABC1593
```

Sample FLIGHT ID CHANGE Message (for a CTOP)

```
FLIGHT ID CHANGE FOR FCAA02
ACID   ASLOT   DEP ARR CTD   CTA   TYPE EX CX IGTD
ABC593X LGA.252100Z ORD LGA 251830 252100 UPD - - 251623
PREVIOUS ACID: ABC1593
```

Table 3-XLVII below presents a breakout of the FLIGHT ID CHANGE message.

Table 3-XLVII FLIGHT ID CHANGE Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	Flight Identifier Change Identifier	FLIGHT ID CHANGE FOR FCAaaa <i>or</i> FLIGHT ID CHANGE FOR aaa	Identifies airport or FCA that the Flight ID Change is for.	24-27
2	Blank Line Separator		Blank line separating data	1
3	Slot List Data Headers	ACID ASLOT DEP ARR CTD CTA TYPE EX CX IGTD	Header for the following Slot List data fields: <ul style="list-style-type: none"> • ACID – Aircraft identifier • ASLOT – Arrival Slot • DEP – Departure Airport • ARR – Arrival Airport • CTD – Controlled Time of Departure • CTA – Controlled Time of 	64

Field/Line	Designation	Unit/Format	Description	Bytes
			Arrival <ul style="list-style-type: none"> • TYPE – Type of Entry • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • IGTD - Initial Gate Time of Departure 	
4 - n	Slot List Data Fields		Refer to Table 3-XXXIII for detailed breakout.	
5	Previous ACID	PREVIOUS ACID: Laa[a][a][a][a]	Aircraft identification prior to this change message.	18-22

q. DIVERSION CANCEL/DIVERSION RECOVERY Messages

A controlled flight that is diverted can go through two stages:

- First, the original controlled flight is diverted to an alternate destination. In order to maintain the arrival slot in the program for that user, the original flight is diversion-cancelled in TFMS.
- If the user creates a new flight leg to operate the flight from the alternate airport to the original destination, the recovery leg assumes the control times, arrival slot, and status from the diversion-cancelled leg.

In both cases, the flight data change can be initiated by either a user message or an ATC message. In both cases, TFMS will send a message to the user indicating the change in status.

NOTE: If a diversion-cancelled flight is reinstated prior to the recovery leg being created, TFMS will send a REINSTATED FLIGHT message as described earlier in this section.

A sample DIVERSION CANCEL message for a user has the following format:

Sample DIVERSION CANCEL Message (for a GDP)

```

DIVERSION CANCEL FOR LGA
ACID  ASLOT      DEP ARR CTD   CTA   TYPE EX CX IGTD
ABC1593 LGA.252100A ORD LGA 251830 252100 GDP Y  Y 251623
    
```

A sample DIVERSION RECOVERY message for a user has the following format:

Sample DIVERSION RECOVERY Message (for a GDP)

```

DIVERSION RECOVERY FOR LGA

ACID  ASLOT      DEP ARR CTD   CTA   TYPE EX CX IGTD
ABC593A LGA.252100A ALB LGA 252025 252100 GDP  Y  Y  251945
    
```

Table 3-XLVIII below presents a breakout of the Diversion Cancel and Diversion Recovery message.

Table 3-XLVIII. DIVERSION CANCEL and DIVERSION RECOVERY Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	Diversion Cancel/Recovery Identifier	DIVERSION CANCEL FOR FCAaaa <i>or</i> DIVERSION CANCEL FOR aaa ----- DIVERSION RECOVERY FOR FCAaaa <i>or</i> DIVERSION RECOVERY FOR aaa	Identifies airport or FCA that the Diversion Cancel or Diversion Recovery is for.	24-27 (Canx) 26-29 (Recvy)
2	Blank Line Separator		Blank line separating data	1
3	Slot List Data Headers	ACID ASLOT DEP ARR CTD CTA TYPE EX CX IGTD	Header for the following Slot List data fields: <ul style="list-style-type: none"> • ACID – Aircraft identifier • ASLOT – Arrival Slot • DEP – Departure Airport • ARR – Arrival Airport • CTD – Controlled Time of Departure • CTA –Controlled Time of Arrival • TYPE – Type of Entry • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • IGTD - Initial Gate Time of Departure 	64

Field/Line	Designation	Unit/Format	Description	Bytes
4 - n	Slot List Data Fields		Refer to Table 3-XXXIII for detailed breakout.	

r. ADAPTIVE COMPRESSION Update Message

The user will get this message whenever TFMS moves one or more of its slots using the adaptive compression process. The message will include the flights that are moved later, to keep their slots usable, as well as flights for that user that are moved earlier to take advantage of the compressed slots. Flights that are being moved later to keep their slots usable will be tagged with a control type of ADPT. Flights that are moved earlier to *bridge* the flights back will be given a control type of ABRG.

A sample ADAPTIVE COMPRESSION message for a user has the following format:

Sample ADAPTIVE COMPRESSION Update Message (for an AFP)

ADAPTIVE COMPRESSION FOR FCAA02

```

ACID  ASLOT      DEP ARR  CTD  CTA   TYPE EX CX  IGTD
ABC1234 FCAA02.260255A DCA  LGA  260210 260255 ADPT - Y  251545
ABC5678 FCAA02.251900A IAD  BOS  251755 251900 ABRG - -  251645
ABC360  FCAA02.252123A CYYZ LGA  252050 252123 ABRG - -  251750
    
```

Table 3-XLIX below presents a breakout of the ADAPTIVE COMPRESSION Update message.

Table 3-XLIX. ADAPTIVE COMPRESSION Update Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	Adaptive Compression Update Identifier	ADAPTIVE COMPRESSI ON FOR FCAaaa or ADAPTIVE COMPRESSI ON FOR aaa	Identifies airport or FCA that the Adaptive Compression Update is for.	28-31
2	Blank Line Separator		Blank line separating data	1
3	Slot List Data Headers	ACID ASLOT DEP ARR CTD CTA TYPE EX CX IGTD	Header for the following Slot List data fields: (See Note) <ul style="list-style-type: none"> • ACID – Aircraft identifier • ASLOT – Arrival Slot • DEP – Departure Airport • ARR – Arrival Airport • CTD – Controlled Time of Departure 	64

Field/Line	Designation	Unit/Format	Description	Bytes
			<ul style="list-style-type: none"> • CTA –Controlled Time of Arrival • TYPE – Type of Entry • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • IGTD - Initial Gate Time of Departure 	
4 - n	Slot List Data Fields		Refer to Table 3-XXXIII for detailed breakout.	

s. SCOPE REDUCTION Message

If the FAA revises a GDP, AFP GS or CTOP so that the program ends earlier and fewer flights are controlled, TFMS will send a message to each affected user listing the flights that are no longer controlled. The flight list will include the last control times assigned to the flights prior to them being dropped from the program.

A sample SCOPE REDUCTION message for a user has the following format:

Sample SCOPE REDUCTION Message (for an AFP)

SCOPE REDUCTION FOR FCAA02

```

ACID  ASLOT      DEP  ARR  CTD   CTA   TYPE EX CX  IGTD
ABC1234 FCAA02.260400A DCA  LGA  260300 260400 AFP  - - 260245
ABC5678 FCAA02.260500A IAD  BOS  260400 260500 AFP  - - 260145
ABC360  FCAA02.260323A CYYZ LGA  260206 260323 AFP  Y - 260150
ABC3522 FCAA02.260311A DCA  MHT  260215 260311 AFP  - - 260145
ABC39   FCAA02.260353A ROC  LGA  260246 260353 AFP  - Y 260235
    
```

Sample SCOPE REDUCTION Message (for a CTOP)

SCOPE REDUCTION FOR FCAA02

```

ACID  ASLOT      DEP  ARR  CTD   CTA   TYPE EX CX  IGTD
ABC1234 FCAA02.260400Z DCA  LGA  260300 260400 UPD  - - 260245
ABC5678 FCAA02.260500Z IAD  BOS  260400 260500 UPD  - - 260145
ABC360  FCAA02.260323Z CYYZ LGA  260206 260323 UPD  - - 260150
ABC3522 FCAA02.260311Z DCA  MHT  260215 260311 UPD  - - 260145
ABC39   FCAA02.260353Z ROC  LGA  260246 260353 UPD  - - 260235
    
```

Table 3-L below presents a breakout of the SCOPE REDUCTION message.

Table 3-L. SCOPE REDUCTION Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	Scope Reduction Identifier	SCOPE REDUCTION FOR FCAaaa <i>or</i> SCOPE REDUCTION FOR aaa	Identifies airport or FCA that the Scope Reduction is for.	23-26
2	Blank Line Separator		Blank line separating data	1
3	Slot List Data Headers	ACID ASLOT DEP ARR CTD CTA TYPE EX CX IGTD	Header for the following Slot List data fields: <ul style="list-style-type: none"> • ACID – Aircraft identifier • ASLOT – Arrival Slot • DEP – Departure Airport • ARR – Arrival Airport • CTD – Controlled Time of Departure • CTA –Controlled Time of Arrival • TYPE – Type of Entry • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • IGTD - Initial Gate Time of Departure 	64
4 - n	Slot List Data Fields		Refer to Table 3-XXXIII for detailed breakout.	

t. EDCT ADAPTIVE COMPRESSION ON Message

Adaptive Compression is intended to avoid slots being wasted by moving flights up to fill those slots. Its purpose is to increase the efficiency of an EDCT program and to eliminate needless delay. When a ground delay program is issued, each arrival slot is assigned to a flight. Sometimes, however, it will turn out that no flight uses a slot, which is thus wasted. This might happen if a flight is cancelled and another flight is not substituted for it. It might also happen if a flight has a mechanical delay and misses its slot. The Adaptive Compression feature will watch for slots that are in danger of being wasted and will move flights up to fill those slots.

A sample Adaptive Compression On message for a user has the following format:

Sample ADAPTIVE COMPRESSION ON Message (for an airport)

EDCT AC ON JFK

Table 3-LI below presents a breakout of the Adaptive Compression On message.

Table 3-LI. ADAPTIVE COMPRESSION ON Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	Adaptive Compression On Identifier	EDCT AC ON FCAaaa <i>or</i> EDCT AC ON aaa <i>or</i> EDCT AC ON ALL	Identifies airport or FCA for which adaptive compression has been turned on	14-17

u. EDCT ADAPTIVE COMPRESSION OFF Message

Adaptive Compression is intended to avoid slots being wasted by moving flights up to fill those slots. Its purpose is to increase the efficiency of an EDCT program and to eliminate needless delay. When a ground delay program is issued, each arrival slot is assigned to a flight. Sometimes, however, it will turn out that no flight uses a slot, which is thus wasted. This might happen if a flight is cancelled and another flight is not substituted for it. It might also happen if a flight has a mechanical delay and misses its slot. The Adaptive Compression feature will watch for slots that are in danger of being wasted and will move flights up to fill those slots.

A sample ADAPTIVE COMPRESSION OFF message for a user has the following format:

Sample ADAPTIVE COMPRESSION OFF Message (for an airport)

EDCT AC OFF JFK

Table 3-LII below presents a breakout of the Adaptive Compression Off message.

Table 3-LII. ADAPTIVE COMPRESSION OFF Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	Adaptive Compression Off Identifier	EDCT AC OFF FCAaaa <i>or</i> EDCT AC OFF aaa	Identifies airport or FCA for which adaptive compression has been turned off	15-18

Field/Line	Designation	Unit/Format	Description	Bytes
		or EDCT AC OFF ALL		

3.2.1.3.3 Information Unit Segmentation

The ARINC application does not execute any message segmentation. However TFMS application sending data to ARINC is performing message segmentation. When a message exceeds the limit of 3840 characters, the message is delivered as a series of messages. Each message in the series is 3840 characters or less. The second and subsequent messages begin with the following preface line:

**** PART # OF messagetype MESSAGE **** CR/LF

3.2.1.3.4 Direction of Information Flow

Direction of information flow between the TFMS and ARINC MQ is shown in Table 3-LIV, TFMS-to-ARINC Interface Summary.

3.2.1.3.5 Frequency of Transmission

The messages transferred by the interface are dynamic, and for the majority, are transferred as required. The exceptions are response messages, which are sent after the receipt of designated messages. Refer to Table 3-LV for message transmission frequency of all message types.

3.2.1.3.6 Responses

Responses used in the transfer of Flight Data messages (FC, FM, FX, and EI) are detailed in Section 3.2.1.3.2.6. Responses to Substitution messages are detailed in Section 3.2.1.3.2.8. Report Requests receive EDCT LIST, EDCT SUB SHOW, EDCT SLIST, or EDCT UNASSIGNED SLOTS messages (i.e., the requested report) as the appropriate responses. Bridging requests also receive confirmation responses. All other messages do not require an application level response from the interface.

For specific information regarding the protocol level handling of responses (both acknowledgements and errors) refer to IBM Websphere MQ V5.3 Clients, 2002.

3.2.1.4 Quality of Service

Not Applicable

3.2.1.5 AP Error Handling

The TFMS uses a system of error messages as response to Flight Data and Substitution messages received with errors. These error message mechanisms are

detailed in Section 3.2.1.3.2.6 and 3.2.1.3.2.8. A full listing of error messages is contained in Appendix A.

The TFMS-to-ARINC MQ interface employs no other error handling functions.

3.2.1.6 Interface Summary Table

An interface summary table (see Table 3-LIII below) shows the association between the messages that flow across the interface and the APs of the interfacing subsystems. The left side of the interface summary table column lists the TFMS APs. The center column contains the names of the messages transferred. The right hand column lists the ARINC MQ APs.

Table 3-LIII. TFMS-to-ARINC Interface Summary

Subsystem A TFMS AP	Message	Direction of Flow	Reference	Subsystem B ARINC MQ Server AP
External Portal Subsystem	Fixed Field Position Report	A ← B	<ul style="list-style-type: none"> Section 3.2.1.3.2.1a VNTSCD-TFM-ICD-OMP-001 Section 3.2.4.1.2.1 	ARINC MQ Processing Function (1)
External Portal Subsystem	Oceanic Clearance Request	A ← B	<ul style="list-style-type: none"> Section 3.2.1.3.2.1b VNTSCD-TFM-ICD-OMP-001 Section 3.2.4.1.2.2 	ARINC MQ Processing Function (1)
External Portal Subsystem	Non-POS/Non-RCL Report	A ← B	<ul style="list-style-type: none"> Section 3.2.1.3.2.1c VNTSCD-TFM-ICD-OMP-001 Section 3.2.4.1.2.3 	ARINC MQ Processing Function (1)
External Portal Subsystem	Ground Delay Program Advisory – Proposed	A → B	Appendix D, Section 1.2a	ARINC MQ Processing Function (2)
External Portal Subsystem	Ground Delay Program Advisory – Actual	A → B	Appendix D, Section 1.2b	ARINC MQ Processing Function (2)
External Portal Subsystem	Airspace Flow Program Advisory – Proposed	A → B	Appendix D, Section 1.2c	ARINC MQ Processing Function (2)

Subsystem A TFMS AP	Message	Direction of Flow	Reference	Subsystem B ARINC MQ Server AP
External Portal Subsystem	Airspace Flow Program Advisory – Actual	A → B	Appendix D, Section 1.2d	ARINC MQ Processing Function (2)
External Portal Subsystem	Ground Delay Program Cancel – Proposed	A → B	Appendix D, Section 1.2e	ARINC MQ Processing Function (2)
External Portal Subsystem	Ground Delay Program Cancel – Actual	A → B	Appendix D, Section 1.2f	ARINC MQ Processing Function (2)
External Portal Subsystem	Airspace Flow Program Cancel – Proposed	A → B	Appendix D, Section 1.2g	ARINC MQ Processing Function (2)
External Portal Subsystem	Airspace Flow Program Cancel – Actual	A → B	Appendix D, Section 1.2h	ARINC MQ Processing Function (2)
External Portal Subsystem	Ground Stop Advisory – Proposed	A → B	Appendix D, Section 1.2i	ARINC MQ Processing Function (2)
External Portal Subsystem	Ground Stop Advisory – Actual	A → B	Appendix D, Section 1.2j	ARINC MQ Processing Function (2)
External Portal Subsystem	Ground Stop Cancel – Proposed	A → B	Appendix D, Section 1.2k	ARINC MQ Processing Function (2)
External Portal Subsystem	Ground Stop Cancel – Actual	A → B	Appendix D, Section 1.2l	ARINC MQ Processing Function (2)
External Portal Subsystem	Ground Delay Program/Airspace Flow Program Compression – Proposed	A → B	Appendix D, Section 1.2m	ARINC MQ Processing Function (2)
External Portal Subsystem	Ground Delay Program/Airspace Flow Program Compression – Actual	A → B	Appendix D, Section 1.2n	ARINC MQ Processing Function (2)

Subsystem A TFMS AP	Message	Direction of Flow	Reference	Subsystem B ARINC MQ Server AP
External Portal Subsystem	Ground Delay Program Blanket Advisory – Proposed	A → B	Appendix D, Section 1.2o	ARINC MQ Processing Function (2)
External Portal Subsystem	Ground Delay Program Blanket Advisory – Actual	A → B	Appendix D, Section 1.2p	ARINC MQ Processing Function (2)
External Portal Subsystem	Formatted Reroute Advisory	A → B	<ul style="list-style-type: none"> Appendix D, Section 1.3 FAA Order 7210.3U 	ARINC MQ Processing Function (2)
External Portal Subsystem	CTOP Advisory – Proposed	A → B	Appendix D, Section 1.4a	ARINC MQ Processing Function (2)
External Portal Subsystem	CTOP Advisory – Actual	A → B	Appendix D, Section 1.4b	ARINC MQ Processing Function (2)
External Portal Subsystem	CTOP Cancel – Actual	A → B	Appendix D, Section 1.4c	ARINC MQ Processing Function (2)
External Portal Subsystem	ATCSCC Advisories	A → B	<ul style="list-style-type: none"> Appendix D, Section 1.1 FAA Order 7210.3U 	ARINC MQ Processing Function (3)
External Portal Subsystem	International Advisories	A → B	<ul style="list-style-type: none"> Appendix D, Section 1.1 FAA Order 7210.3U 	ARINC MQ Processing Function (3)
External Portal Subsystem	General Message	A → B	<ul style="list-style-type: none"> Appendix D, Section 1.1 FAA Order 7210.3U 	ARINC MQ Processing Function (3)
External Portal Subsystem	Flight Create Message	A ← B	<ul style="list-style-type: none"> Section 3.2.1.3.2.5a 	ARINC MQ Processing Function (4)

Subsystem A TFMS AP	Message	Direction of Flow	Reference	Subsystem B ARINC MQ Server AP
External Portal Subsystem	Flight Modify Message	A ← B	<ul style="list-style-type: none"> Section 3.2.1.3.2.5b TFMS ICD for Substitution, Section 4.2.2 	ARINC MQ Processing Function (4)
External Portal Subsystem	Flight Cancel Message	A ← B	<ul style="list-style-type: none"> Section 3.2.1.3.2.5c TFMS ICD for Substitution, Section 4.2.3 	ARINC MQ Processing Function (4)
External Portal Subsystem	Early Intent	A ← B	<ul style="list-style-type: none"> Section 3.2.1.3.2.5d Protocol for Submission of Early Intent Messages to ETMS Ver 1.3, Section 2.3 	ARINC MQ Processing Function (4)
External Portal Subsystem	Flight Data Message Good Response	A → B	<ul style="list-style-type: none"> Section 3.2.1.3.2.6a TFMS ICD for Substitution, Section 4.3.1 	ARINC MQ Processing Function (5)
External Portal Subsystem	Flight Data Message Error Response	A → B	<ul style="list-style-type: none"> Section 3.2.1.3.2.6b TFMS ICD for Substitution, Section 4.3.2 	ARINC MQ Processing Function (5)
External Portal Subsystem	Slot Create Message	A ← B	<ul style="list-style-type: none"> Section 3.2.1.3.2.7a TFMS ICD for Substitution, Section 4.2.5 	ARINC MQ Processing Function (4)
External Portal Subsystem	Slot Credit Substitution	A ← B	<ul style="list-style-type: none"> Section 3.2.1.3.2.7b TFMS ICD for Substitution, Section 4.2.4 	ARINC MQ Processing Function (4)
External Portal Subsystem	HOLD ALL SLOTS Message	A ← B	<ul style="list-style-type: none"> Section 3.2.1.3.2.7c TFMS ICD for Substitution, Section 4.2.6 	ARINC MQ Processing Function (6)

Subsystem A TFMS AP	Message	Direction of Flow	Reference	Subsystem B ARINC MQ Server AP
External Portal Subsystem	RELEASE ALL SLOTS Message	A ← B	<ul style="list-style-type: none"> Section 3.2.1.3.2.7d TFMS ICD for Substitution, Section 4.2.7 	ARINC MQ Processing Function (6)
External Portal Subsystem	Substitution Message Good Response	A → B	<ul style="list-style-type: none"> Section 3.2.1.3.2.8a TFMS ICD for Substitution, Section 4.3.1 	ARINC MQ Processing Function (5)
External Portal Subsystem	Substitution Message Error Response	A → B	<ul style="list-style-type: none"> Section 3.2.1.3.2.8b TFMS ICD for Substitution, Section 4.3.2 	ARINC MQ Processing Function (5)
External Portal Subsystem	Report Request	A ← B	<ul style="list-style-type: none"> Section 3.2.1.3.2.9a TFMS ICD for Substitution, Section 6.1 	ARINC MQ Processing Function (7)
External Portal Subsystem	EDCT List	A → B	<ul style="list-style-type: none"> Section 3.2.1.3.2.9b TFMS ICD for Substitution, Section 6.2.1 	ARINC MQ Processing Function (5)
External Portal Subsystem	EDCT SUB SHOW	A → B	<ul style="list-style-type: none"> Section 3.2.1.3.2.9c TFMS ICD for Substitution, Section 6.2.2 	ARINC MQ Processing Function (5)
External Portal Subsystem	EDCT SLIST	A → B	<ul style="list-style-type: none"> Section 3.2.1.3.2.9d TFMS ICD for Substitution, Section 6.2.3 	ARINC MQ Processing Function (5)
External Portal Subsystem	EDCT UNASSIGNED SLOTS	A → B	<ul style="list-style-type: none"> Section 3.2.1.3.2.9e TFMS ICD for Substitution, Section 6.2 	ARINC MQ Processing Function (5)
External Portal Subsystem	BRIDGING ON Message	A ← B	<ul style="list-style-type: none"> Section 3.2.1.3.2.9f TFMS ICD for Substitution, Section 6.3 	ARINC MQ Processing Function (6)

Subsystem A TFMS AP	Message	Direction of Flow	Reference	Subsystem B ARINC MQ Server AP
External Portal Subsystem	BRIDGING ON Response Message	A → B	<ul style="list-style-type: none"> Section 3.2.1.3.2.9f TFMS ICD for Substitution, Section 6.3 	ARINC MQ Processing Function (6)
External Portal Subsystem	BRIDGING OFF Message	A ← B	<ul style="list-style-type: none"> Section 3.2.1.3.2.9g TFMS ICD for Substitution, Section 6.3 	ARINC MQ Processing Function (6)
External Portal Subsystem	BRIDGING OFF Response Message	A → B	<ul style="list-style-type: none"> Section 3.2.1.3.2.9g TFMS ICD for Substitution, Section 6.3 	ARINC MQ Processing Function (6)
External Portal Subsystem	Slot List	A → B	<ul style="list-style-type: none"> Section 3.2.1.3.2.10a TFMS ICD for Substitution, Section 3.1 	ARINC MQ Processing Function (8)
External Portal Subsystem	Substitution Status Message	A → B	<ul style="list-style-type: none"> Section 3.2.1.3.2.10b TFMS ICD for Substitution, Section 7.1 	ARINC MQ Processing Function (2)
External Portal Subsystem	GDP Termination Message (via EDCT Purge)	A → B	<ul style="list-style-type: none"> Section 3.2.1.3.2.10c TFMS ICD for Substitution, Section 7.2 	ARINC MQ Processing Function (2)
External Portal Subsystem	EDCT Update Message	A → B	<ul style="list-style-type: none"> Section 3.2.1.3.2.10d TFMS ICD for Substitution, Section 7.3 	ARINC MQ Processing Function (2)
External Portal Subsystem	DAS Delay Message	A → B	<ul style="list-style-type: none"> Section 3.2.1.3.2.10e TFMS ICD for Substitution, Section 7.4 	ARINC MQ Processing Function (2)
External Portal Subsystem	GAAP Slot Assignment Message	A → B	<ul style="list-style-type: none"> Section 3.2.1.3.2.10f TFMS ICD for Substitution, Section 7.5 	ARINC MQ Processing Function (2)

Subsystem A TFMS AP	Message	Direction of Flow	Reference	Subsystem B ARINC MQ Server AP
External Portal Subsystem	SCS Bridging Update Message	A → B	<ul style="list-style-type: none"> Section 3.2.1.3.2.10g TFMS ICD for Substitution, Section 7.6 	ARINC MQ Processing Function (2)
External Portal Subsystem	UDP Bridging Update Message	A → B	<ul style="list-style-type: none"> Section 3.2.1.3.2.10h TFMS ICD for Substitution, Section 7.19 	ARINC MQ Processing Function (2)
External Portal Subsystem	ECR Update Message	A → B	<ul style="list-style-type: none"> Section 3.2.1.3.2.10i TFMS ICD for Substitution, Section 7.7 	ARINC MQ Processing Function (2)
External Portal Subsystem	SCS Status Message	A → B	<ul style="list-style-type: none"> Section 3.2.1.3.2.10j TFMS ICD for Substitution, Section 7.8 	ARINC MQ Processing Function (2)
External Portal Subsystem	DROPOUT FLIGHT Message	A → B	<ul style="list-style-type: none"> Section 3.2.1.3.2.10k TFMS ICD for Substitution, Section 7.9 	ARINC MQ Processing Function (2)
External Portal Subsystem	RECONTROL Message	A → B	<ul style="list-style-type: none"> Section 3.2.1.3.2.10l TFMS ICD for Substitution, Section 7.10 	ARINC MQ Processing Function (2)
External Portal Subsystem	SUBSTITUTION Message	A → B	Section 3.2.1.3.2.10m	ARINC MQ Processing Function (2)
External Portal Subsystem	TIMEOUT CANCEL Flight Message	A → B	<ul style="list-style-type: none"> Section 3.2.1.3.2.10n TFMS ICD for Substitution, Section 7.13 	ARINC MQ Processing Function (2)
External Portal Subsystem	REINSTATED FLIGHT Message	A → B	<ul style="list-style-type: none"> Section 3.2.1.3.2.10o TFMS ICD for Substitution, Section 7.14 	ARINC MQ Processing Function (2)

Subsystem A TFMS AP	Message	Direction of Flow	Reference	Subsystem B ARINC MQ Server AP
External Portal Subsystem	FLIGHT ID CHANGE Message	A → B	<ul style="list-style-type: none"> Section 3.2.1.3.2.10p TFMS ICD for Substitution, Section 7.15 	ARINC MQ Processing Function (2)
External Portal Subsystem	DIVERSION CANCEL Message	A → B	<ul style="list-style-type: none"> Section 3.2.1.3.2.10q TFMS ICD for Substitution, Section 7.16 	ARINC MQ Processing Function (2)
External Portal Subsystem	DIVERSION RECOVERY Message	A → B	<ul style="list-style-type: none"> Section 3.2.1.3.2.10q TFMS ICD for Substitution, Section 7.16 	ARINC MQ Processing Function (2)
External Portal Subsystem	ADAPTIVE COMPRESSION Update Message	A → B	<ul style="list-style-type: none"> Section 3.2.1.3.2.10r TFMS ICD for Substitution, Section 7.17 	ARINC MQ Processing Function (2)
External Portal Subsystem	SCOPE REDUCTION Message	A → B	<ul style="list-style-type: none"> Section 3.2.1.3.2.10s TFMS ICD for Substitution, Section 7.18 	ARINC MQ Processing Function (2)
External Portal Subsystem	EDCT ADAPTIVE COMPRESSION ON Message	A → B	<ul style="list-style-type: none"> Section 3.2.1.3.2.10t TFMS ICD for Substitution, Section 7.20 	ARINC MQ Processing Function (2)
External Portal Subsystem	EDCT ADAPTIVE COMPRESSION OFF Message	A → B	<ul style="list-style-type: none"> Section 3.2.1.3.2.10u TFMS ICD for Substitution, Section 7.21 	ARINC MQ Processing Function (2)

Subsystem A TFMS AP	Message	Direction of Flow	Reference	Subsystem B ARINC MQ Server AP
<p>Note – To save space, the following entries are entered in the Subsystem B columns:</p> <ul style="list-style-type: none"> (1) – From ARINC Communications Centers (2) – To all configured addressees (3) – As addressed (all are sent to ATCSCC for electronic logging as well) (4) – From CDM Participants (5) – Addressed to NAS User ARINC address from which incoming message was received (6) – From NAS Users, CDM Participants (7) – To ATCSCC (8) – To NAS Users, CDM Participants having controlled flights 				

3.2.2 Protocol Implementation

The TFMS to ARINC MQ interface communications functions are implemented according to OSI reference model as defined in FAA-STD-039b, Open Systems Architecture and Protocols, and FAA-STD-043b, Open System Interconnect Priority. Message queuing functions are implemented according to IBM WebSphere MQ V5.3, Clients, 2002. Subsection 3.2.2 documents the OSI protocols implemented for each layer of the interface. For the layers not used, this following text will be used "This layer is not implemented within the TFMS-to-ARINC MQ interface".

- a. Application Layer (Layer 7) - The TFMS-to-ARINC MQ interface uses the IBM WebSphere MQ V5.3 protocol as its Application layer protocol.
- b. Presentation Layer (Layer 6) – This layer is not implemented within the TFMS-to-ARINC MQ interface.
- c. Session Layer (Layer 5) - This layer is not implemented within the TFMS-to-ARINC MQ interface.
- d. Transport Layer (Layer 4) - The TFMS-to-ARINC MQ interface uses the Transmission Control Protocol (TCP) as its Transport layer protocol.
- e. Network Layer (Layer 3) - TFMS-to-ARINC MQ interface uses the standard Internet Protocol (IP) as its Network layer protocol.
- f. Data-Link Layer (Layer 2) – The TFMS-to-ARINC MQ uses the 100-baseT Ethernet standard in accordance with IEEE 802.3, *IEEE Standard for Information Technology — Telecommunications and Information Exchange Between Systems*, 2000 as the Data Link Layer
- g. Physical Layer (Layer 1) - The Physical layer of the TFMS-to-ARINC MQ interface consists of standard Category 5 (Cat-5) Ethernet cable as its Physical layer protocol.

Figure 3-2, OSI Layer Functional Interface Connectivity Diagram for TFMS-to-ARINC MQ, gives a visual representation of the OSI layers and their structure.

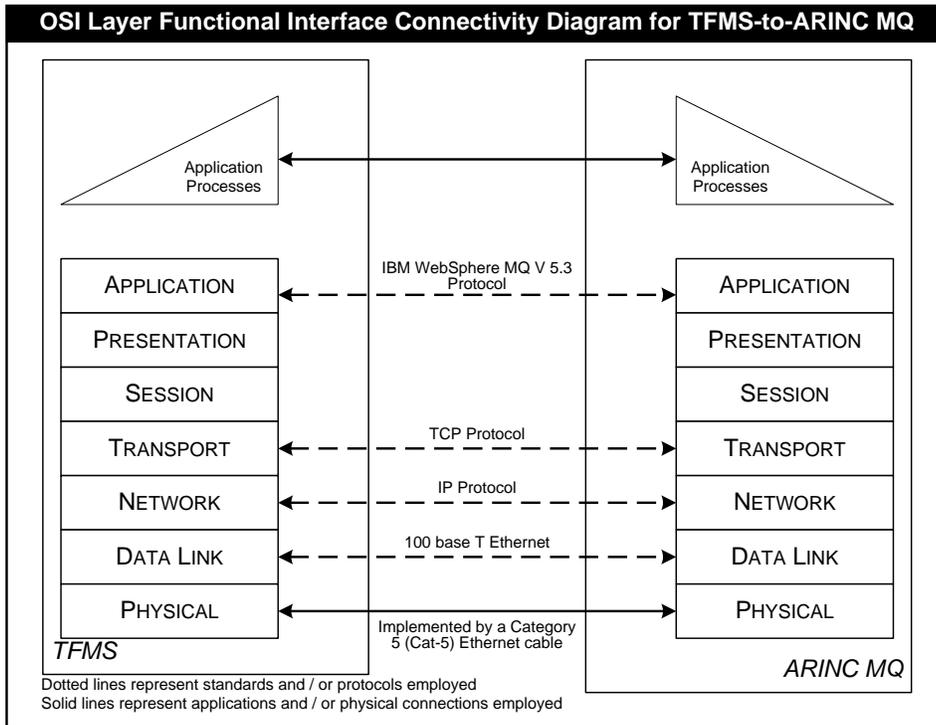


Figure 3-2. OSI Layer Functional Interface Connectivity Diagram for TFMS-to-ARINC

3.2.2.1 Application Services

The TFMS-to-ARINC MQ interface uses the IBM WebSphere Message Queuing (MQ) protocol at the application layer. This is a COTS product.

Additionally the TFMS-to-ARINC interface uses CDM Session protocols and a number of other sub-protocols to initiate and a session with the clients and exchange data. These protocols are defined in detail in Appendix C.

3.2.2.2 Network Services

The TFMS-to-ARINC MQ interface uses the established standards of Transmission Control Protocol (TCP) in accordance with RFC 793, Transmission Control Protocol, and Internet Protocol (IP) in accordance with RFC 791, *Internet Protocol*, Sep 1981.

3.2.2.2.1 Packet Routing

The TFMS-to-ARINC MQ interface uses the standard Internet Protocol (IP) to route data packets, in accordance with RFC 791, *Internet Protocol*, Sep 1981.

3.2.2.3 Naming and Addressing

The TFMS-ARINC MQ interface makes use of an addressing scheme specified in the interface message header for each message exchanged on the interface. The interface message header consists of a minimum of two lines of information as follows (note, items in italics are optional):

<Priority Type> **<Send To Address>** *<Send To Address>* *<Send To Address>*
<Send To Address> *<Send To Address>*
.<Return Address > *<timestamp>*

- First Line – Specifies the message priority as “QU” and identifies the address(es) to which the message is to be sent. Up to 8 addresses may be specified on line one. If needed additional lines may be included to specify additional addresses to which the message is to be sent.
- Next Required Line – This line begins with a period, “.”, and specifies the return address of the sender. A timestamp may also be included, but is optional.

The TFMS-to-ARINC MQ uses a set of addressing systems to transfer messages across the interface. A set of addresses is maintained by the ARINC MQ system for all addressees connected to the ARINC MQ system. The address consists of seven letters/numbers, assigned by ARINC. The format convention for the address is as follows:

- The first three letters provide an airport identifier (e.g., JFK)
- The second two letters is anything the airline wants to include (e.g., HD for help desk)
- The last two letters are airline identifier (e.g, AA for American Airlines)

Some example addresses are:

JFKHDAA
OAXXA**
TFMBSYA

The use of the character ‘*’ in the address “OAX**XA” acts as a wild card, indicating any address with the first three letters “OAX” and the last two of “XA” will receive messages sent using this address.

In the interface message header, any blank line or line beginning with ‘#’ is ignored, and is used for comments, providing clarity for the user.

An example of a TFMS generated ARINC MQ interface message is as follows:

```

QU JFKWXAF JNBCASA JNBCMSA LAXDPCO LAXOCBR LAXODBR LAXOFBR LAXOFKE
LAXPACR LGASODL LGBOWPO LGWODVS LITDD8C MCODDFL MCOEPDL MDTCCUS
MDTPCUS MEMAT9E MEMCCNW MEPDAYX MEXF8AM MEXNWMX MEXOWMX MIADDAA
MIAFL6F MIAOOLL MNZDBUS MNZOO9L MSPDDSY MSPDDXJ MSPTKNW ORDODKE
ORDOOJL ORDOOMQ PAOYRXH PHLKOBABA PHXDDUS PITCFUS PLBDDCO PLBDDUS
.ACZZZYA 180159
ATSCC ADVZY 006 EWR/ZNY 12/18/2008 CDM GROUND DELAY PROGRAM CNX
CTL ELEMENT: EWR
ELEMENT TYPE: APT
ADL TIME: 0154Z
GDP CNX PERIOD: 18/0154Z - 18/0643Z
DISREGARD EDCTS FOR DEST EWR
COMMENTS: GROUND STOP AND GDP ARE BOTH CANCELLED AT THIS TIME.
180158-180743
    
```

Immediately following the interface message header is the application packet. Application packets are described in Section 3.2.1.3.2.

3.2.3 Security

TFMS implements FAA information security guidelines in accordance with CSC/TFMM-04/0048, Systems Security Plan (SSP) for Traffic Flow Management–Modernization (TFM-M), the FAA Information Systems Security Program, FAA Order 1370.82A, and FAA-STD-045, OSI Security Architecture, Protocols and Mechanisms. It will enact security strategies and measures on all incoming information into TFMS.

3.2.4 Interface Design Characteristics Table

The Table 3-LIV, Interface Design Characteristics, serves as a "quick-look" reference.

Table 3-LIV. Interface Design Characteristics – TFMS-to-ARINC MQ Interface

Message Name	Format	Size (Bytes)	Time Constraints	Frequency
Fixed Field Position Report	ASCII	22/75*		As required
Oceanic Clearance Request	ASCII	22/85*		As required
Non-POS/Non-RCL Report	ASCII	50/95*		As required
Ground Delay Program Advisory – Proposed	ASCII	Variable††		As required
Ground Delay Program Advisory – Actual	ASCII	Variable††		As required
Airspace Flow Program Advisory – Proposed	ASCII	Variable††		As required
Airspace Flow Program Advisory – Actual	ASCII	Variable††		As required
Ground Delay Program Cancel – Proposed	ASCII	Variable††		As required

Message Name	Format	Size (Bytes)	Time Constraints	Frequency
Ground Delay Program Cancel – Actual	ASCII	Variable††		As required
Airspace Flow Program Cancel – Proposed	ASCII	Variable††		As required
Airspace Flow Program Cancel – Actual	ASCII	Variable††		As required
Ground Stop Advisory – Proposed	ASCII	Variable††		As required
Ground Stop Advisory – Actual	ASCII	Variable††		As required
Ground Stop Cancel – Proposed	ASCII	Variable††		As required
Ground Stop Cancel – Actual	ASCII	Variable††		As required
Ground Delay Program/Airspace Flow Program Compression – Proposed	ASCII	Variable††		As required
Ground Delay Program/Airspace Flow Program Compression – Actual	ASCII	Variable††		As required
Ground Delay Program Blanket Advisory – Proposed	ASCII	Variable††		As required
Ground Delay Program Blanket Advisory – Actual	ASCII	Variable††		As required
Formatted Reroute Advisory (W/o Flight List)	ASCII	Variable††		As required
Formatted Reroute Advisory (With Flight List)	ASCII	Variable††		As required
CTOP Advisory – Proposed	ASCII	Variable††		As required
CTOP Advisory – Actual	ASCII	Variable††		As required
CTOP Cancel – Actual	ASCII	Variable††		As required
ATCSCC Advisories	ASCII	Variable††		As required
International Advisories	ASCII	Variable††		As required
General Message	ASCII	125/**		As required
Flight Create Message	ASCII	38/114		As required
Flight Modify Message	ASCII	18/132		As required
Flight Cancel Message	ASCII	18/26		As required
Early Intent Message	ASCII	69/649		As required
Flight Data Message Good Response	ASCII	58/59	After receiving Flight Data message (if no errors exist)	In response to FD Packet
Flight Data Message Error Response	ASCII	128/224*	After receiving Flight Data message (if errors exist)	In response to FD Packet
Slot Create Message	ASCII	40/46		As required

Message Name	Format	Size (Bytes)	Time Constraints	Frequency
Slot Credit Substitution	ASCII	40/46		As required
HOLD ALL SLOTS Message	ASCII	22/23		As required
RELEASE ALL SLOTS Message	ASCII	25/26		As required
Substitution Message Good Response	ASCII	198*	After receiving Sub message	In response to SS Packet
Substitution Message Error Response	ASCII	97/162*	After receiving Sub message	In response to SS Packet
Report Request	ASCII	60/113		As required
EDCT List	ASCII	689/760*		As required
EDCT SUB SHOW	ASCII	658/727*		As required
EDCT SLIST	ASCII	134/137*		As required
EDCT UNASSIGNED SLOTS	ASCII	34/772*		As required
BRIDGING ON Message	ASCII	22/23		As required
BRIDGING ON Response Message	ASCII	34/35	After receiving BRIDGING ON message	As required
BRIDGING OFF Message	ASCII	23/24		As required
BRIDGING OFF Response Message	ASCII	35/36	After receiving BRIDGING OFF message	As required
Slot List	ASCII	172/175*		As required
Substitution Status Message***	ASCII	16/21		As required
GDP Termination Message (via EDCT Purge)***	ASCII	146/149†		As required
EDCT Update Message***	ASCII	152/155†		As required
DAS Delay Message***	ASCII	150/154†		As required
GAAP Slot Assignment Message***	ASCII	150/154†		As required
SCS Bridging Update Message***	ASCII	160/164†		As required
UDP Bridging Update Message***	ASCII	160/164†		As required
ECR Update Message***	ASCII	160/164†		As required
SCS Status Message***	ASCII	15/22		As required
DROPOUT FLIGHT Message***	ASCII	155/159†		As required
RECONTROL Message***	ASCII	150/153†		As required
SUBSTITUTION Message***	ASCII	153/156†		As required
TIMEOUT CANCEL Flight Message***	ASCII	155/158†		As required
REINSTATED FLIGHT Message***	ASCII	158/161†		As required
FLIGHT ID CHANGE Message***	ASCII	175/182†		As required
DIVERSION CANCEL Message***	ASCII	157/160†		As required
DIVERSION RECOVERY Message***	ASCII	159/162†		As required

Message Name	Format	Size (Bytes)	Time Constraints	Frequency
ADAPTIVE COMPRESSION Update Message***	ASCII	161/164†		As required
SCOPE REDUCTION Message***	ASCII	156/159†		As required
EDCT ADAPTIVE COMPRESSION ON Message	ASCII	14/17		As required
EDCT ADAPTIVE COMPRESSION OFF Message	ASCII	15/18		As required
*Note – Some entries in these messages may require more than one line of entry. The given maximum is valid if all entries do not exceed one line. **Note – These messages are variable free form and as such does not have a truly definable maximum. The minimum given covers only the required header and footer entries. ARINC MQ message packet size is limited to approximately 1800 bytes maximum. ***Note – These message are sent unsolicited. †Note – These messages include a Slot List. The min/max sizes provided are for a slot list containing a single flight. ††Note – Advisories contain variable length fields. Min/Max Byte count is not predictable.				

3.3 Physical Design Characteristics

At the TPC, the TFMS-to-ARINC MQ interface uses the ARINC MQ WAN to transfer data to a collocated ARINC MQ Router at the TPC. ARINC supplies this router to receive their data at a serial connection, and then translates it to Ethernet format. The ARINC router then connects to the ports on the two Cisco Catalyst 3560G switches (designated SWPT_4). These switches then provide connectivity to the Cisco 7206 Router/Switch (designated EXTRTR) which sends the data to and from the Firewall. The data then passes to and from the External Portal Message Interface Server, an Hp ProLiant DL380 (designated PRSR_3)

At the DRC, the TFMS-to-ARINC MQ interface employs a ARINC MQ feed to provide landline access. The DRC receives data streams from the FTI routers (connected to the NESG-OEX) which interface with two Cisco Catalyst 3560G switches (designated SWPT_4). The switches connect to the Cisco 7206 Router/Switches (designated EXTRTR), which send the data to and from the Firewall. The firewall then passes the data to and from the External Portal Message Interface Server, an HP ProLiant DL380 (designated PRSR_3).

Note – the Demarcation for TFMS is designated by an encircled dot on the line end.

Figure 3-3 below shows the physical interface.

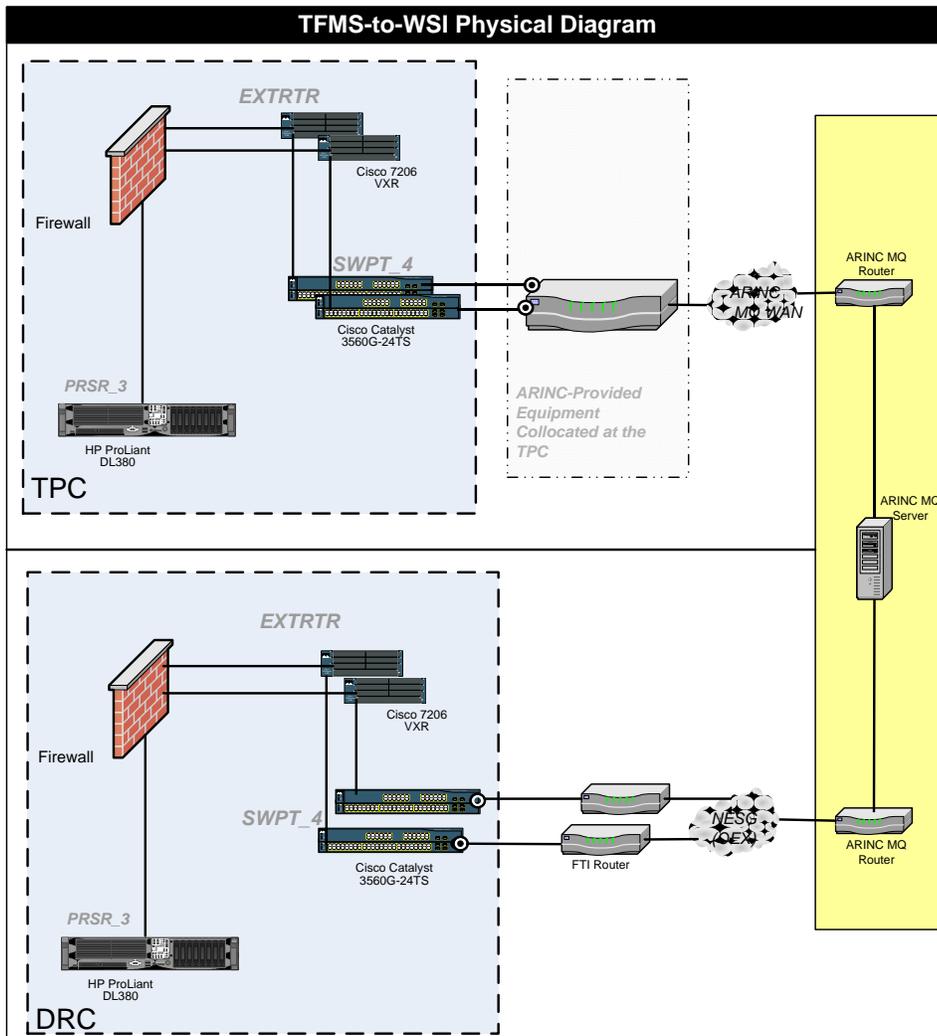


Figure 3-3. TFMS-to-ARINC MQ Physical Diagram

3.3.1 Electrical Power and Electronic Characteristics

Not applicable. No subsystems supply electrical, mechanical, or environmental support to another subsystem. Systems supply their own discrete power and do not support each other in this manner.

3.3.1.1 Connectors

The TFMS-to-ARINC MQ interface uses a standard RJ45 Ethernet connection at the ARINC supplied router to effect the interface. This interface uses a standard RJ45 pin assignment.

3.3.1.2 Wire/Cable

The TFMS-to-ARINC MQ uses a leased T-1, four wire cable to transfer data through the ARINC MQ WAN. This serial connection connects to the ARINC router, which performs the translation to Ethernet format. A standard Cat-5 cable then transfers the data to the TFMS Router.

3.3.1.3 Electrical Power/Grounding

Not Applicable

3.3.1.4 Fasteners

Not Applicable

3.3.1.5 Electromagnetic Compatibility

Not Applicable

4 Verification Provisions

4.1 Responsibility for Verification

Following are verification provisions for the TFMS-to-ARINC interface:

1. Pre-OT&E (Operational Testing and Evaluation)
2. OT&E
3. KSAT (Key Site Acceptance Test)

4.1.1 Pre-OT&E

Pre-Operational Test and Evaluation (OT&E) testing is performed to verify the operational viability of the TFMS-ARINC interface and data stream prior to formal testing. ARINC message exchange is available within this test phase but testing may be performed using simulated data. Pre-OT&E testing verifies that the end systems comply with and utilize the messages and formats as specified in this ICD. This test is conducted by both end systems as part of their informal system tests using their own test plans and test procedures. It is conducted at their respective test facilities. The William J Hughes Technical Center (WJHTC) TFMS Test Facility (TF) is designated as the test facility for the TFMS system. Pre-OT&E testing of TFMS is performed in accordance with FAA-approved test plans and procedures. TFMS test results are provided to the FAA. A TPC Auxiliary Platform (TAP) at the WJHTC is configured with the appropriate TFMS release software to support ARINC testing (refer to Section 4.2 Test Environments).

4.1.2 OT&E

The OT&E tests are live tests conducted formally by the FAA with CSC support at the TPC. They include the Air Traffic Control System Command Center (ATCSCC) “early look” tests with the participation of FAA field personnel. Among other things, these tests verify end to end connectivity between TFMS and the ARINC.

4.1.3 KSAT

The Key Site Acceptance Test (KSAT) focuses on TFMS functionality and connectivity tests. It is conducted under operational conditions, performed with live data between the TPC, the ATCSCC and an FAA-selected Air Route Traffic Control Center (ARTCC) site.

4.2 Test Environments

The TFMS-ARINC test environment consists of a TPC Auxiliary Platform (TAP) that is configured with the software for ARINC user community pre-production testing. Each TAP is a separate test environment, loaded with either the current operational TFMS release or the next version to be released. Each TAP is isolated from the operational system and is configured to receive one way flow of live flight

data from a message forwarding component of the TFMS operational system. Non-operational data on a TAP is not enabled to flow into the operational system.

Access to the test environments for ARINC customers requires that a separate connection be created to access the TAPs. Current operational ARINC network connections (Ops) are not permitted to access the test environments. A separate non-operational service delivery point or gateway (referred to as the FAA National Test Bed or FNTB) provides isolation from the operational system and access to the TFMS test environments.

5 Preparation for Delivery

Not Applicable.

6 Notes

6.1 Definitions

User Preferred Trajectory (UPT) - The route that the user requests based on existing conditions.

6.2 Abbreviations and Acronyms

This section provides a definition of acronyms contained within this ICD.

ABRG	Adaptive Compression Bridging
AC	Aircraft
AC_CAT	Aircraft Category
ACARS	Aircraft Communications Addressing and Reporting System
ACENTR	Arrival Center
ACID	Aircraft Identifier
ADCUS	Advise Customs Flag
ADL	Aggregate Demand List
ADPT	Adaptive Compression
ADVZY	Advisory
AFP	Airspace Flow Program
ALT	Altitude
ALTN	Alternate
ANSI	American National Standards Institute
AOCNET	Airline Operations Center Network
AP	Application Process
APT	Airport
ARINC	Aeronautical Radio Incorporated
ARTCC	Air Route Traffic Control Center
ASCII	American Standard Code for Information Interchange
ASLOT	Assigned Arrival Slot
ATC	Air Traffic Control
ATCSCC	Air Traffic Control System Command Center
BLKT	Blanket
CDM	Collaborative Decision Making
CDR	Coded Departure Route
CNX	Cancel
COMP	Compression
CONUS	Continental United States
COTS	Commercial Off The Shelf
CR	Change Request
CTA	Controlled Time of Arrival
CTD	Controlled Time of Departure

CTL	Control
CTOP	Collaborative Trajectory Options Program
CX	Cancel Flag
DAS	Delay Assignment
DCC	Display Channel Complex
DCENTR	Departure Center
DEP	Departure Airport
DEST	Destination Airport
DID	Data Item Description
DME	Distance Measuring Equipment
DRC	Disaster Recovery Center
DTG	Date Time Group
DVRSN	Diversion
ECR	EDCT Change Request
EDCT	Estimated Departure Clearance Time
EENTRY	Earliest Entry time (for AFP)
EI	Early Intent
ERTA	Earliest Runway Time of Arrival
ETA	Estimated Time of Arrival
ETD	Estimated Time of Departure
ETE	Estimated Time Error
ETMS	Enhanced Traffic Management System
EX	Exempt Flag
FA	Fuel Advisory
FAA	Federal Aviation Administration
FC	Flight Create
FCA	Flow Constrained Area
FD	Flight Data
FEA	Flow Evaluation
FL	Flight Level
FM	Flight Modify
FP	Flight Plan
FSM	Flight Schedule Monitor
FX	Flight Cancel
FYI	For Your Information
GAAP	General Aviation Airport Programs
GDP	Ground Delay Program
GMT	Greenwich Mean time (See also UTC)
GS	Ground Stop
HAR	High Altitude Reservation

IATA	International Air Transport Association
IBM	International Business Machines
ICAO	International Civil Aviation Organization
ICD	Interface Control Document
ID	Identification
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
IGTD	Initial Gate Time of Departure
IP	Internet Protocol
IR	Interface Requirement
IRD	Interface Requirement Document
IRS	Interface Requirement Specification
ISO	International Organization for Standardization
ISSP	Information Systems Security Plan
MD	Management Document
MQ	Message Queue
NADIN	National Airspace Data Interchange Network
NAS	National Airspace System
NOACK	No Acknowledgement
NRP	National Route Program
OAG	Official Airline Guide
OMP	Offshore Message Processor
ORIG	Origin Airport
OIS	Open Systems Interconnect
PGTD	Proposed Gate Time of Departure
PLN	Planned
POS	Fixed Field Position Report
POS	Position
PT	Planning Telcon
PTP	High Altitude Point-to-Point
RCL	Ocean Clearance Request
RFC	Request for Comment Document
RMD	Recommended
RQ	Request header
RQD	Required
RSTN	Restriction
SBRG	SCS Bridging Update
SC	Slot Create
SCS	Slot Credit Substitution
SH	Slot Hold Flag

SMI	Standard Message Identifier
SPD	Aircraft Speed
SS	Simplified Substitution
SSS	System/Subsystem Specification
STD	Standard
STMP	Special Traffic Management Programs
SUB	Airline Substitution
SWAP	Severe Weather Avoidance Program
TCAS	Traffic Alert/Collision Avoidance System
TCP	Transmission Control Protocol
TFM	Traffic Flow Management
TFMI	Traffic Flow Management Infrastructure
TFM-M	Traffic Flow Management - Modernization
TFMS	Traffic Flow Management System
TMI	Traffic Management Initiative
TO	Oceanic Position Report
TPC	TFMS Production Center
UBRG	UDP bridging Update
UDP	Unified Delay Program
UPD	Update
UPT	User Preferred Trajectory
US	United States
UTC	Universal Time Coordinate
VRTM	Verification Requirements Traceability Matrix
WAN	Wide Area Network
WXRTE	Severe Weather Reroute

Appendix A Error Codes and Messages

Table A-I provides a complete list of the error codes and corresponding messages that may be generated by the TFMS in response to processing received messages.

Table A-I. Error Codes/Messages

Code	Error Message	Corrective Action
Packet Header Error Messages		
ERR401	PACKET NOT PROCESSED	The packet has not been processed due to internal TFMS error.
ERR402	PACKET ID IS MISSING. USE LLLDDDDDDDDDD.DD	The packet header line does not include a packet ID.
ERR403	INVALID PACKET ID. USE LLLDDDDDDDDDD.DD	The packet ID does not match the specified syntax.
ERR405	UNKNOWN PACKET CODE. USE FD OR SS	The packet contains a code other than FD or SS in the header line.
ERR406	PACKET CODE LINE MISSING. USE FD LLLDDDDDDDDDD.DD	The packet has no header line.
ERR407	UNKNOWN HUB SITE ARINC ADDRESS. USE QU BOSCDYA	The packet was sent to the wrong address.
ERR408	PACKET NOT PROCESSED	An error occurred while attempting to update the TFMS Flight Database (FDB).
ERR409	MESSAGE NOT PROCESSED DUE TO TFMS INTERNAL ERROR	An error occurred while attempting to update the TFMS Flight Database (FDB).
ERR410	INVALID EN ROUTE TIME	En Route Time may not exceed 18 hours.
ERR411	MESSAGE NOT PROCESSED: FDB IN SLAVE MODE.	This message should only appear on internal TFMS logs.
FC, FM, FX Error Messages		
ERR301	UNKNOWN MESSAGE TYPE. USE FC/FM/FX/SM/HOLD ALL SLOTS FOR/RELEASE ALL SLOTS FOR	A message with an invalid message type was received. For FD packets, valid message types are FC, FM, and FX. For SS packets, valid message types are FM, FX, SC, HOLD ALL SLOTS, and RELEASE ALL SLOTS.
ERR302	UNKNOWN FORMAT FOR FLIGHT ID	The flight ID field does not match the specified syntax.
ERR303	UNKNOWN FORMAT FOR AIRPORT	An airport field does not match the specified syntax.
ERR304	UNKNOWN FORMAT FOR DEPARTURE AIRPORT.	The departure airport field does not match the specified syntax.
ERR305	UNKNOWN FORMAT FOR ARRIVAL AIRPORT	The arrival airport field does not match the specified syntax.

Code	Error Message	Corrective Action
ERR306	UNKNOWN AIRPORT	The specified airport does not exist in the TFMS airport database.
ERR307	FLIGHT ID/DEPARTURE/ARRIVAL AIRPORT MISSING.	One of the first three required fields is missing (cannot tell which one from syntax).
ERR308	UTC DEPARTURE DATE/TIME MISSING.	The required field UTC Departure Date/Time is missing.
ERR309	INVALID UTC DEPARTURE DATE/TIME.	The UTC Departure Date/Time contains an illegal value (e.g., a month greater than 12)
ERR310	UNKNOWN FORMAT FOR UTC DEPARTURE DATE/TIME	The UTC Departure Date/Time field does not match the specified syntax.
ERR311	AIRCRAFT TYPE MISSING.	An aircraft type field was not provided on an FC.
ERR312	RUNWAY DEPARTURE TIME MISSING	A runway arrival time was provided without a runway departure time. These fields must be provided in pairs.
ERR313	RUNWAY ARRIVAL TIME MISSING.	A runway departure time was provided without a runway arrival time. These fields must be provided in pairs.
ERR314	GATE DEPARTURE TIME MISSING	A gate arrival time was provided without a gate departure time. These fields must be provided in pairs.
ERR315	GATE ARRIVAL TIME MISSING	A gate departure time was provided without a gate arrival time. These fields must be provided in pairs.
ERR316	GATE TIMES MISSING IN FC	An FC was received without the required gate departure and arrival time fields.
ERR317	INVALID TIME. USE DDHHMM	A time field contains an illegal value (e.g., date greater than 31)
ERR318	DEPARTURE TIME LATER THAN ARRIVAL TIME	A departure time cannot be later than an arrival time in a matched pair of times
ERR319	DEPARTURE TIME EQUAL TO ARRIVAL TIME	A departure time cannot be equal to an arrival time in a matched pair of times
ERR320	NOT AUTHORIZED TO UPDATE THIS FLIGHT	One of the flights in the message belongs to an airline that submitter can not submit data for.
ERR321	DEPARTURE DATE TOO FAR IN FUTURE	The departure date is more than 1 day in the future
ERR322	ARRIVAL TIME IN PAST	Cannot create a flight arriving in the past.
ERR323	FIELD SPECIFIED MULTIPLE TIMES	A field has been defined more than once.
ERR324	INVALID FORMAT FOR	The aircraft type field does not match the

Code	Error Message	Corrective Action
	AIRCRAFT TYPE	specified syntax.
ERR325	UNKNOWN AIRCRAFT TYPE	The specified aircraft type does not exist in the TFMS database.
ERR326	FLIGHT ID TOO LONG. USE MAX 7 CHARS.	The Flight ID has 8 characters.
ERR327	LINE CONTINUATION CHARACTER MUST BE LAST FIELD.	The line continuation character must be the last field in a message. It must also stand apart from other fields.
ERR396	CANNOT SPECIFY CONTROLLED TIME.	Cannot specify CTD or CTA in an FM message submitted in an FD packet. Control times can only be specified in an FM submitted in an SS packet.
ERR397	CANNOT SPECIFY ASSIGNED ARRIVAL SLOT.	Cannot provide Arrival Slot in an FM message submitted in an FD packet. Arrival slot can only be provided in an FM submitted in an SS packet.
ERR398	INVALID CHARACTER.	An unrecognizable character was received in an FC, FM, or FX message.
ERR399	UNKNOWN SYNTAX ERROR	A totally unrecognizable message was received.
FC Error Messages		
ERR001	FLIGHT ALREADY CREATED. USE FM	An FC has already been received for this flight; you must use an FM to modify it.
ERR002	FLIGHT HAS BEEN COMPLETED	Cannot create a flight that has already flown.
ERR003	FOUND COMPLETED FLIGHT WITH OTHER DEPARTURE AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR004	FOUND COMPLETED FLIGHT WITH OTHER ARRIVAL AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR005	FOUND ACTIVE FLIGHT WITH OTHER DEPARTURE AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR006	FOUND ACTIVE FLIGHT WITH OTHER ARRIVAL AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR007	FOUND FILED FLIGHT WITH OTHER DEPARTURE AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR008	FOUND FILED FLIGHT WITH OTHER ARRIVAL AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.

Code	Error Message	Corrective Action
ERR009	FOUND CONTROLLED FLIGHT WITH OTHER DEPARTURE AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR010	FOUND CONTROLLED FLIGHT WITH OTHER ARRIVAL AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR011	FOUND AIRL.CREATED FLIGHT WITH OTHER DEPARTURE AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR012	FOUND AIRL.CREATED FLIGHT WITH OTHER ARRIVAL AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR463	REPLACE FAILED TO UPDATE FLIGHT ENTRY	An FC was received for an existing flight but the flight record could not be updated.
ERR464	FAILED TO ADD NEW FLIGHT ENTRY	A new flight record could not be created in the flight database.
ERR465	A8 AND A9 FIELDS CAN ONLY BE SENT ON FC	An FM or FX message was received that contained A8 and A9 fields. Those fields are only valid on an FC message.
ERR466	A8 FIELD CANNOT BE SENT WITHOUT A9	The FC message must have both the A8 and A9 fields or neither.
ERR467	A9 FIELD CANNOT BE SENT WITHOUT A8	The FC message must have both the A8 and A9 fields or neither.
ERR469	NO MATCHING DIVERTED FLIGHT	An FC message with A8 and A9 fields was received but the diverted flight specified by those fields was not found in the database.
ERR470	NEW FLIGHT ALREADY CREATED, RECEIVED A8/A9, USE FM	When an FC message has the A8/A9 fields, the flight ID must be for a new flight. This message indicates that the flight already existed. Use an FM message to modify the times of the flight.
FM Error Messages		
ERR101	FLIGHT HAS BEEN COMPLETED	Cannot modify data fields other than the actual departure and arrival times after a flight has been completed.
ERR102	FLIGHT CANCELLED IN NAS. FILE FLIGHT PLAN	A NAS message has cancelled the flight. An FZ will re-instate the flight.
ERR103	FLIGHT AIRLINE CANCELLED. USE FC	An FX has been received for this flight. You can re-instate only by sending an FC.
ERR104	FLIGHT CANCELLED. USE FC	This flight has been canceled by a message other than an FX or a NAS message. You can re-instate only by sending an FC.

Code	Error Message	Corrective Action
ERR105	FLIGHT TIMED OUT. MODIFY DEPARTURE TIME	The flight has been time out canceled. You can re-instate it by sending an FM with new departure times.
ERR106	USE FX AND FC TO DIVERT FLIGHT BEFORE DEPARTURE	To divert a flight before it has departed, you must first cancel it and submit an FC with the new arrival airport.
ERR108	FOUND COMPLETED FLIGHT WITH OTHER DEPARTURE AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR109	FOUND COMPLETED FLIGHT WITH OTHER ARRIVAL AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR110	FOUND ACTIVE FLIGHT WITH OTHER DEPARTURE AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR111	FOUND ACTIVE FLIGHT WITH OTHER ARRIVAL AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR112	FOUND FILED FLIGHT WITH OTHER DEPARTURE AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR113	FOUND FILED FLIGHT WITH OTHER ARRIVAL AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR114	FOUND CONTROLLED FLIGHT WITH OTHER DEPARTURE AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR115	FOUND CONTROLLED FLIGHT WITH OTHER ARRIVAL AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR116	FOUND AIRL.CREATED FLIGHT WITH OTHER DEPARTURE AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR117	FOUND AIRL.CREATED FLIGHT WITH OTHER ARRIVAL AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR120	CANNOT MODIFY ASSIGNED ARRIVAL SLOT	Cannot modify the assigned arrival slot in an FD packet.
ERR121	CANNOT MODIFY CONTROLLED DEPARTURE TIME.	Cannot modify the controlled departure time in an FD packet.
ERR122	CANNOT MODIFY CONTROLLED ARRIVAL TIME.	Cannot modify the controlled arrival time in an FD packet.
ERR123	FLIGHT NOT FOUND. PROVIDE	The flight does not already exist. TFMS

Code	Error Message	Corrective Action
	GATE TIMES TO CREATE.	would have created it if the gate departure and arrival times had been provided on the FM.
ERR124	FLIGHT NOT FOUND. PROVIDE AIRCRAFT TYPE TO CREATE	The flight does not already exist. TFMS would have created it if aircraft type had been provided on the FM.
ERR125	FLIGHT NOT FOUND. PROVIDE AIRCRAFT TYPE AND GATE TIMES TO CREATE.	The flight does not already exist. TFMS would have created it if the aircraft type and gate departure and arrival times had been provided on the FM.
ERR452	FLIGHT DOES NOT EXIST. FLIGHT-ID COULD NOT BE CHANGED	The FM message contained a new flight-id in the A2 field. However, neither the new nor the old flight-id could be found in the database.
ERR453	SCS MESSAGE FAILED TO UPDATE FLIGHT	The flight specified on an SCS message could not be updated in the TFMS database.
ERR454	SCS MESSAGE CANNOT MATCH ANY FLIGHT ENTRY	The flight specified on an SCS message does not exist in the TFMS database.
ERR455	DIVERSION RECOVERY FAILED TO UPDATE FLIGHT ENTRY	TFMS has assumed that an FM message is updating the recovery leg of a diverted flight, but the update has failed.
ERR456	DIVERSION RECOVERY FAILED TO ADD FLIGHT ENTRY	TFMS has assumed that an FM message is creating the recovery leg of a diverted flight, but the creation has failed.
ERR457	DIVERSION RECOVERY MESSAGE FOR ACTIVE FLIGHT NOT PROCESSED	The FM message for the recovery leg of an active flight has failed.
ERR458	FLIGHT-ID CHANGE ONE-TO-ONE MATCH FAILED TO UPDATE FLIGHT ENTRY	The flight specified with the A8 and A9 fields could not be updated in the TFMS database.
ERR459	FLIGHT-ID CHANGE MULTIPLE MATCH FAILED TO UPDATE FLIGHT ENTRY	The flight specified with the A8 and A9 fields could not be updated in the TFMS database.
ERR460	REPLACE FDB ENTRY FAILED	The update to an existing flight in the TFMS database failed.
ERR461	ADD NEW FLIGHT ENTRY FAILED	The attempt to create a new flight record in the TFMS database failed.
ERR462	FMSS MESSAGE CANNOT MATCH ANY FLIGHT ENTRY	A flight in a substitution request could not be found in the TFMS database
FX Error Messages		
ERR203	FLIGHT HAS BEEN COMPLETED	Can't cancel a flight that has already flown.
ERR204	FLIGHT IS ACTIVE	Can't cancel a flight that is already in the air.

Code	Error Message	Corrective Action
ERR205	FOUND COMPLETED FLIGHT WITH OTHER DEPARTURE AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR206	FOUND COMPLETED FLIGHT WITH OTHER ARRIVAL AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR207	FOUND ACTIVE FLIGHT WITH OTHER DEPARTURE AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR208	FOUND ACTIVE FLIGHT WITH OTHER ARRIVAL AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR209	FOUND FILED FLIGHT WITH OTHER DEPARTURE AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR210	FOUND FILED FLIGHT WITH OTHER ARRIVAL AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR211	FOUND CONTROLLED FLIGHT WITH OTHER DEPARTURE AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR212	FOUND CONTROLLED FLIGHT WITH OTHER ARRIVAL AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR213	FOUND AIRL.CREATED FLIGHT WITH OTHER DEPARTURE AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR214	FOUND AIRL.CREATED FLIGHT WITH OTHER ARRIVAL AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR215	FOUND SCHEDULED FLIGHT WITH OTHER DEPARTURE AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR216	FOUND SCHEDULED FLIGHT WITH OTHER ARRIVAL AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR217	FOUND CANCELLED FLIGHT WITH OTHER DEPARTURE AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR218	FOUND CANCELLED FLIGHT WITH OTHER ARRIVAL AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
Early Intent Error Messages		

Code	Error Message	Corrective Action
ERROR413	INVALID MESSAGE TYPE FOR EI PACKET. USE FP.	FP is the only legal message type for an Early Intent packet.
ERROR471	CRUISING SPEED MISSING	The cruising speed is missing from the FP message.
ERROR472	AIRCRAFT TYPE MISSING	The aircraft type is missing.
ERROR473	DEPARTURE AIRPORT MISSING	The departure airport is missing from the FP message.
ERROR474	ARRIVAL AIRPORT MISSING	The arrival airport is missing from the FP message.
ERROR475	DEPARTURE TIME MISSING	The proposed departure time is missing from the FP message.
ERROR476	COORDINATION FIX MISSING	The coordination fix, or departure airport, is missing from the FP message.
ERROR477	ALTITUDE MISSING	The requested altitude is missing from the FP message.
ERROR478	ROUTE SYNTAX ERROR	An error was found in the route portion of the FP message.
ERROR479	FLIGHT PLAN ALREADY PROCESSED	A flight plan already exists for the flight in the TFMS database.
ERROR480	FLIGHT ACTIVE	The flight specified in the FP message is already flying.
ERROR481	FLIGHT COMPLETED	The flight specified in the FP message has already landed.
ERROR482	ETD OUT OF RANGE	The departure time on the FP message does not match that of the flight entry already in the database.
ERROR483	TFMS DATABASE ERROR.	The flight specified in the FP message could not be updated in the TFMS database.
ERROR484	FP MESSAGE CANNOT MATCH ANY FDB ENTRY	The specified flight in the FP message does not exist in the TFMS database.
Simplified Substitution and Slot Credit Substitution Error Messages		
ERR412	ILLEGAL HOLD FLAG VALUE: USE R OR H	Valid values for Hold Flag are H to hold slot or R to release slot.
ERR414	NOT AUTHORIZED TO SUB FOR THESE FLIGHTS	At least one flight in this packet belongs to a carrier for which the sender is not authorized to make substitutions at this airport. Sender must be authorized to submit substitutions for all flights referenced in an SS packet.
ERR415	CANNOT CANCEL A NON-CONTROLLED FLIGHT	An FX message submitted in an SS packet must pertain to a controlled flight. A non-controlled flight may only be cancelled in an FD packet. The most common cause for this

Code	Error Message	Corrective Action
		error is an incorrect flight ID, origin, destination, or original gate departure date and time.
ERR417	CTA NOT WITHIN 20-MINUTE WINDOW	CTA must be no earlier than the slot time for the flight's assigned slot, and no more than 20 minutes later than the slot time.
ERR418	CANNOT SUB INTO SLOT NOT OWNED BY THIS CARRIER	The FM message references a slot that does not currently belong to the sending airline or one of its authorized affiliates.
ERR419	CANNOT SUB TWO FLIGHTS IN ONE SLOT	Packet contains FM messages that assign more than one flight to the same slot. Only one flight may be assigned to a slot.
ERR420	CANNOT SUB ONE FLIGHT IN TWO SLOTS	Packet contains FM messages that assign a flight to more than one slot. A flight may be assigned to only one slot.
ERR421	CANNOT SUB A NON-CONTROLLED FLIGHT	Cannot use an FM message to assign a flight to a slot if the flight does not already have a slot assignment. This message is generated if the flight referenced in an FM does not exist in the TFMS flight database, or if it exists but is not currently controlled. The most common cause for this error is an incorrect flight ID, origin, destination, or original gate departure date and time.
ERR422	CANNOT CONTROL FLIGHT SCHEDULED TO ARRIVE DURING GDP	An SC message can be used to create a slot and assign it to a flight only if the flight is scheduled to arrive after the GDP end time is over.
ERR423	SLOT NOT OWNED BY FLIGHT IN THIS PACKET	In order to preserve the one-flight-one-slot rule, every slot that is assigned in an SS packet must be assigned to another flight in that packet prior to the packet being processed.
ERR424	CANNOT SUB INTO SLOT OCCUPIED BY FORMER POP-UP FLIGHT	Flight cannot be assigned to an earlier slot if the flight currently assigned to that slot was formerly a pop-up.
ERR425	AIRPORT NOT CONTROLLED	A HOLD ALL SLOTS or RELEASE ALL SLOTS message was received for an airport that does not currently have a GDP.
ERR426	CANNOT CHANGE HOLD FLAG FOR NON-CANCELLED FLIGHT	Cannot modify hold flag for flight that does not have an assigned slot in a GDP. The most common cause for this error is an incorrect flight ID, origin, destination, or original gate departure date and time.

Code	Error Message	Corrective Action
ERR427	CANNOT SUB POP-UP FLIGHT	Cannot assign a pop-up flight to a slot. Only a revision may assign a pop-up to a slot, after which the flight is referred to as a former pop-up.
ERR428	CONTROL INFO MISSING. SPECIFY: DEP.TIME, ARR.TIME, AND SLOT	CTD, CTA, and ASLOT fields are required in an FM message submitted in an SS packet.
ERR429	SLOT TIME CANNOT BE IN THE PAST	A flight cannot be assigned to a slot whose slot time is earlier than the current time.
ERR430	CANNOT SUB COMPLETED FLIGHT	Cannot modify slot assignment for a completed flight.
ERR431	CANNOT SUB MULTIPLE AIRPORTS	All messages in an SS packet must pertain to flights arriving at the same airport.
ERR432	CANNOT SEND FC MESSAGE IN SS PACKET	Flights cannot be created in an SS packet. An FC message may only be submitted in an FD packet.
ERR433	SC CAN BE SENT ONLY IN SS PACKET	Slots cannot be created in an FD packet. An SC message may only be submitted in an SS packet.
ERR434	CANNOT CREATE SLOT FOR CONTROLLED FLIGHT	Flight referenced in SC message is already controlled. Cannot use SC message to create a slot and assign a flight to the newly created slot if the flight already has an assigned slot or an FA Delay.
ERR435	SLOT ALREADY EXISTS	The slot value provided in SC message already exists. A newly created slot must have a unique slot identifier. An airline can generally create a unique identifier by changing the suffix letter in the slot name.
ERR436	INVALID MESSAGE TYPE FOR SS PACKET. USE FM/FX/SCS/HOLD ALL SLOTS/RELEASE ALL SLOTS	Only FM, FX, SCS, HOLD ALL SLOTS or RELEASE ALL SLOTS are valid within an SS packet.
ERR437	SLOT IN SC MSG CANNOT BE DURING CURRENT GDP	Slot time for newly created slot falls in the current GDP timeframe. For an airline to create a slot, the slot time portion of the "Assigned Arrival Slot" field in the SC message must specify a time that is after the GDP is over.
ERR438	CANNOT SUB REMOVED FLIGHT	The flight has been removed by the FAA and is not available for subbing.
ERR439	ETE CANNOT BE CHANGED BY MORE THAN 50%	The new ETE, derived by subtracting CTD from CTA, cannot change from the prior ETE by more than 45 minutes or 50% of the

Code	Error Message	Corrective Action
		prior ETE, whichever is greater.
ERR440	SUB PROCESSING IS OFF	Command Center is currently not accepting substitution messages pertaining to this GDP. TFMS sends an TFMS SUBS ON message when it resumes accepting substitution messages
ERR441	SCS CAN ONLY BE INCLUDED IN SS PACKETS	A Slot Credit Sub message can only be included in an SS packet, not in an FD or EI packet.
ERR442	SCS PROCESSING IS OFF	The FAA has turned Slot Credit Sub processing off for the airport. All SCS requests will be rejected.
ERR443	YIELDED SLOT MUST BE IN THE FUTURE	The slot that is being given up in the SCS message must be later than the current time.
ERR444	EARLIEST ACCEPTABLE TIME MUST BE LATER THAN TIME OF YIELDED SLOT	The time of the yielded slot must be earlier than the earliest acceptable time.
ERR445	EARLIEST ACCEPTABLE TIME MUST BE EARLIER THAN LATEST ACCEPTABLE TIME	The window of acceptable times must be specified as the earliest acceptable time first then the latest acceptable time.
ERR446	20-MINUTE WINDOW NOT ALLOWED WITH SCS	The substitution window size for an SCS packet must be set to 0. If any flights within the packet violate the window size, then the packet will be rejected.
ERR447	YIELDED SLOT OWNED BY FORMER POP-UP FLIGHT	The yielded slot must not be owned by a former pop-up.
ERR448	SCS TIME RANGES OVERLAP	The time ranges of different SCS messages within a packet must not overlap. The time range of an SCS is defined as the time from the yielded slot to the latest acceptable time.
ERR449	SLOT CREDIT SUBSTITUTION CANNOT BE FULFILLED	No bridge flights could be found that would allow the SCS flight to be moved into the requested window.
ERR450	SLOT TIME OF SCS FLIGHT IS ALREADY WITHIN WINDOW	The yielded slot of the SCS flight already falls within the requested window. No processing is required.
ERR451	SCS PROCESSING HAS BEEN DISABLED UNTIL FURTHER NOTICE	The FAA has suspended SCS processing temporarily.
ERR485	AFP SUBS ARE DISABLED	The FAA has suspended substitutions for AFP indefinitely. This is distinguished from ERR440 as follows. ERR440 is sent when FAA has momentarily turned off subs in order to issue a revision or compression. If a

Code	Error Message	Corrective Action
		user sees ERR440, they should wait a few minutes and try again. ERR485 indicates the FAA has disabled subs because they are causing a large-scale technical or procedural problem. Subs may be disabled for days or weeks in this latter case.
Warning Messages		
WARN001	DEPARTURE AIRPORT MISMATCH FOR SCHEDULED FLIGHT	An FM was received for a flight that matches a scheduled entry in all but the departure airport. The flight will be updated.
WARN002	ARRIVAL AIRPORT MISMATCH FOR SCHEDULED FLIGHT	An FM was received for a flight that matches a scheduled entry in all but the arrival airport. The flight will be updated.
WARN003	FLIGHT NOT FOUND. CREATED FLIGHT	An FM was received for a flight that didn't exist; however sufficient data was provided to allow the flight to be created.
WARN004	FLIGHT SCHEDULE CANCELLED	An FM was received for a scheduled entry that has been cancelled by an RS message. The times will be updated.
WARN006	FLIGHT NOT FOUND	An FX was received for a flight that didn't exist. The message was ignored.
WARN007	FLIGHT ALREADY AIRLINE CANCELLED	Flight identified in FX message has already been cancelled in a prior FX message.
WARN011	FC RECEIVED FOR REMOVED FLIGHT	The flight specified on the FC has been removed by the FAA. The flight entry will be updated but will stay remove cancelled.
WARN012	FM RECEIVED FOR REMOVED FLIGHT	The flight specified on the FM has been removed by the FAA. The flight entry will be updated but will stay remove cancelled.
WARN013	FX RECEIVED FOR REMOVED FLIGHT	The flight specified on the FX has been removed by the FAA. The flight entry will be updated to include the airline cancellation.
WARN014	UNKNOWN REMARKS KEYWORD	The only accepted remark in an A7 field is DVRSN, for diversion.
WARN015	FC – NO DIVERTED FLIGHT FOUND	An FC was received for a diverted flight but either the airport or times did not agree exactly. The flight record will be updated.

Appendix B Websphere MQ Option Usage

Table B-I provides a complete list of the Websphere MQ options utilized by TFMS in support of the ARINC interface. The descriptions provided in the table below have been excerpted from the following IBM Websphere MQ document:

Application Programming Reference, SC34-6062-03, March 2003

Table B-I. Websphere MQ Options

Option	Description
Input Options	
MQC.MQGMO_WAIT	Wait for message to arrive. The application is to wait until a suitable message arrives. The maximum time the application waits is specified in <i>WaitInterval</i> .
MQC.MQOO_FAIL_IF QUIESCING	Fail if queue manager is quiescing. This option forces the MQOPEN call to fail if the queue manager is in quiescing state.
MQC.MQGMO_SYNCPOINT	Get message with syncpoint control. The request is to operate within the normal unit-of-work protocols. The message is marked as being unavailable to other applications, but it is deleted from the queue only when the unit of work is committed. The message is made available again if the unit of work is backed out.
Output Options	
MQC.MQOO_FAIL_IF QUIESCING	Fail if queue manager is quiescing. This option forces the MQOPEN call to fail if the queue manager is in quiescing state.
MQC.MQPMO_SYNCPOINT	Put message with syncpoint control. The request is to operate within the normal unit-of-work protocols. The message is not visible outside the unit of work until the unit of work is committed. If the unit of work is backed out, the message is deleted.

Appendix C CDM Message Protocol

There are five types of CDM message protocols.

- General CDM session Protocols
- ADL session Protocols
- Flight Data Message Protocols
- Simplified Substitution Protocols
- CTOP Message Protocols

With the exception of the ADL session, CDM [session and the CTOP session](#), ARINC MQ interface utilizes [two](#) of the above five message protocols. [These protocols are detailed in the CDM Message Protocol document that is shown on the CDM webpage: \[http://cdm.fly.faa.gov/ad/CDM-GDP_specs.htm\]\(http://cdm.fly.faa.gov/ad/CDM-GDP_specs.htm\). The latest document is version 2.5, dated November 2012.](#)

Appendix D Advisories and General Messages

[The Advisories and General Messages](#) list Free Format ATCSCC advisories, formatted GDP advisories, formatted Re-Route Advisories [and CTOP Advisories](#). [These Advisories are detailed in the Advisories and General Messages document that is shown on the CDM webpage: \[http://cdm.fly.faa.gov/ad/CDM-GDP_specs.htm\]\(http://cdm.fly.faa.gov/ad/CDM-GDP_specs.htm\). The latest document is version 1.3, dated November 2012.](#)

Appendix E Interface Control Document for CTOP

For content of the CTOP ICD, please refer to the CDM webpage:
http://cdm.fly.faa.gov/ad/CDM-GDP_specs.htm. The latest CTOP ICD is version 3.0,
dated November 2012.