ATFM/SG/15 − WP/06
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International Civil Aviation Organization

Fifteenth Meeting of the Asia/Pacific Air Traffic Flow Management Steering Group (ATFM/SG/15)

Bangkok, Thailand, 28 April – 02 May 2025

Agenda Item 6: Regional ATFM Framework, A-CDM Plan and related Guidance Material

AMENDMENTS TO ASIA/PACIFIC REGION AFTN/AMHS-BASED INTERFACE CONTROL DOCUMENT FOR ATFM, VERSION 2.0

(Presented by Hong Kong China, Singapore, and Thailand)

SUMMARY

This paper presents the proposed amendments to the Asia/Pacific Region AFTN/AMHS-based Interface Control Document (ICD) for ATFM, version 2.0, aimed at harmonizing the use of fields for indicating the designation and the reason for the ATFM measure, in support of enhanced post-operations analysis.

1. INTRODUCTION

1.1 The Asia/Pacific Region AFTN/AMHS-based Interface Control Document (ICD) for ATFM, version 2.0, was developed by the Asia/Pacific ATFM Steering Group (ATFM SG) and approved by the Asia/Pacific Communications, Navigation, and Surveillance Sub-Group (CNS SG) in 2020. It provides a baseline standard for interface requirements that ATFM support systems of each ATFM node – operating in accordance with the Asia/Pacific Regional ATFM Concept of Operations – must meet to enable communication with other ATFM support systems of other ATFM nodes in cross-border ATFM operations.

1.2 As described in the ICD aforementioned, when transmitting Slot Allocation Message (SAM), Slot Revision Message (SRM), and Slot Cancellation Message (SLC) over AFTN/AMHS, the field *REGUL* can be used to indicate the designation of the ATFM measure, including the specific location of the constraint. Another available field, *REGCAUSE*, can be used to specify the reason for the ATFM measure.

2. DISCUSSION

2.1 To enhance post-operations analysis in identifying hot spots and reasons for activation of ATFM measures, as well as to enable the automated data processing of SAM/SRM/SLC and SWIM-based information exchange models, the Core Team of the Asia-Pacific Cross-Border Multi-Nodal ATFM Collaboration (AMNAC) agreed to harmonize the use of *REGUL* as follows.

AAAACCCCCDDMMMVV

where

AAAA : 4 characters to represent constrained area, i.e. airport or FIR
Example
- Airport, e.g. VTBS
- FIR, e.g. VTBB

CCCCC : Maximum 5 characters to represent specific constrained location
Example
- Sector, e.g. 3N
- Waypoint, e.g. BENSA

Note: This CCCCC *field can be omitted if it is not applicable.*

DDMMM : 5 characters to represent date and month when the ATFM measure is effective
Example
27MAR

VV : 2 digits to represent version of the designation of the ATFM measure
Example
03

2.2 To ensure effective and harmonized use of *REGUL* not only within the AMNAC but also across the Asia/Pacific region, this paper proposes to replace section **3.2.1.13 REGUL Field** of the Asia/Pacific Region AFTN/AMHS-based Interface Control Document (ICD) for ATFM, version 2.0, with the following.

3.2.1.13 REGUL Field
The —REGUL field indicates the designation of the ATFM measure, including the specific location of the constraint, affecting the flight. Several —REGUL fields may be present, with the first one being the ATFM measure that controls the flight. The syntax required is:

'-' "REGUL" regulid

where regulid = AAAACCCCCDDMMMVV

AAAA : 4 characters to represent constrained area, i.e. airport or FIR
Example
- Airport, e.g. VTBS
- FIR, e.g. VTBB

CCCCC : Maximum 5 characters to represent specific constrained location
Example
- Sector, e.g. 3N
- Waypoint, e.g. BENSA

Note: This CCCCC *field can be omitted if it is not applicable.*

DDMMM : 5 characters to represent date and month when the ATFM measure is effective

Example

27MAR

VV : 2 digits to represent version of the designation of the ATFM measure

Example

03

2.3 Moreover, the AMNAC Core Team agreed to adapt the full REGCAUSE codes from the EUCONTROL's ATFCM Users' Manual. This paper proposes to replace section **3.2.1.15 REGCAUSE Field** of the Asia/Pacific Region AFTN/AMHS-based Interface Control Document (ICD) for ATFM, version 2.0, with the following.

3.2.1.15 REGCAUSE Field

The —REGCAUSE field indicates the reason for the ATFM measure to assist in post-operations analysis. —REGCAUSE comprises the following.

a) Regulation cause code – One letter code corresponding to the cause of the ATFM measure assigned by the flow management personnel
   - C – ATC capacity
   - I – ATC industrial action
   - R – ATC routings
   - S – ATC staffing
   - T – ATC equipment
   - A – Accident/incident
   - G – Aerodrome capacity
   - E – Aerodrome services
   - N – Industrial action NON-ATC
   - M – Airspace management
   - P – Special event
   - W – Weather
   - V – Environment issue
   - O – Other

b) Regulation location code – One letter code, i.e. D, E, or A, describing the phase of the flight (Departure, Enroute, and Arrival) where the constrain triggers the ATFM measure

c) A space

d) The IATA delay code in numeric (e.g. 81, 82, 83, 89) or 00 where no IATA code is available
   - 81 – ATFM due to ATC EN-ROUTE DEMAND/CAPACITY
   - 82 – ATFM due to ATC STAFF/EQUIPMENT EN-ROUTE
   - 83 – ATFM due to RESTRICTION AT DESTINATION AIRPORT
   - 84 – ATFM due to WEATHER AT DESTINATION
   - 85 – MANDATORY SECURITY
   - 86 – IMMIGRATION, CUSTOMS, HEALTH
   - 87 – AIRPORT FACILITIES
   - 88 – RESTRICTIONS AT AIRPORT OF DESTINATION

- 89 – RESTRICTIONS AT AIRPORT OF DEPARTURE
- 98 – INDUSTRIAL ACTION OUTSIDE OWN AIRLINE
- 99 – OTHER REASON

The syntax required is:

'-' "REGCAUSE" regulationcausecode regulationlocationcode " " IATAdelaycode

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper;

b) discuss the proposal on the amendments to the Asia/Pacific Region AFTN/AMHS-based Interface Control Document (ICD) for ATFM, version 2.0 as presented in paragraph 2.2 and 2.3, and agree to Draft Conclusion as follow:

<table>
<tr><td colspan="3">Draft Conclusion ATFM/SG/15-X: Adoption of AFTN/AMHS-based Interface Control Document (ICD) to the Asia/Pacific Regional Framework for Collaborative ATFM</td></tr>
<tr><td colspan="2">What: That, the revised AFTN/AMHS-based Interface Control Document at Appendix X to the report be uploaded to the Asia/Pacific Regional Office website, to replace the existing version, for use by Asia/Pacific States/Administrations in implementing cross-border ATFM communications in accordance with the provision of the Regional Framework for Collaborative ATFM.</td><td>Expected impact:
☐ Political / Global
☐ Inter-regional
☐ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td colspan="2">Why: To enhance ATFM post-operations analysis and to improve regional interoperability by broadening the technical applicability of the ICD to conform with system requirements of all Asia/Pacific States/Administrations</td><td>Follow-up: ☐Required from States</td></tr>
<tr><td>When: 29-Aug-25</td><td colspan="2">Status: Draft to be adopted by Subgroup</td></tr>
<tr><td colspan="3">Who: ☒Sub groups ☒APAC States ☐ICAO APAC RO ☐ICAO HQ ☒Other: CNS SG/29</td></tr>
</table>

c) discuss any relevant matters as appropriate.

— — — — — — — —

INTERNATIONAL CIVIL AVIATION ORGANIZATION

ASIA/PACIFIC REGION
AFTN/AMHS-BASED INTERFACE CONTROL DOCUMENT
FOR
AIR TRAFFIC FLOW MANAGEMENT

Version ~~2.0~~3.0

Approved by the Communications, Navigation and Surveillance Sub-Group of APANPIRG (CNS SG)

RECORD OF AMENDMENTS

Version	Description	Date	Authored By	Approved By
1.0	-		ATFM/SG/9	CNS SG/23
2.0	Amendment Outcomes from ATFM/SG/10		ATFM/SG/10	CNS SG/24
3.0	New format of REGUL and REGCAUSE (outcomes of ATFM/SG/15)		ATFM/SG/15	

TABLE OF CONTENTS

LIST OF ACRONYMS

ADEP .....Departure Airport

ADES .....Arrival Airport

ADEXP .....ATS Data Exchange Presentation

AFIL .....Flight Plan Filed in the Air

AFTN .....Aeronautical Fixed Telecommunications Network

AIDC .....ATS Interfacility Data Communications

AMHS .....ATS Message Handling System

ANSP .....Air Navigation Service Provider

ARCID .....Aircraft Identification

ARR .....Arrival message

ASCII .....American Standard Code for Information Interchange

ATC.....Air Traffic Control

ATFCM .....Air Traffic Flow and Capacity Management

ATFM .....Air Traffic Flow Management

ATS .....Air Traffic Services

ATSU .....Air Traffic Services Unit

CCITT ……...Consultative Committee for International Telephony and Telegraphy, now known as the Telecommunication Standardization Sector of the International Telecommunications Union (ITU-T)

CDM .....Collaborative Decision Making

CTOT .....Calculated Take-Off Time

DEP .....Departure message

DOF.....Date of Flight Departure

EOBD .....Estimated Off-Block Date

EOBT .....Estimated Off-Block Time

ETFMS .....Enhanced Tactical Flow Management System

FMP.....Flow Management Position

FPL .....Flight Plan message

HDG .....Heading

IA5 .....International Alphabet Number 5

IATA .....International Air Transport Association

ICAO .....International Civil Aviation Organization

ICD .....Interface Control Document

IFPLD .....Individual Flight Plan

IFPLID .....Individual Flight Plan Identifier

IFPS.....Integrated Initial Flight Plan Processing System

IOBD .....Initial Off-Block Date

IOBT .....Initial Off-Block Time

IP .....Internet Protocol

ITU-T.....Telecommunication Standardization Sector of the International Telecommunications Union (formerly known as the Consultative Committee for International Telephony and Telegraphy - CCITT)

K .....Kilometre

M .....Mach

N .....Knot

NM .....Network Manager

OBT.....Off Block Time

ODF.....Optional heading information Data Field

REG.....Aircraft Registration

RVR .....Runway Visual Range

SAM .....Slot Allocation Message

SLC .....Slot Cancellation Message

SMI .....Standard Message Identifier

SRM .....Slot Revision Message

TOT .....Take Off Time

UTC.....Coordinated Universal Time

…….

1. ICD SCOPE

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

1.1 Introduction

The Distributed Multi-Nodal Air Traffic Flow Management (ATFM) Network concept is based on a network of Air Navigation Service Providers (ANSPs) leading independent ATFM operation within their area of responsibility and connecting to each other through information sharing framework.

Unlike regional-centralized ATFM where there is an overarching authority responsible for ATFM operation for the entire region, each ANSP together with associated Airspace Users (AUs) and Airport Operators (AOs) within their area of responsibility comprising one or more Flight Information Regions (FIRs), or airspace within the area of responsibility of ANSPs without an assigned FIR, participates in cross-border ATFM following this Distributed Multi-Nodal ATFM Network concept, and forms an ATFM Node where the ANSP as a Node Leader is responsible for engaging with various Node stakeholders and ensuring that the Node as a whole is ready and able to participate in the regional cross-border ATFM process.

By establishing common ATFM operating procedures and utilizing fully-interconnected information sharing mechanism among ATFM Nodes, ATFM programs based on Collaborative Decision Making (CDM) process, involving both domestic and intra-regional international flights can be effectively implemented in the region.

To achieve the efficient information dissemination required for such ATFM operation, the baseline standard for information exchange among related stakeholders is needed. This Interface Control Document (ICD) specifies the interface requirements which ATFM support system of each Node Leader must meet in order to be able to communicate with systems of other ATFM Nodes participating in the cross-border ATFM and to ensure the compatibility between them.

1.2 Scope

This ICD details the interface between nodes of the distributed Multi-Nodal ATFM.

This ICD:

- Establishes data exchange, functional, and performance requirements
- Assigns responsibilities for interface implementation and maintenance

1.3 Subsystem Responsibility List

The leader of each node develops and maintains its own ATFM software in accordance to this ICD.

1.4 Operational Requirement

The Distributed Multi-Nodal ATFM Network comprises ATFM Nodes, each of which is led by an ANSP responsible for ATFM operation within their area of responsibility. With various ATFM support systems developed independently or procured by different ANSPs and lack of information linkage among them, an airline operating flights across such areas falling within the area of responsibility of different ANSPs is required to access different systems to obtain ATFM information on their flights. The requirement of accessing multiple and varying ATFM support systems increases workload the on part of an airline and so creates a possible roadblock to expanding the ATFM Network to areas falling within the area of responsibility of different ANSPs. This calls for the need of a so-called single-point information access able to be achieved by establishing the interconnection between ATFM support systems aiming at enabling the seamless information sharing among stakeholders. However, to maintain the flexibility to accommodate new users and additional customized functions of ATFM support systems developed or procured separately as previously mentioned and to minimize the impact of changes among them, loose system coupling is still required. Furthermore, to attain cost-effective communication among stakeholders and to gain the network-wide scalability, common standards for information exchange are needed to be considered. On the other hand, with the nature of decentralized ATFM operational approach where ATFM support system of each ATFM Node locating geographically dispersed, security across systems is of paramount importance. Technical requirements to address the operational need for information sharing between ATFM support systems stated above can be summarized as follows:

1) Loose system coupling
2) Common standards for information exchange
3) System-wide security

To facilitate the aforementioned requirements, this document describes an interface connection that is designed using the currently deployed AFTN networking (or AMHS).

In particular, considering variation in interactions among stakeholders required at different phases of ATFM operation and keeping in mind the objective of having systems loosely coupled, a data exchange architecture based on existing messaging is chosen to exchange ATFM information. This solution is intended to eventually be deprecated and replaced by a SWIM based solution that uses FIXM data models. However, considering the timeline for deployment of all nodes of the multi-nodal network, it is considered a necessary first step to initially deploy ATFM using data exchange with AFTN/AMHS.

2. APPLICABLE DOCUMENTS

List of all applicable documents:

ICAO DOC 4444

ICAO DOC 9971

Asia/Pacific Regional Framework for Collaborative ATFM

Asia/Pacific Regional ATFM Concept of Operations

FIXM 4.1.0 core

FIXM XXX APAC extension for MN

SWIM Version of the Multi-Nodal ICD

Asia-Pacific Cross-Border Multi-Nodal ATFM Collaboration Common Operating Procedure

3. INTERFACE CHARACTERISTICS

This section provides the general, functional, and physical characteristics for each AFTN node and the AFTN/AMHS interface.

3.1 General Characteristics

This section identifies the interfacing subsystem(s); the point(s) of interface including associated cable terminations, functions, and services provided by the interface; and each layer implemented within the interfacing subsystem(s) necessary to achieve connectivity.

Figure 1 (next page) identifies the interface described within this ICD and depicts how the systems fit into the logical architecture context of the implementation.

3.1.1 Data Format

In general, data that is sent to the local ATFM System across the interface will use text-based messages, as defined by the *ICAO Doc 4444* standard for exchange of flight information messages. Specifically, the communication described in this ICD is based on the message transfer requirements necessary to exchange character-based International Alphabet Number 5 (IA-5) AFTN message data[1] between two ATM systems. IA-5 is a modified subset of American Standard Code for Information Interchange (ASCII) characters that can only be supported by AFTN and AFTN/AMHS Gateway. The information in this document pertaining to the message transmission is based on the CCITT 1984 X.25 standard[2].

[1] This ICD includes a collection of information from several standards that are applicable to the interface. This is because the Multi-Nodal concept only needs a subset of all of the messages available from the relevant standards. Universally, when discussing the general characteristics of the data format of the messages: the message composition is defined as IA-5 as described in *ICAO Annex 10, Volume I*, paragraph 4.11.1; message format is as specified in *Volume II*, section 4.4.16; and message text shall be as specified in *Volume II*, section 4.4.16.3.

[2] https://icao.int/APAC/Documents/edocs/cns/ICD_X25Protocol.pdf

The messages in this ICD are not defined in ICAO Doc 4444. They are defined in the EUROCONTROL *ATS Data Exchange Presentation* (ADEXP). For simplicity, only messages related to multi-nodal ATFM operations are included in this ICD.

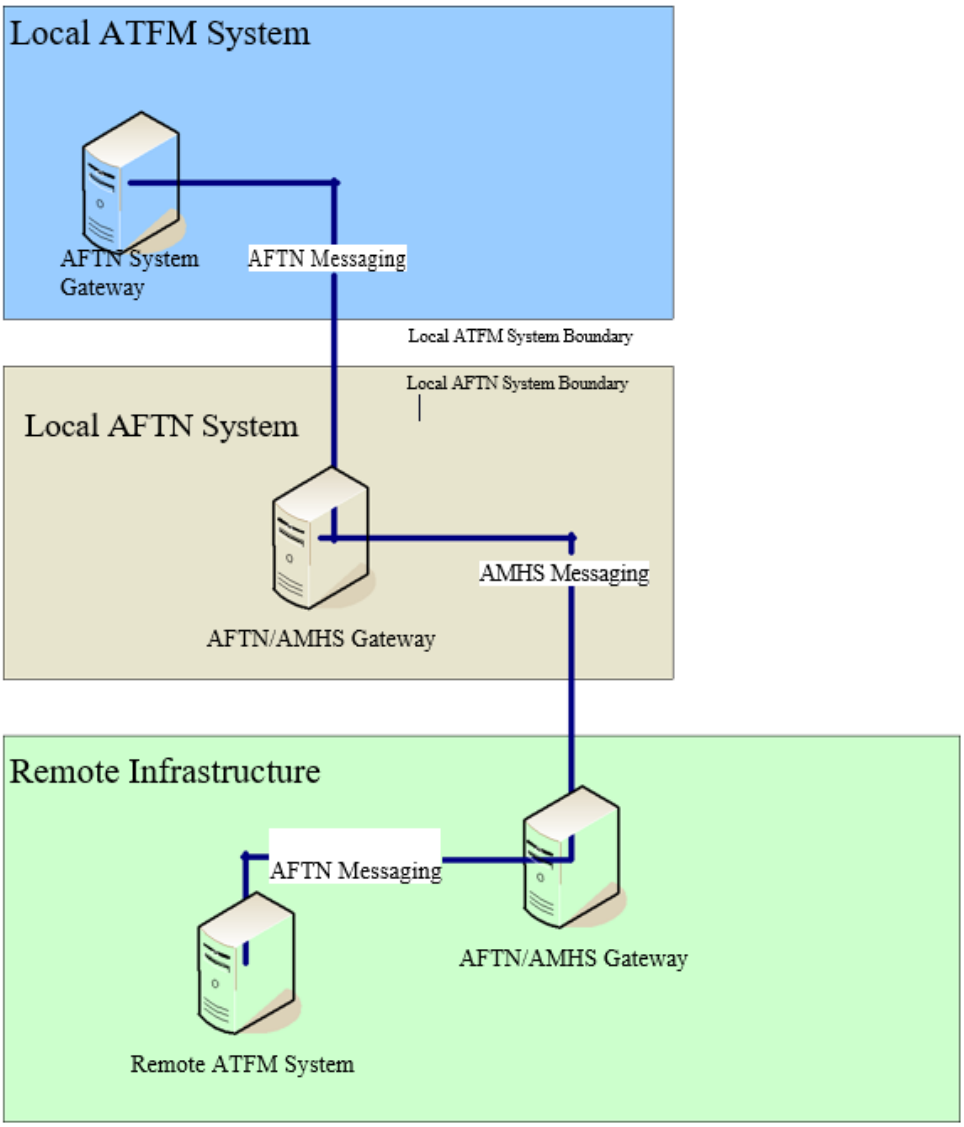

Figure 1: Logical Architecture showing interface demarcation between the Local ATFM System and AFTN/AMHS

3.1.2 Messages defined by ADEXP

For the Slot Allocation Message (SAM) and the Slot Revision Message (SRM), the Slot Cancellation Message (SLC), the standard that is applied is referenced using the EUROCONTROL document: *ATFCM User's Manual Edition 21*, dated 03 May 2018. The SAM, SRM, and SLC follow the same form as required by *ICAO Doc 4444* and as reiterated in this ICD (see section 3.1.4).

3.1.3 Message Construction

Each AFTN message, regardless of the data format, contains a specific structure that is compliant with IA-5 and defined in ICAO Annex 10. This structure is summarized in Table 1.

Field #	Description	Format	Example
1	Start of Message/ Start of heading	~~4 letters~~ 1 character	~~ZCZC~~ 0/1
2	Transmission Identification	3 letters + 3 numbers	HAR001
3	Additional Service Indication	Optional <11 characters	123456
4	Priority Indicator	2 letters	FF
5	Addressee of the message	8 letters	EGLLZRZX
6	Day / time of the message	DDHHMM (UTC)	041345
7	Originator of the message	8 letters	OPSTZQZX
8	Optional Heading Information	ODF – See AIDC	See AIDC
9	ATS Message Payload	…	…
10	End of Message	1 character	0/3

Table 1: Summary of IA-5 Fields used in messages sent via AFTN/AMHS

Generally, ICAO, ADEXP, and AIDC use the IA-5 format to send messages over AFTN/AMHS. However, there are key differences in how ICAO and ADEXP use the fields. These differences are explained in the following sections and follow the format illustrated in **Figure 2** and **Figure 3**.

```
FAB3887 251146
FF WSJCZQZX
251146 WMFDYFYX
(DEP-MAS2530/A2165-WMKK1146-WBGG-DOF/150125)
```

Figure 2: IA-5 Illustration of ICAO Message

```
WSB0903 250145
FF YMMLJSTX
250145 VTBBFDMC
—TITLE SAM
—ARCID SAA123
—ADEP FAJS
—ADES FADN
—EOBD 100303
—EOBT 1020
—CTOT 1035
```

Figure 3: IA-5 Illustration of ADEXP Message

3.1.3.1 IA-5 Message Field 1: Start of Message

The Start of Message / Start of heading is handled outside the scope of this ICD, but it is included for completeness.

3.1.3.2 IA-5 Message Field 2: Transmission Identification

The transmission identification field includes a prescribed sequence of characters intended to convey a specific keyboard (terminal) and a channel on which the terminal will communicate:

a) Transmitting-terminal letter

b) Receiving-terminal letter

c) Channel-identification letter

d) Channel-sequence number

For the purposes of this ICD, the Transmission Identification for the local ATFM system will be in alphanumeric code as locally agreed.

3.1.3.3 IA-5 Message Field 3: Additional Service Indication

For the purposes of this ICD, the additional service indication field is the time of the transmission.

3.1.3.4 IA-5 Message Field 4: Priority Indicator

The priority indicator is a two (2)-letter identifier that provides context for the associated message. The following priority indicators are possible:

- SS – Distress message
- FF – Standard Air Traffic Service (ATS) Message
- DD – Urgent message
- GG – One of the following:
  - Meteorological message
  - Flight Regularity Message
  - Aeronautical Information Services message
- KK – Aeronautical Administrative message.

For the purposes of this ICD, the ATFM messaging will only send FF messages.

3.1.3.5 IA-5 Message Field 5: Addressee of the Message

The addressee of the message is an eight-character code that is interpreted by the network to determine the routing location that the message will be sent.

When the number of addressees required is more than the operational system parameters allow, two or more transmissions of the message must be made. The eight (8)-letter combination addressee indicators are composed as follows:

- The four (4)-letter ICAO location indicator, as defined by *ICAO DOC 7910* (*Location Indicators*).
- A three (3)-letter designator for the facility type/office, or if no designator has been assigned, ZZZX for aircraft in flight, or YYYX for all other cases. The source of the facility designator is *ICAO DOC 8585, Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services*.
- The eighth character of the address indicates the end system application and is determined by the Air Traffic Services Unit (ATSU).

3.1.3.6 IA-5 Message Field 6: Day / Time of the Message

The day/time field is the time the message is sent by a local ATFM System or filed for sending (for incoming messages). The field is a six (6)-digit date/time group that follows the format, DDHHMM in

Coordinated Universal Time (UTC).

3.1.3.7 IA-5 Message Field 7: Originator of the Message

The originator of the message is an eight-character code of the ANSP, organization, and application which is sending the message. Similar to IA-5 Message Field 5, the originator address is constructed in three parts:

- The four (4)-letter ICAO location indicator, as defined by *ICAO DOC 7910* (*Location Indicators*).
- A three (3)-letter designator for the facility type/office, as defined by *ICAO DOC 8585, Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services*.
- The eighth character of the address indicates the end system application and is determined by the ATSU.

3.1.3.8 IA-5 Message Field 8: Optional Heading Information

The optional heading information field is used for AIDC messages. It is rarely used for ICAO or ADEXP messages; therefore, it is not included in this ICD.

3.1.3.9 IA-5 Message Field 9: ATS Message Payload

See section 3.1.4 and section 3.2.

3.1.3.10 IA-5 Message Field 10: End of Message

The end of message field is a specific character sequence that is indicative of the end of the AFTN message. Similar to IA-5 message field 1, this is handled by the AFTN/AMHS gateway; therefore, it is not within the scope of this ICD.

3.1.4 Message Body (ATS Message Payload)

The message body—message type and data—follows the message header. The message body contains the message type and information used to identify the flight attributes as well as maintain an updated flight state. The message body may be different depending on whether it is defined by ICAO or ADEXP. The context of this ICD Is focused on multi-nodal operations, and therefore only ADEXP related messaging is included.

3.1.4.1 Messages defined by ADEXP

In contrast with messages defined by AIDC and ICAO, the message body for ADEXP messages does not begin with an open parenthesis. Instead, they begin with the hyphen "—", followed by a keyword (TITLE), and then the three (3)-letter indicator of the message type. Although there are several complexities related to simple and compound fields in ADEXP messages, for this ICD, the focus is limited to only simple fields.

Each field is delimited a by hyphen "–", and the data elements within each field are separated by '/' or spaces. The example shown in **Figure 4** has been presented in a manner which makes it easy to read. This has been achieved through the use of carriage returns, line feeds, indents, etc. Such a layout does not form part of the ADEXP format rules; therefore, presentation of a message is at the discretion of the receiving system.

```
—TITLE [Message Type]
—[FIELD1][Element]
```

—[FIELD2][Element]
—[FIELD3][Element]
…

Figure 4: Overall structure of AFTN (ADEXP) message

Figure 5 is an example of a SAM message that follows the ADEXP structure:

—TITLE SAM
—ARCID SAA123
—ADEP FAJS
—ADES FADN
—EOBD 100303
—EOBT 1020
—CTOT 1035
—REGUL FAJS
—TAXITIME 0015
—REGCAUSE WA 84

Figure 5: SAM message using ADEXP structure

3.2 Functional Design Characteristics

This subsection describes the functional design characteristics of this interface and focuses on the AFTN messages that contain the information necessary to manage flight data for multi-nodal operations, or are related to the communication between a local ATFM system and AFTN. These messages are independent of the messaging system—AFTN or AMHS.

Every AFTN message contains a combination of identifying fields for uniqueness and specific flight data attributes for the flight. **Table 2** shows the information contained in each field and which fields are sent with each message type from *ICAO Doc 4444 PANS-ATM* and includes all AFTN messages. **Table 3** shows a similar table for those messages defined in ADEXP[3].

[3] **Table 3** indicates the messages, as defined in ADEXP. The source of the table is the EUROCONTROL *Air Traffic Flow & Capacity Management Operations (ATFCM) Users Manual, edition 22.1,* dated 14 November 2018.]

DESIGNATOR / MESSAGE TYPE		1 Not currently used	2 Not currently used	3 Message type, number and reference data	4 Not currently used	5 Description of emergency	6 Not currently used	7 Aircraft identification and SSR mode and code	8 Flight rules and type of flight	9 Number and type of aircraft and wake turbulence category	10 Equipment	11 Not currently used	12 Not currently used	13 Departure aerodrome and time	14 Estimate data	15 Route	16 Destination aerodrome and total estimated elapsed time, alternate aerodrome(s)	17 Arrival aerodrome and time	18 Other information	19 Supplementary information	20 Alerting search and rescue information	21 Radio failure information	22 Amendment	FIELD TYPE NUMBERS
Alerting	ALR			3		5		(7)	8	(9)	10			(13)		(15)	(16)		(18)	(19)	(20)			Emergency messages
Radiocommunication failure	RCF			3				7														(21)		
Filed flight plan	FPL			3				7	8	(9)	10			(13)		(15)	(16)		(18)					Field flight plan messages and associated update messages
Delay	DLA			3				7						13			16		18					
Modification	CHG			3				7						13			16		18				△22	
Flight plan cancellation	CNL			3				7						13			16		18					
Departure	DEP			3				7						13			16		18					
Arrival	ARR			3				7						13			16	17						
Current flight plan	CPL			3				7	8	(9)	10			(13)	14	(15)	(16)		(18)					Coordination messages
Estimate	EST			3				7						13	14		16							
Coordination	CDN			3				7						13			16						△22	
Acceptance	ACP			3				7						13			16							
Logical acknowledgement message	LAM			3																				
Request flight plan	RQP			3				7						13			16		18					Supplementary messages
Request supplementary flight plan	RQS			3				7						13			16		18					
Supplementary flight plan	SPL			3				7						13			(16)		(18)	(19)				

(○) This field begins a new line when the message is printed in
(△) This field is repeated as necessary.

Table 2: Fields and corresponding flight information contained in each ICAO ATS message type (*Source – ICAO Doc 4444 PANS-ATM Appendix 3*)

PRIMARY FIELD COMPOSITION OF TACTICAL ATFCM MESSAGES EXCHANGE (1)														
Message Field	**SAM**	**SRM**	**SLC**	**SIP**	**FLS**	**DES**	**RRP**	**RRN**	**ERR**	**SMM**	**SPA**	**SRJ**	**FCM**	**RJT**
-TITLE	1	1	1	1	1	1	1	1	1	1	1	1	1	1
-IFPLID	1	1	1	1	1	1	1	1	(1)	(1)	(1)	(1)	(1)	(1)
-ADDR	(1)	(1)	(1)	(1)	(1)	(1)								
-ARCID	1	1	1	1	1	1	1	1	(1)	1	1	1	1	1
-ADEP	1	1	1	1	1	1	1	1	(1)	1	1	1	1	1
-EOBD	1	1	1	1	1	1	1	1	(1)	(1)	(1)	(1)	(1)	(1)
-EOBT	1	1	1	1	1	1	1	1	(1)	1	1	1	1	1
-IOBD	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
-IOBT	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
-CTOT	1			1			(1)	(1)		1				
-NEWCTOT		1		1			(1)	(1)			1			
-NEWPTOT							(1)	(1)						
-REJCTOT												1		
-REASON	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)					
-ADES	1	1	1	1	1	1	1	1	(1)	1	1	1	1	1
-REGUL	1<	1<		1<	0<								0<	
-ORGRTE							1	1						
-PTOT					(1)		(1)	(1)						
-NEWRTE							1	1						
-RRTEREF							(1)	1						(1)
-RVR	(1)	(1)			(1)								(1)	
-RESPBY				1	(1)		1	1						
-ORGMSG									(1)					
-FILTIM									1					
-ERRFIELD														
-MINLINEUP														
-COMMENT	0<	0<	0<	0<	0<	0<	0<	0<	0<					
-TAXITIME	1	1	1	1	1	1	1	1	(1)					
-REGCAUSE	1	1			(1)									
-OBTLIMIT - VALPERIOD							1	1						
-TTO	1	1												

'1' means: exactly one field of the specified type is required
'(1)' means : a single optional field of the specified type is allowed
a 'blank cell' means: this field is not in a message
'n<' means: n or more occurrences of this field can appear in a message

Table 3: Fields and corresponding flight information contained in each ADEXP message type

The messages needed to perform the slot management functionality are the SAM, SRM and SLC. Each message sent by the Local ATFM system to AFTN/AMHS or received by the local ATFM System from AFTN/AMHS is compliant with *ADEXP*. The table 3 above is for reference only, please refer to the table 4 below for the exact ADEXP fields to be sent in the respective SAM, SRM and SLC messages.

3.2.1 ADEXP ATS Message Payload – Message Fields

Table 4 provides an overview of the data that is contained in each field for the ADEXP messages defined in this document. The complete structure and the format of the information in each field can be found in the *EUROCONTROL Specification for ATS Data Exchange Presentation (ADEXP), version 3.2*.

Each ATFM message comprises a number of fields, some of which are mandatory and some of which are optional. This may vary from message to message. Specific requirements are given in this document according to the principles of the ADEXP Standard document already mentioned. All ATFM messages shall begin with the TITLE field. The order of other fields is optional.

The field IFPLID, the unique identifier assigned to a flight by EUROCONTROL's Integrated Initial Flight Plan Processing System (IFPS) (two (2) alphabetic characters followed by eight (8) digits, e.g. —IFPLID AA12345678), will be in all ADEXP messages issued by the Network Manager (NM). EUROCONTROL's Enhanced Tactical Flow Management System (ETFMS) will accept the IFPLID when provided in an incoming message in ADEXP format. Therefore, messages sent to NM may include the Individual Flight Plan (IFPLD). The field is optional and it is not used in any other system worldwide so the value can be anything such as AA00000000.

The M and O designation in Table 4 indicates mandatory or optional fields for the specific message; if the field is blank it is not used for the specific message.

ADEXP Field Name	Message & Example	SAM	SRM	SLC
TITLE	-TITLE SAM	M	M	M
ADDR	-BEGIN ADDR -FAC LLEVZPZX -FAC LFFFZQZX -END ADDR	O	O	O
ARCID	-ARCID AMC101	M	M	M
IFPLID	-IFPLID AA12345678	O	O	O
ADEP	-ADEP EGLL	M	M	M
ADES	-ADES LMML	M	M	M
EOBD	-EOBD 160224	M	M	M
EOBT	-EOBT 0950	M	M	M
IOBD	-IOBD 160224	O	O	O
IOBT	-IOBT 0950	O	O	O
CTOT	-CTOT 1030	M		
NEWCTOT	-NEWCTOT		M	
REGUL	-REGUL RMZ24M	O	O	O
TAXITIME	-TAXITIME 0020	M	M	M
REGCAUSE	-REGCAUSE CE 81	M	M	
REASON	-REASON	O	O	O
RVR	-RVR	O	O	O
COMMENT	-COMMENT	O	O	O

Table 4: Flight data attributes associated with ADEXP message fields

3.2.1.1 TITLE Field

The TITLE field is a three (3)-letter identifier of the message. The TITLE field always is first in the payload. The syntax required for this field is:

'-' "TITLE" titleid

3.2.1.2 ADDR Field

List field that requires BEGIN and END (i.e., -BEGIN ADDR and –END ADDR) as brackets around a listing of eight character addresses with subfields (e.g., -FAC CFMUTACT). The eight-character identifiers are the same as that which is identified for location identifiers in section 3.1.3.5. The syntax required for this field is:

'- "BEGIN" "ADDR" 1 { fac } '-' "END" "ADDR"

3.2.1.3 ARCID Field

The ARCID field is the registration marking of the aircraft, or the ICAO designator of the aircraft operator followed by the flight identifier. The syntax required for this field is:

'-' "ARCID" aircraftid

3.2.1.4 IFPLID Field

IFPS Identification. This is the unique flight plan identification which is issued by EUROCONTROL's Flight Planning System (IFPS). It is only available in flight plans that have been distributed in ADEXP format. The IFPLID is two (2) alphabetic characters followed eight (8) digits, e.g. —IFPLID AA12345678), and will be in all ADEXP messages issued by the NM. EUROCONTROL's ETFMS will accept the IFPLID when provided in an incoming message in ADEXP format. Therefore, messages sent to NM may include the IFPLD. The field is optional and it is not used in any other system worldwide, so for sending the message to any other ATFM system, the value can be anything such as AA00000000.

The Syntax required is:

'-' "IFPLID" 2{ALPHA}2 ! 8{ DIGIT }8

3.2.1.5 ADEP Field

ICAO indicator for Aerodrome of Departure. The syntax required is:

'-' "ADEP" (icaoaerodrome | 'AFIL' | 'ZZZZ')

3.2.1.6 ADES Field

ICAO indicator for Aerodrome of Destination. The syntax required is:

'-' "ADES" (icaoaerodrome | 'ZZZZ')

3.2.1.7 EODB Field

Estimated Date of Flight. The format is YYMMDD (i.e., no century). The syntax required is:

'-' "EOBD" YYMMDD

3.2.1.8 EOBT Field

Estimated Off-Block Time. The syntax required is:

'-' "EOBT" hhmm

3.2.1.9 IOBD Field

Initial Off-Block Date. The format is YYMMDD (i.e., no century). The syntax required is:

'-' "IOBD" YYMMDD

3.2.1.10 IOBT Field

Initial Off-Block Time. The syntax required is:

'-' "IOBT" hhmm

3.2.1.11 CTOT Field

Calculated Take-Off Time. Importantly, the send or receipt of an SAM message (with a CTOT) is only done at approximately two hours before EOBT. This relative delivery time will allow the ATFM systems to determine whether the CTOT is intended for the current day or next day. Specifically, if the CTOT will be late enough in the day relative to current time that it actually is for the next day, the ATFM systems can assume it is the next day and use the EOBD to determine the correct day of flight. The syntax required is:

'-' "CTOT" hhmm

3.2.1.12 NEWCTOT Field

A new Calculated Take-Off Time, as updated by an ATFM system. Importantly, the send or receipt of an SRM message (with a NEWCTOT) is only done at approximately two hours before EOBT. This relative delivery time will allow the ATFM systems to determine whether the NEWCTOT is intended for the current day or the next day. Specifically, if the NEWCTOT will be late enough in the day relative to current time that it actually is for the next day, the ATFM systems can assume it is the next day and use the EOBD to determine the correct day of flight. The syntax required is:

'-' "NEWCTOT" hhmm

3.2.1.13 REGUL Field

~~The —REGUL field indicates the name of the ATFM Measure affecting the flight. Several —REGUL fields may be present, the first one being the ATFM Measures field that controls the flight. The syntax required is:~~

~~'-' "REGUL" regulid~~

The —REGUL field indicates the designation of the ATFM measure, including the specific location of the constraint, affecting the flight. Several —REGUL fields may be present, with the first one being the ATFM measure that controls the flight. The syntax required is:

'-' "REGUL" regulid

where regulid = AAAACCCCCDDMMMVV

AAAA : 4 characters to represent constrained area, i.e. airport or FIR

Example

- Airport, e.g. VTBS
- FIR, e.g. VTBB

CCCCC : Maximum 5 characters to represent specific constrained location

Example

- Sector, e.g. 3N
- Waypoint, e.g. BENSA

Note: This CCCCC *field can be omitted if it is not applicable.*

DDMMM : 5 characters to represent date and month when the ATFM measure is effective

Example

27MAR

VV : 2 digits to represent version of the designation of the ATFM measure

Example

03

3.2.1.14 TAXITIME Field

The difference in time between the 'off blocks time' and the 'take-off time'. The times referred to could be actual or estimated depending upon the context. The syntax required is:

'-' "TAXITIME" hhmm

3.2.1.15 REGCAUSE Field

~~In order to provide more specific nomenclature for delay causes and, at the same time, to assist the post-flight analysis, the ADEXP field —REGCAUSE comprises:~~

~~a) ATFM Measure cause code (one (1) letter code corresponding to the cause assigned by the Flow Management Position [FMP] upon the implementation of the ATFM measure).~~

~~b) ATFM Measure Location code – one (1) letter code: D, E or A, describing the phase of the flight (Departure, Enroute, and Arrival) of the constraint that triggered the ATFM Measure.~~

~~c) A space.~~

~~d) The IATA Delay Code in numeric (e.g., 81, 82, 83, 89) or 00 when no IATA Code available.~~

~~The following codes comprise the list of Air Traffic Control (ATC) delay codes. There are other codes related to airline operations that are not applicable to this ICD and are therefore omitted. The codes are as follows:~~

~~i. 81 (AT) ATFM due to ATC EN-ROUTE DEMAND/CAPACITY, standard demand/capacity problems~~

~~ii. 82 (AX) ATFM due to ATC STAFF/EQUIPMENT EN-ROUTE, reduced capacity caused by industrial action or staff shortage, equipment failure, military exercise, or extraordinary demand due to capacity reduction in neighboring area~~

~~iii. 83 (AE) ATFM due to RESTRICTION AT DESTINATION AIRPORT, airport and/or runway closed due to obstruction, industrial action, staff shortage, political unrest, noise abatement, night curfew, special flights~~

~~iv. 84 (AW) ATFM due to WEATHER AT DESTINATION~~

~~v. 85 (AS): Mandatory security~~

~~vi. 86 (AG): Immigration, Customs, Health~~

~~vii. 87 (AF): Airport Facilities, parking stands, ramp congestion, buildings, gate limitations~~

~~viii. 88 (AD): Restrictions at airport of destination, airport/runway closed due obstruction, industrial action, staff shortage, political unrest, noise abatement, night curfew, special flights~~

~~ix. 89 (AM): Restrictions at airport of departure, airport/runway closed due obstruction, industrial action, staff shortage, political unrest, noise abatement, night curfew, special flights, start-up and pushback, weather phenomena.~~

~~The —REGCAUSE appears in the SAM and SRM messages, and is associated only with the controlling ATFM Measure. The code appearing in the message is the code valid at the time the delay was given to the flight.~~

~~The syntax required is:~~

~~**' ' "REGCAUSE" regulationreasoncode locationccode ” “ IATAdelaycode**~~

The —REGCAUSE field indicates the reason for the ATFM measure to assist in post-operations analysis. —REGCAUSE comprises the following.

a) Regulation cause code – One letter code corresponding to the cause of the ATFM measure assigned by the flow management personnel
   - C – ATC capacity
   - I – ATC industrial action
   - R – ATC routings
   - S – ATC staffing
   - T – ATC equipment
   - A – Accident/incident
   - G – Aerodrome capacity
   - E – Aerodrome services
   - N – Industrial action NON-ATC
   - M – Airspace management
   - P – Special event
   - W – Weather
   - V – Environment issue
   - O – Other

b) Regulation location code – One letter code, i.e. D, E, or A, describing the phase of the flight (Departure, Enroute, and Arrival) where the constrain triggers the ATFM measure

c) A space

d) The IATA delay code in numeric (e.g. 81, 82, 83, 89) or 00 where no IATA code is available
   - 81 – ATFM due to ATC EN-ROUTE DEMAND/CAPACITY
   - 82 – ATFM due to ATC STAFF/EQUIPMENT EN-ROUTE
   - 83 – ATFM due to RESTRICTION AT DESTINATION AIRPORT
   - 84 – ATFM due to WEATHER AT DESTINATION
   - 85 – MANDATORY SECURITY
   - 86 – IMMIGRATION, CUSTOMS, HEALTH
   - 87 – AIRPORT FACILITIES
   - 88 – RESTRICTIONS AT AIRPORT OF DESTINATION
   - 89 – RESTRICTIONS AT AIRPORT OF DEPARTURE
   - 98 – INDUSTRIAL ACTION OUTSIDE OWN AIRLINE
   - 99 – OTHER REASON

The syntax required is:

'-' "REGCAUSE" regulationcausecode regulationlocationcode “ ” IATAdelaycode

3.2.1.16 REASON Field

Reason to explain an action by the FMP (e.g. rejection, cancellation, etc.). The syntax required is:

'-' "REASON" 4{ALPHA}12

3.2.1.17 RVR Field

Runway Visual Range. The syntax required is:

'-' "RVR" 1{ DIGIT }3

3.2.1.18 COMMENT Field

This field provides additional information. The syntax required is:

'-' "COMMENT" 1 { LIM_CHAR }

3.2.1.19 REFDATA Field

This is reference data for the message being transmitted that collectively defines the unique message number. This field has three subfields, namely the sender subfield, the receiver (recvr) subfield, and the sequence number (seqnum) subfield. The sender subfield indicates the eight (8)-letter facility address of the sending facility; the receiver subfield indicates the eight (8)-letter facility address to which the message is being sent; and the sequence number subfield indicates the three (3)-digit serial number of the message being sent.

The message sequence number progresses sequentially from 001 to 000 (representing 1000), thence repeats from 001, for all messages sent to the same addressee, regardless of the type of message.

The three (3)-digit sequence number, the sender and receiver address, creates a unique combination used as the reference data. This is the equivalent of Field type 3, element (b) called ‘message number’ in *ICAO Doc 4444*.

The syntax required is:

'-' "REFDATA"

'-' "SENDER" '-' "FAC" 1{ LIM_CHAR }30

'-' "RECVR" '-' "FAC" 1{ LIM_CHAR }30

'-' "SEQNUM" 3{DIGIT}3

3.2.1.20 MSGREF Field

Reference data for associated, previously transmitted messages. This field has three subfields, namely the sender subfield, the receiver (recvr) subfield and the sequence number (seqnum) subfield. Together the MSGREF field is intended to provide the necessary reference context for a message being sent. The sender subfield indicates the eight (8)-letter facility address that sent the original message; the receiver subfield indicates the eight (8)-letter facility address to which the original message was sent; and the sequence number subfield indicates the three (3)-digit serial number of the original message sent.

This is the equivalent of Field type 3, element (c) called 'reference data' in *ICAO Doc 4444*.

The values of Sub-fields "sender", "recvr", and "seqnum", within Primary field "msgref", shall be those of the same Sub-fields within Primary field "refdata" of the OLDI message referred to

'-' "MSGREF"

'-' "SENDER" '-' "FAC" 1{ LIM_CHAR }30

'-' "RECVR" '-' "FAC" 1{ LIM_CHAR }30

'-' "SEQNUM" 3{DIGIT}3

3.2.2 ADEXP ATS Message Payload Types

3.2.2.1 SAM Message Composition

A SAM is sent by the local ATFM System any time a flight is assigned a CTOT. The SAM is used to inform of the Calculated Take-Off Time (CTOT) for each individual flight. The SAM is to be sent approximately 2 hours before EOBT. The construct shown in **Table 5** is inclusive of only the mandatory information.

- TITLE	**SAM**
- ARCID	**Aircraft ID**
- ADEP	**Departure Airport**
- ADES	**Arrival Airport**
- EOBD	**Estimated Off-Block Day**
- EOBT	**Estimated Off-Block Time**
- CTOT	**Calculated Take-Off Time**
- TAXITIME	**Estimated Taxi Time**
- REGCAUSE	**ATFM Measure Cause Code**

Table 5: SAM message – mandatory information

3.2.2.2 SRM Message Composition

A SRM is sent by an ATFM system any time a flight that has already received. A SAM message, is assigned a revised CTOT. The SRM is used to inform of the new Calculated Take-Off Time (CTOT) for each individual flight. Since the goal is to send the original CTOT (via SAM) approximately 2 hours before EOBT, the SRM should not be sent until after the SAM has been acknowledged, + a short interval of time (e.g., 5 minutes). That way, the SAM will always be the first message sent with a CTOT, and SRM messages are suppressed until the CTOT is sent. All revisions to the CTOT should be sent via SRM. The construct shown (**Table 6**) is inclusive of only the mandatory messages.-

TITLE	**SRM**
- ARCID	**Aircraft ID**
- ADEP	**Departure Airport**
- ADES	**Arrival Airport**
- EOBD	**Estimated Off-Block Day**
- EOBT	**Estimated Off-Block Time**
- NEWCTOT	**New Calculated Take-Off Time**
- TAXITIME	**Estimated Taxi Time**
- REGCAUSE	**ATFM Measure Cause Code**

Table 6: SRM message – mandatory information

3.2.2.3 SLC Message Composition

A SLC is sent by an ATFM system any time a flight is no longer assigned a CTOT. The SLC is used to inform that the previously assigned Calculated Take-Off Time (CTOT) no longer applies for an individual flight. The construct shown (**Table 7**) is inclusive of only the mandatory messages.

- TITLE	**SLC**
- ARCID	**Aircraft ID**
- ADEP	**Departure Airport**
- ADES	**Arrival Airport**
- EOBD	**Estimated Off-Block Day**
- EOBT	**Estimated Off-Block Time**
- TAXITIME	**Estimated Taxi Time**

Table 7: SLC Message Composition – mandatory information

3.2.3 Message Summary Table

Table 8 provides a summary of the required message including the ID, message title, and the message flow direction.

ID	Message Title	Message Direction
SAM	Slot Allocation Message	Local AFTN System ←→ AFTN
SRM	Slot Revision Message	Local AFTN System ←→ AFTN
SLC	Slot Cancellation Message	Local AFTN System ←→ AFTN

Table 8: Message summary table

3.2.4 Protocol implementation

TBD – dependent on specific site implementation

3.2.5 Security

This is a direct connection between AFTN / AMHS and the local ATFM system through a cable connection and after the data is ingested into local ATFM System, the interface is controlled explicitly via firewall rules and precise protocols.

3.3 Physical Design Characteristics

TBD – dependent on specific site implementation

3.3.1 Electrical Power and Electronic Characteristics

3.3.1.1 Connectors

TBD – dependent on specific site implementation

3.3.1.2 Wire/Cable

TBD – dependent on specific site implementation

3.3.1.3 Electrical Power/Grounding

TBD – dependent on specific site implementation

3.3.1.4 Fasteners

TBD – dependent on specific site implementation

3.3.1.5 Electromagnetic Compatibility

Not applicable.
