Pan Regional (NAT and APAC) Interface Control Document for ATS Interfacility Data Communications (PAN AIDC ICD)

This edition has been issued by the APAC/NAT Task Force for the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) and the North Atlantic Systems Planning Group (NAT SPG).

Coordination Draft
Version 0.81 — 27 July, 2013

International Civil Aviation Organization

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Amendments to the PAN ICD

The following table will be used to track updates to the PAN ICD by the Ad Hoc Working Group. This document contains procedures material from the Asia/Pacific Regional ICD for AIDC and the North Atlantic Common Coordination ICD.

Amendment	Source	Subject(s)	Date
0.1		Not used	
0.2	Pre-PAN ICD	Annotated outline incorporated into document structure	May 2010
0.3	PAN ICD	The draft document at this stage is focused on populating the outline with relevant material. Document style, formatting, and presentation of material are still to be considered.	Oct 2010
0.4	PAN ICD	Comments inserted from v0.3 comment forms Changes inserted from NAT CC ICD new v1.2.9 to reflect editorial changes and corrections Changes inserted from NAT CC ICD new v1.3.0 to reflect changes specified in Amendment 1, effective 15 Nov 2012, to the ICAO Doc 4444 Procedures for Air Navigation Services-Air Traffic Management, Fifteenth Edition	Nov 2011
0.5	PAN ICD	(IRAIDTF/1) updated Version 0.4 of the PAN Regional ICD for AIDC to include comments from Iceland, Australia, the APAC AIDC Seminar, and the Secretariat.	Jan 2013
0.6	PAN ICD	(IRAIDTF Web/1) added AIDC+LRM response examples, AIDC message table, proposed field 15 wording, sample AIDC message containing field 15, Field 14-Estimate Data added and moved to Chapter 4.	Feb 2013
0.7	PAN ICD	(IRAIDTF Web/2) Chapter 8 will be deleted and included in a new appendix; added LRM examples, new AIDC message table, new Field 15 wording.	Apr 2013
0.8	PAN ICD	IRAIDTF/2 updated Version 0.7 of the Pan Regional ICD for AIDC and removed Chapter 8, Chapter 9 relocated as Attachment A and Cahpter 6 relocated as Attachment B to the ICD.	July 2013

AMENDMENTS

The issue of amendments is announced by the ICAO Regional Offices concerned, which holders of this publication should consult. The space below is provided to keep a record of such amendments.

RECORD OF AMENDMENTS AND CORRIGENDA

AMENDMENTS			
No.	Date applicable	Date entered	Entered by

CORRIGENDA			
No.	Date applicable	Date entered	Entered by

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FOREWORD.

1. Historical background

1.1 The **Pan Regional Interface Control Document** (PAN ICD) for ATS Interfacility Data Communications (AIDC) is the result of the progressive evolution of the **Asia/Pacific Regional ICD for AIDC**, issued by the ICAO Asia/Pacific Regional Office on behalf of the Asia Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG), and the **North Atlantic Common Coordination ICD**, published by the ICAO European and North Atlantic Office, on behalf of the North Atlantic Systems Planning Group (NAT SPG).

1.2 Each of the two founding documents provided guidance on a regional basis. However, in recognition of the need to provide globally harmonized guidance for AIDC, the PAN ICD First Edition, merging the APAC and NAT guidance material, was adopted by the APAC and NAT Regions in 2014.

1.3 The PAN ICD addresses the ground-ground data link provision from a technical and operational point of view taking into account lessons learned, global implications and guidance on recent initiatives.

2. Scope and Purpose

2.1 The PAN-ICD provides guidance and information concerning ground-ground data link operations and is intended to facilitate the uniform application of Standards and Recommended Practices contained in *Annex 2 — Rules of the Air, Annex 10 — Aeronautical Telecommunications and Annex 11 — Air Traffic Services, the provisions in the Procedures for Air Navigation Services — Air Traffic Management (PANS-ATM, Doc 4444) and, when necessary, the Regional Supplementary Procedures (Doc 7030).*

2.2 This guidance material specifies the facilities and messages to be used for the exchange of notification, coordination, transfer of control, and related data between automated Air Traffic Service (ATS) systems. The material is intended to improve safety and maximize operational benefits by promoting standardized ground-ground data link operations throughout the world.

2.3 The following personnel and organizations should be familiar with relevant aspects of its contents: regulators, airspace planners, air navigation service providers (ANSPs), training organizations, regional/State monitoring agencies, automation specialists at centers and equipment suppliers.

2.4 The guidance will support the following activities:

a) Safety regulatory oversight of air navigation services;

b) The development of letters of agreements between ANSPs c) The development of operational procedures;

c) The implementation activities; and,

d) Operational monitoring, analysis, and exchange of operational data among regions and States.

2.5 The messages defined in this document are used during the various stages of the flight. Though outside the scope of the AIDC application, the Emergency-, Flight Planning- and Supplementary Message Categories as defined in PANS-ATM Appendix 3 will continue to be used to perform functions not provided by the AIDC application.

2.6 In particular, the Flight Planning function is required and will be required in the future to support operations. The ICAO messages FPL (Filed Flight Plan), CHG (Modification), DLA (Delay),

Comment [JB1]: COMMENT---BK

TBD

Most Flight Data Processing Systems (FDPS) contain functionality which permits the controller to inform the system that initial- or revised coordination has been completed manually. Safety occurrence investigations revel that the following errors do occur:

a)The controller indicates to the FDPS that initial coordination has been completed manually when no coordination has taken place. As a result the aircraft may enter the downstream airspace without coordination having taken place:

The controller indicates to the FDPS that

a)revised coordination has been completed when it did not take place. As a result the downstream center does not have the correct flight profile.

As a mitigation against such errors it is proposed to add a new message, Profile Confirmation Message (PCM). This message would contain the same data as the CPL but the reply would only be a LAM or LRM. The transferring FDPS would automatically, without controller intervention, send the PCM just before the aircraft crosses the common boundary and the receiving FDPS would automatically, without controller intervention, compare the data in the PCM to the data that is contained in the receiving FDPS. If everything matches the receiving FDPS would send a LAM and no controllers would be alerted. If there is a data mismatch the receiving FDPS would send a LRM with specific error indications and controllers at both the transferring and receiving centers would be alerted.

DEP (Departure), ARR (Arrival), CNL (Cancel) and RQP (Request Flight Plan) will be used to support this function.

2.7 There is a great need for a communications and data interchange infrastructure to significantly reduce the need for verbal coordination between ATSUs. AIDC standards, as defined in the PAN ICD, provide a harmonised means for data interchange between ATS units during the notification, coordination, and transfer of control phases of operations.

2.8 The message sets and procedures described in the PAN ICD have been designed for use with the existing Aeronautical Fixed Telecommunications Network (AFTN) and the future Aeronautical Telecommunication Network (ATN). In the interest of global standardisation, ICAO methods and messages as defined in PANS-ATM Appendix 3 Air Traffic Services Messages, were used wherever possible. Where ICAO methods and messages do not meet requirements, new messages were identified using existing ICAO field definitions to the extent possible. Specifically, the PAN ICD defines the following:

a) Basic communications and support required to coordinate implementation of AIDC;

b) Common boundary agreements between all the ATSUs concerned;

c) Implementation guidance material;

2.9 The ICD also describes a configuration management process which will ensure stability in the design and implementation of the messages described herein.

3. Status

3.1 This guidance is approved and maintained by the respective participating PIRGs and has a status of an ICAO regional guidance material. It contains material that may eventually become Standards and Recommended Practices (SARPs) or PANS provisions when it has reached the maturity and stability necessary for adoption or approval. It also comprises material prepared as an amplification of the basic principles in the corresponding SARPs, and designed particularly to assist the user in the application of the SARPs and PANS.

4. Implementation

4.1 With a view of facilitating implementation of the provisions herein by States, this guidance material has been prepared using language that permits direct use by all users.

5. References

5.1 The following references are cited in this document:

TBD

6. Changes to the document

6.1 This document is maintained as a regional document in coordination with all ICAO planning and implementation regional groups (PIRGs) providing ground-ground data link services within their region. Each participating PIRG establishes a mechanism for submitting and administering change proposals.

6.2 Change proposals (CPs) can be submitted by any stakeholder participating in ground-ground data link operations. The stakeholder should submit a Change Proposal to their ICAO regional office (see Appendix D). The ICAO regional office will coordinate the change proposal within its own region, other regions, and ICAO HQ, to determine the acceptability of the change proposal. Once the ICAO regional office has completed coordination and the participating PIRGs accept the change proposal, the change is concluded by each of the PIRGs.

Amendments to the PAN ICD

Amendment	Source(s)	Subject(s)	Approved applicable
1st Edition ([date])	Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/ – [year]) North Atlantic Systems Planning Group (NAT SPG/ – [year])	**Pan Regional ICD** (PAN ICD)	Applicable within participating Regions on [date].

Chapter 1. **Definitions**

1.1 Terms and definitions

1.1.1 When the following terms are used in this document they have the following meanings. Where the term has "(ICAO)" annotated, the term has already been defined as such in SARPs and/or PANS.

1.2 Acronyms

1.2.1 When the following acronyms are used in the present document they have the following meanings. Where the term has "(ICAO)" annotated, the acronym has already been defined as such in SARPs and/or PANS.

Acronym

ABI. Advance Boundary Information (AIDC)

ACARS. Aircraft Communication Addressing and Reporting System.

ACC. Area Control Centre (ICAO)

ACI. Area of Common Interest (AIDC)

ACP. Acceptance (AIDC)

ADS. ADS-C (AIDC)

ADS-B. Automatic Dependent Surveillance – Broadcast (ICAO)

ADS-C. Automatic Dependent Surveillance – Contract (ICAO)

AFN. ATS Facilities Notification

AFTN. Aeronautical Fixed Telecommunication Network (ICAO)

AIDC. ATS Interfacility Data Communications

AOC. Assumption of Control in AIDC
(Also stands for Aeronautical Operational Control (ICAO)

AMHS. ATS Message Handling System

APANPIRG. Asia Pacific Air Navigation Planning and Implementation Regional Group

ARINC. Aeronautical Radio Inc.(ICAO)

ASIA/PAC. Asia/Pacific

ASM. Application Status Monitor (AIDC)

Comment [JB2]: ***COMMENT***: AW

***Suggest discussion on the term ACI (Area of Common Interest), defined in 7.21.1.5:* "An ATSU's Area of Common Interest (ACI) is defined as the airspace for which the ATSU is responsible, i.e., an FIR, and surrounding border regions just outside the FIR. These surrounding border regions are usually determined by the required separation minima"**

The definition (i.e. all the airspace that the ATSU is responsible for) doesn't really match the use of the word "Common" in the title:- "common" implying airspace for which two or more ATS units may have a "common" interest. Just from its name, I would have considered the ACI to in fact just be the "border region"

SUGGESTED CHANGE TO DOCUMENT*: *Suggest a new term be used to less ambiguously describe this airspace.

ATC. Air Traffic Control (ICAO)

ATSC. Air Traffic Service Center

ATM. Air Traffic Management (ICAO)

ATMOC. Air Traffic Management Operations Centre

ATN. Aeronautical Telecommunications Network (ICAO)

ATS. Air Traffic Services

ATSU. Air Traffic Service Unit

~~**C-ATSU**. Controlling ATSU~~

CDN. Coordination Negotiation (AIDC)

CHG. ICAO Modification Message

CPD. CPDLC Connection Status Identifier

CPDLC. Controller Pilot Data Link Communications (ICAO)

CPL. Current Flight Plan (AIDC)

CRC. Cyclic Redundancy Check

~~**D-ATSU**. Downstream ATSU~~

DCT. Direct

DIA. Coordination Dialogue

EMG. Emergency (AIDC)

EST. Coordination Estimate (AIDC)

ETX. End of Text

FAN. FANS Application Message (AIDC)

FANS. (also FANS-1/A) Future Air Navigation System

FCN. FANS Completion Notification (AIDC)

FCO. Facilities Notification Contact

FI. Flight Identifier

FIR. Flight Information Region (ICAO)

FMC. Flight Management Computer

FMD. Flight Management Computer (Selected)

FMH. Facilities Notification Message Header

FML. Flight Management Computer (Left)

FMR. Flight Management Computer (Right)

FN CAD. Contact Advisory

FPL. Filed Flight Plan (ICAO)

FPO. Facilities Notification Current Position

GOLD. Global Operational Data Link Document

IA-5. International Alphabet 5 (ICAO)

ICAO. International Civil Aviation Organization

ICD. Interface Control Document

IMI. Imbedded Message Identifier

LAM. Logical Acknowledgement Message (AIDC)

LOA. Letter of Agreement

LRM. Logical Rejection Message (AIDC)

MAC. Coordination Cancellation (AIDC)

MIS. Miscellaneous (AIDC)

MOU. Memorandum of Understanding

MTI. Message Type Identifier

NAT. Organized Tracks (AIDC); or North Atlantic

Comment [AS3]: *Inputs from CAD HK*

NAT ID. North Atlantic Implementation Document

NDA. Next Data Authority (ICAO) (CPDLC message); or Next Data Authority (Next unit that will communicate with the aircraft using CPDLC)

OAC. Oceanic Area Control Centre

OCS. Oceanic Control System

ODF. Optional Data Field

OPLINKP. Operational Data Link Panel (ICAO)

OSI. Open System Inter-connection

PAC. Pre-activation (AIDC)

PANS-ATM. Procedures for Air Navigation Services – Air Traffic Management (ICAO DOC 4444)

REJ. Rejection (AIDC)

~~**R-ATSU**. Receiving ATSU~~

RNP. Required Navigation Performance

SARPs. Standards and Recommended Practices (ICAO)

SITA. Societe Internationale de Telecommunciations Aeronautiques

SMI. Standard Message Identifier

SOH. Start of Header

STX. Start of Text

TCP. Transfer of Control Point

TDM. Track Definition Message (AIDC)

TOC. Transfer of Control (AIDC)

TRU. Track Update (AIDC)

UTC. Coordinated Universal Time

VSP. Variable System Parameter

Comment [KD4]: *Final review and decision on the use of these terms, throughout the document.*

Chapter 2. Purpose, Policy and Units of Measurement

2.1 Purpose

2.1.1 The AIDC application supports information exchanges between ATC application processes within automated ATS systems located at different ATSUs, as defined in PANS-ATM, Appendix 6. This application supports the Notification, Coordination, Transfer of Control, and Transfer of Data link Communication functions between these ATSUs

2.1.2 The PAN ICD specifies the facilities and messages to be used for the exchange of notification-, coordination- transfer of control, and transfer of Data link communication related data between automated ATS systems. The messages defined in this document are used during the active phase of flight.

2.2 Policy

2.2.1 The application of AIDC should be based on a step-by-step data distribution scheme comprising three (3) phases: NOTIFICATION, COORDINATION and TRANSFER OF CONTROL. In support of all the operational phases, application management messages are required to support application level dialogue between automated ATS systems.

2.2.2 The Advance Boundary Information (ABI) message should be used for notification, subject to bi-lateral agreement. ABI can also be used to represent the cleared profile, particularly when using abbreviated coordination and not utilising the CPL message.

2.2.3 For the coordination phase, The Current Flight Plan (CPL) message should act as the initial cleared profile coordination message and the Coordination (CDN) message should be used to negotiate changes. Coordination dialogues must be terminated using an Accept (ACP) or a Reject (REJ) message.

2.2.4 The Transfer of Control (TOC) and Acceptance of Control (AOC) messages should be used for the automatic transfer of control function.

2.2.5 The capability to revert to verbal coordination and manual transfer of control should be retained.

2.2.6 Flight plans and flight plan related messages should continue to be filed in accordance with existing procedures.

2.3 Units of measurement and data convention

2.3.1 AIDC messages described in the PAN ICD may support different units of measurement to those described below. If this occurs, bilateral agreements should determine the units to be transmitted, as well as their format and any associated limitations (e.g. minimum/maximum value, resolution etc).

2.3.2 **Time and date.**

2.3.2.1 All time information should be expressed in UTC as four digits (HHMM) rounded to the nearest whole minute, with midnight expressed as 0000. Subject to bilateral agreement, time may be expressed as 6 digits (HHMMSS). When date information is used, it should be expressed in YYMMDD format

2.3.3 **Geographic position information.**

2.3.3.1 Geographic position information should be specified in accordance with *PANS-ATM, Appendix 3*.

2.3.4 **Level information.**

Comment [JB5]:
FROM GM:
I know this document is primarily aimed at AIDC, but it does also seem to talk about Flight Planning Messages. I see these outlined in Para 2.3. I do not see mention of messages that support Supplementary Flight Plan Data such as the SPL and the RQS message. Since these deal with Field 19 of ICAO messages, I am a proponent of just making SPL data part of the FPL. We have had to make changes to Ocean21 because many airspace users include Field 19 in an FPL, although ICAO documents prohibit it. Maybe we should just move in that direction.

Issues about radar hand-offs and flight planning can be addressed after the single AIDC is compiled/Keith Dutch

Comment [JB6]:
FROM GM:
AIDC the way it is currently implemented fails to handle Radar to Radar transactions. I see that this document refers to a TRU message, but in reading it, I do not see that it covers this function. This is also true in the NAM ICD world. There are messages out there called RTI, RTA, and RTU, which are intended to handle a radar hand-off although they are loosely based on NAS hand-off functionality, and probably could be modified for world-wide use. The TOC method to transfer control does not guarantee proper track correlation, and does not qualify as a valid transfer of radar identification on a surveillance track. If we are going to work to a global standard, which I think is a great idea, we need to address transfer of surveillance track identification. Many times we think of AIDC as a non-surveillance process. If it is going to be global, it needs to handle surveillance also.

Issues about radar hand-offs and flight planning can be addressed after the single AIDC is compiled/Keith Dutch

2.3.4.1 All level information should be specified as flight level(s) or altitude(s) expressed in hundreds of feet. With the exception of block levels, level information – including supplementary crossing data and crossing conditions – should be specified in accordance with *PANS-ATM, Appendix 3*.

Comment [KD7]: *Add reference to metric. Ensure that examples feature metric levels.*

2.3.5 **Block level information**

2.3.5.1 Where a block level is to be included in an AIDC message, it should be expressed as the lower level followed by the upper level.

Example

Format	Explanation
F320F340	The aircraft is operating in a block of levels between F320 and F340 (inclusive)

Block level information may be included in Field 14 of any AIDC message, or in the Track Data field of a TRU message.

2.3.6 **Speed information**

Comment [JB8]: **COMMENT from BK: It is a fact that many aircraft are flying "cost index" which is not in accordance with speeds filed in the flight plan and which may lead ATC to assume incorrect speeds in fix-time calculations and conflict probing. One way to tackle that would be to actually clear aircraft to fly "cost index" and require the pilot to report specific speed changes to ATC. Consider including a provision for coordinating that the aircraft is flying "cost index" speed. (cost index is probably a Boeing term, an appropriate term would need to be determined). *SUGGESTED CHANGE TO DOCUMENT*: Possible data convention: PLUTO/0215F310/IM076 The aircraft is flying cost index, last reported speed M076.**

2.3.6.1 All speed information should be expressed as true airspeed in knots or as a true Mach number. With the exception of Mach Number Technique in Field 14, speed information should be specified in accordance with *PANS-ATM, Appendix 3*.

2.3.7 **Mach Number Technique Information**

2.3.7.1 Where Mach Number technique information is to be included in Field 14 in an AIDC message it should be expressed as:

- A single character describing whether an aircraft will be maintaining the notified Mach Number or less (L), the notified Mach Number or greater (G), or exactly the notified Mach Number (E); and
- Four characters defining the notified Mach Number, expressed as the letter M followed by 3 figures specifying the Mach number to the nearest hundredth of unit Mach.

Comment [KD9]: *AW to address a more generic terminology for this.*

Examples

Format	Explanation
GM085	The aircraft is maintaining M0.85 or greater
EM076	The aircraft is maintaining M0.76
LM083	The aircraft is maintaining M0.83 or less

Mach Number Technique information may be included in Field 14 of any AIDC message

2.3.8 **Offset and Weather Deviation Information**

2.3.8.1 Where Offset or weather deviation information is to be included in Field 14 in an AIDC message it should be expressed as:

- A single character describing whether the information is associated with an offset (O) or a weather deviation (W); and,
- One to three characters indicating the distance of route associated with this clearance (leading zeros should not be used); and,
- A direction, indicating left (L), right (R) or either side of route (E).

Examples

Format	Explanation
O30R	The aircraft is offsetting 30NM to the right of route
W25E	The aircraft is conducting a weather deviation up to 25NM either side of route
W100L	The aircraft is conducting a weather deviation up to 100NM to the left of route

2.3.8.2 Offset and weather deviation information may be included in Field 14 of any AIDC message, or in the Track Data field of a TRU message.

2.3.8.3 When *transmitting an AIDC message containing Offset information, the direction "E" (either side of route) should not be used*.

2.3.8.4 Valid "off track" distance values are integers between 1 and 250, with no leading zeros. The distance off route is measured in nautical miles (NM).

REF: Refer to Chapter 4 on the use of Fields 14 and 15

2.3.9 **Functional addresses.**

2.3.9.1 A functional address, which refers to a function within an ATS unit (e.g. an ATC watch supervisor), may be substituted in the MIS and EMG messages for the aircraft identification found in Field 7. Where such an address is used, it is preceded by an oblique stroke (/) to differentiate it from aircraft identification.

2.4 Restriction formats

2.4.1 **Principles.**

2.4.1.1 "Restriction" is the term used to describe a clearance that requires an aircraft to comply with an instruction at, or by, a specific time or position. The instruction may involve a speed, level change, or a requirement to cross a position at a specific time (or earlier/later.)

Comment [JB10]: *COMMENT*: from BK
Shouldn't the norm be that the point of coordination is the last cleared waypoint prior to Area of Common Interest (ACI) penetration?
SUGGESTED CHANGE TO DOCUMENT:
2.51 The point used in field 14, Estimate Data, will normally be the last cleared waypoint prior to Area of Common Interest (ACI) penetration ~~a boundary point~~ but may also be an agreed point close to or on~~, rather than on,~~ the FIR boundary.
Related to resolution of Field 14 language from AW?

Comment [JB11]: *Comment: from EN*
Future ATN is not so much in future anymore and could be realized either based on OSI or IPS. ICAO manuals provide sufficient guidance for implementation.
Resolution
The message sets and procedures described in the ICD have been designed for use with the existing Aeronautical Fixed Telecommunications Network (AFTN) and could be also used with the Aeronautical Telecommunication Network (ATN) based either on OSI or IPS..

Related to resolution of Field 14 language from AW?

Comment [KD12]: *Review document for standard use of "Reference"*

Comment [JB13]: Comment from EN
I think the outcome of the ADS Panel message set was then included in Doc 4444 and 9694
Resolution
Relationship to the Doc 4444 and Doc 9694 message sets.

Comment [AW14]: *We do not use these formats in the South Pacific, and so I was not confident in re-writing this section. Are these formats used by anyone?*

2.4.1.2 The use of restrictions is not mandatory. This section describes the conventions and formats used to permit the coordination of a restriction in Field 15 of an AIDC Message from one ATSU to another.

2.4.1.3 The use of restrictions should be prescribed by bi-lateral agreement. It may be agreed to use all types of restrictions or only a sub-set (for example only level restrictions or only speed restrictions).

2.4.1.4 Restrictions should only be entered in the Route field (Field 15).

2.4.1.5 The restriction information provided by the C-ATSU to the D-ATSU should be limited to the flight profile at and beyond the ACI boundary.

2.4.1.6 The cleared level, supplementary crossing data and crossing conditions in field 14 should be based on the conditions at the point of coordination in Field 14a .

2.4.1.7 If a fix other than a filed route point is used in the level and/or speed clearance at and beyond the ACI boundary, it should be part of the appropriate flight profile in field 15.

2.4.2 **Level and speed restrictions.**

2.4.2.1 Route, speed and level information contained in Field 14 and the Route Field 15 represent the current cleared profile of the aircraft.

2.4.2.2 Where a clearance requires a speed/level change subsequent to a route point, then the ICAO convention of route point followed by an oblique stroke and the new speed/level will be used:

Example

60N010W/M084F350

2.4.2.3 Where a clearance requires a speed/level change to be completed before passing a route point, then the items will be reversed:

Example

M084F350/62N020W

2.4.2.4 A combination of these two conventions will describe a clearance with a defined starting and completion point:

Example

60N010W/M084F350/62N020W

2.4.3 **Time restrictions.**

2.4.3.1 There are three types of time restrictions describing when an aircraft should arrive at a fix:

AT/ (UNTIL);

AT OR BEFORE; or,

AT OR LATER.

2.4.3.2 A suffix will be added to the four digit time to denote the restriction type, as follows:

AT: 'A', e.g. 1230A;

AT OR BEFORE: 'B', e.g., 1230B; or,

AT OR LATER: 'L', e.g., 1230L.

2.4.3.3 The restriction itself will begin with a slash (/), e.g., /1230B, and will appear after the fix with which it is associated. For example, 49N050W/1230L signifies that the aircraft should arrive at 49N 50W at or later than 1230 Z.

2.4.3.4 A time restriction may be used in conjunction with speed/level restrictions as follows:

60N010W/1230L/M084F350

After 60N010W cleared M084 FL350 and cross 60N010W at or later than 1230Z

M084F350/62N020W/1230A

Cleared M084 FL350 to be maintaining at or before 62N020W and cross 62N020W

at time 1230Z

60N010W/M084F350/62N020W/1230B

After 60N010W cleared M084 FL350 to be maintaining at or before 62N020W.

Cross 62N020W at or before 1230Z

2.4.4 **Time restrictions related to level and speed.**

2.4.4.1 There are three types of time restrictions, describing when an aircraft should commence or terminate a level and/or speed change. A suffix will be added to the four digit time to denote the restriction type, as follows:

UNTIL: ("A", e.g. 1230A)

AT or BEFORE: ("B", e.g., 1230B); or AT or

LATER: ("L", e.g., 1230L)

2.4.4.2 The restriction itself will begin with a slash, i.e., "/", e.g., /1230B, and will appear directly after the element with which it is associated. For example, M080F350/1230L signifies that the aircraft should cruise M080 at F350 at or later than time 1230Z.

2.4.4.3 A time restriction related to level and speed may be used in conjunction with a fix restriction as follows:

Example:

M080F350/1135A/M080F370/1220B 53N030W

Maintain M080 F350 until 1135Z then cleared M080 F370 to be level at or before 1220Z

M080F330/1135A/M080F370 53N030W

Maintain M080 F330 until 1135Z then climb to F370

60N010W/M084F350/1230B

After 60N010W cleared M084 FL350 to be maintaining at or before 1230Z

M083F330/1135L/60N020W

At 1135Z or later cleared M083 FL330 to be maintaining by 60N020W

M083F330/1135L

At 1135Z or later cleared M083 F330

Chapter 3. Communications and Support Mechanisms

3.1 Introduction

3.1.1 Coordination communications are divided into two areas: one addresses the need for voice communications between ATSUs, whereas the other addresses the need for data communications. It is anticipated that the continuing implementation of automated data communications between ATSUs will result in a reduction in the utilization of voice communications.

3.2 Message headers, timers and ATSU indicators

3.2.1 **Message headers.**

3.2.1.1 The AFTN IA-5 Message Header, including the use of the Optional Data Field defined in ICAO Annex 10, Vol II and herein, will be employed for the exchange of all ATS data. The AFTN priority indicator FF should normally be used for all data exchanges.

3.2.2 **Optional data field.**

3.2.2.1 The optional data field provides a flexible way to convey information from end-to-end, undisturbed by the communication processes along the path. Since the information is optional it is necessary to specify a unique number and ending for each defined use. Option 1 has already been allocated for additional addressing use, and will be found in ICAO Annex 10, Vol II. Option numbers 2 and 3 have been defined for computer applications to convey message/data unit identification and message/data unit reference information, respectively, and are adopted in this ICD. Other options can be defined and added as the need arises. The proposed encoding has no impact on AFTN switching centers as they ignore this part of the origin line. The ODF is required for AIDC. When AMHS or AFTN/AMHS gateways are used for AIDC messages exchanges the ODF elements as specified in this ICD should be supported.

3.2.3 **Addressing**.

3.2.3.1 The Source and Destination addresses of the AFTN header convey the direction and logical identity of the application processes exchanging AIDC data information. The application process must be aware of the AFTN addresses that are used for this function. The first four characters specify the location as per the ICAO Location Indicators (Doc 7910), while the next three characters specify an office/agency or a processor at the given location as per Doc 8585. The eighth character of the address indicates the end system application and details of the naming assignment are contained in Chapter 6, *ATM Application Naming Conventions*..

3.2.4 **Message/data identification number.**

3.2.4.1 The message/data identification number is a six digit number, taken from a single application pool of available numbers. The identification of the sending and receiving units would use the normal eight character addresses of the AFTN header.

3.2.4.2 The message/data identification number is encoded and conveyed in the AFTN message header Optional Data Field (ODF), option 2. The AFTN implementation provides functionality consistent with the OSI primitive/parameter structure.

3.2.4.3 A message/data identification number will be assigned to each message/data unit requiring confirmation of receipt by the initiating processor. This number will be assigned by the application process basis in such a way as to guarantee a unique identification number for a period of time as specified in paragraph 3.2.8 below. For messages/data not requiring confirmation the message/data identification parameter should not be used.

3.2.5 **Reference Information.**

3.2.5.1 The message/data reference information is a way of linking a message/data unit to a previously sent message. This function is encoded and conveyed in the AFTN ODF, option 3. This implementation would make the linking information consistent with the abstract OSI protocol primitive/parameter structure. The reference information consists of the message/data identification number of the previously sent message/data unit being referenced. As the previous message being referenced could have been originated by either processor, the location indicator of the message source should be used as a prefix to the reference number. Examples are found in paragraph 3.22.5 below.

3.2.6 **Time stamp.**

3.2.6.1 The time stamp is expressed as 12 digits in year, month, day, hours, minutes, and seconds (YYMMDDHHMMSS). The precision (seconds) of the time stamp will support computation of transmission delays. This data item is conveyed as option 4 of the ODF. The AFTN date time group may be used by administrations to monitor performance of the messaging exchanges

3.2.7 **Cyclic Redundancy Check (CRC).**

3.2.7.1 The CRC is a four digit hexadecimal number that is used to ensure end-to-end message integrity. The CRC method employed is the CRC-CCITT XModem. The CRC is computed over the message text, from the beginning left parenthesis to the closing right parenthesis, inclusive. Non printable characters such as line feeds and carriage returns should be excluded from the CRC calculation. This data item is conveyed as option 5 of the ODF.

3.2.8 **Timers**.

3.2.8.1 In order to guarantee the uniqueness of the message/data identification number, and yet allow for the efficient reuse of the numbers in the pool, two timers are required for each message/data unit requiring confirmation: accountability and reuse.

3.2.9 **Accountability timer.**

3.2.9.1 The accountability timer determines the maximum period of time for the responding application to confirm receipt of a given message/data unit. The default value for this timer nominally should be three minutes. If there is no valid response from the responding application, the initiating processor should retransmit the message/data unit and reset the timer, or initiate local recovery procedures. When local procedures allow retransmission, a maximum value, such as three, must be determined before local recovery procedures are initiated. The accountability timer should be cancelled by the receipt of any message with the appropriate message/data reference identifier, which will typically be a LAM or LRM. Retransmissions use the same message/data identification number as the original message/data unit.

Comment [KD15]: ***Should be reviewed.***

3.2.10 **Reuse timer.**

3.2.10.1 The reuse timer function employs two timers that determine the minimum period of time during which a message/data identification number is guaranteed to be unique. Reuse timer A should be set for exchanges not involving dialogues between processors. The range for reuse timer A should be from 1 to 30 minutes, in one minute increments. The default value for reuse timer A should be 5 minutes, or as agreed by the concerned ATSUs. Reuse timer B should be set for exchanges where a dialogue is involved in the exchange. The range for reuse timer B should be 2 to 90 minutes, in one minute increments. The default value for reuse timer B should be 10 minutes, or as agreed for communicating applications by the concerned administrations. A given

message/data identification number can be reused when an ACP, AOC, or REJ response message is received or the reuse timer has expired.

3.2.11 **System Failure Timer Procedures.**

3.2.11.1 In the event of system failure, the accountability and reuse timers will be reset and resume timing upon completion of system recovery.

Comment [KD16]: *How should the failed system old messages after recovery?*

3.2.12 The following examples depict four AIDC Messages encoded in accordance with the previous procedures. The second message is a reference to the first message. SOH, STX, message ending and ETX characters are omitted for clarity, as are the alignment functions. The proposed encoding would have no impact on AFTN switching centres as they ignore this part of the origin line.

FF NFFFZOZO

122145 KZOAZOZO 2.000033-4.940412214523-5.A34B-

(CPL-UAL714-IS-B747/H-S/C-KLAX-05S179W/2220F370-M082F370(route data) -YSSY-0)

Explanation: Sending an initial coordination message (number 000033 from Oakland Air Route Traffic Control Center (KZOAZOZO) to Nadi ACC (NFFFZOZO) at time 940412 214523.

FF KZOAZOZO

122147 NFFFZOZO 2.000044-3.KZOA000033-4.940412214703-5.DE6A-

(ACP-UAL714-KLAX-YSSY)

Explanation: Nadi ACC (NFFFZOZO) accepts the proposed coordination condition received from Oakland Air Route Traffic Control Center (KZOAZOZO) by sending message number 000044 from NFFFZOZO to KZOAZOZO at 940412214703. The message refers to message 000033 sent earlier by KZOAZOZO

FF KZNYZOZO

122145 CZQMZOZO 2.000033-4.940412214523-5.A34B-

(CPL-UAL714-KJFK- etc.)

Explanation: Sending Message number 000033 from CZQMZOZO to KZNYZOZO at time

940412 214523.

FF CZQMZOZO

122147 KZNYZOZO 2.000044-3.CZQM000033-4.940412214703-5.DE6A-

(ACP-UAL714-KJFK-EGLL)

Explanation: Sending message number 000044 from KZNYZOZO to CZQMZOZO at

122147 and the data refers to message 000033 sent earlier by CZQMZRZO

3.3 Engineering considerations

3.3.1 The AIDC messages are currently exchanged through AFTN. However, the use of AMHS through AMHS/AFTN gateways, OSI or IPS based ATN (Doc 9880 and 9896 refer) could be also implemented

3.3.2 **Performance Criteria.**

3.3.2.1 In order to effectively use the AIDC application for the interchange of ATC coordination data, performance requirements need to be specified. These specified performance requirements need to be agreed to by states implementing AIDC through bi-lateral agreements.

3.3.3 **Recording of AIDC data.**

3.3.3.1 The contents and time stamps of all AIDC messages should be recorded in both end systems in accordance with the current requirements for ATS messages.

3.3.3.2 Facilities should be available for the retrieval and display of the recorded data.

Comment [JB17]: Comment from WB Remove. This perhaps should be a NAT annex

Comment [JB18]: Annex 10, Annex 11 and Doc 4444 refer- verify TBD

3.4 Test considerations

3.4.1 Test messages should have the same format as operational messages, but should be distinguished by non-operational call signs specified in bi-lateral agreements. Off-line test systems should be considered in addition to testing on operational systems.

Chapter 4. ATS Coordination Messages

4.1 Introduction

4.1.1 The following sections describe those messages used for AIDC. AIDC data fields should conform to ICAO definitions per PANS-ATM Appendix 3 except as described below for Items 14 and 15 and a "Text" field that is used in some AIDC messages.

4.1.2 All ATS data should be enclosed between parentheses. Only one ATS message should be included within a transmission.

4.2 Message Item requirements

AIDC messaging does not in all cases require the full contents of all ICAO message fields. This section specifies the usage of specific elements from message fields defined in the PANS-ATM and additional data items for fields 14 and 15.

4.2.1 **Field 3 requirements.**

4.2.1.1 All messages should use Item 3a only.

4.2.1.2 Items 3b and 3c are not used since, for AIDC, these reference numbers are included in the ODF, option 3. See Chapter 3, para 3.21.5.

4.2.2 **Field 7 requirements.**

4.2.2.1 Where Field 7 is mandatory in a message, Field 7a (Aircraft Identification) should always be included. Fields 7b (SSR Mode) and 7c (SSR Code) are optional but should be included if the information is available and applicable

4.2.3 **Item 13 requirements**.

4.2.3.1 In respect of ATS Field 13, only Field 13 a), the departure aerodrome designator, is required. Field 13 b) (departure time) is not to be transmitted.

4.2.4 **Item 14 requirements**

The following section describes the contents of Field 14, as well as providing examples of how the various data items information can be incorporated.

4.2.4.1 Field 14 – Estimate data

Table 4-1. Contents of Field 14

Data	Example	Mandatory/Optional	Comment
Position (14a)	46N150W 1545S16545E GOOFY	M	Normally a waypoint or system calculated position on or near the FIR or ACI boundary as agreed to by bi-lateral agreement

Comment [ATO19]: APAC ICD, APPENDIX A – NAT ICD, PART II

Comment [JB20]: *COMMENT*: Section commences with numbering of 4.11 and not 4.1

SUGGESTED CHANGE TO DOCUMENT
Commence numbering at 4.1

Renumbering will be addressed in several places in the document once content is decided upon

Comment [JB21]: *COMMENT---WB* Field sub descriptions. In the APAC V3.0 all fields are generally described as whole numbers. With the incorporation of the NAT ICD the fields have become specific to Item 7 a,b etc. This is not consistent with intent or implementations so far. Generally the subparts of the fields are either mandatory or optional and can be included if contained.

SUGGESTED CHANGE TO DOCUMENT:
Review and allow field subsections if populated

Estimate (14b)	2200	M	The estimate for the position in 14a
Level (14c)	A090 F330 F330F370	M	The coordinated level of the aircraft While 14c is mandatory, the support for the block level format is optional
Supplementary crossing data (14d)	A120 F350	Included when applicable	Use in conjunction with 14e to indicate that an aircraft may be on climb or descent at, or within tolerances of, the FIR boundary
Crossing condition (14e)	A B	Included when applicable	(A) The aircraft may be on climb from the level specified in 14d (B) The aircraft may be on descent from the level specified in 14d
Mach Number Technique	GM084 EM076 LM083	O	Used when a Mach number speed restriction has been assigned to the aircraft by ATC.
Offset and weather deviation	W25R W100E O30R	O	When an offset or weather deviation is in effect, the position in 14a should be a position on the flight planned route, rather than the offset route

Note1. Each field of optional information is separated from the previous data by an oblique stroke "/";

Note2. The order that the data is included in Field 14 is the order in which it is listed in the table above. For example, if an AIDC message were to include an assigned Mach Number as well as a weather deviation, the mach number information would precede the weather deviation information.

4.2.4.2 Block level information in Field 14

4.2.4.2.1 It is permissible to include supplementary crossing data and a crossing condition with a block level however the supplementary crossing data may only be a single level (i.e. it cannot be a block level).

Example

Field 14	Explanation
MINNY/2125F320F340	The aircraft is estimating MINNY at 2125, and is operating in a block of levels between F320 and F340 (inclusive).
46N150W/0244F310F350F290A	The aircraft is estimating 46N150W at 0244, and has been assigned a block of levels between F310 and F350 (inclusive) and will cross 46N150W at or above F290

4.2.4.2.2 The coordination of block level information by AIDC should only be made following bilateral agreement.

4.2.4.3 Mach Number Technique Information in Field 14

4.2.4.3.1 If included in an AIDC message, any Mach Number information should always follow directly after the level information and be separated from the level information by a forward slash delimiter (/).

Example

Field 14	Explanation
BUGGS/0349F350/GM085	The aircraft is estimating BUGGS at 0349 at F350 and has been instructed to maintain M0.85 or greater
4305N17510W/0215F310/EM076	The aircraft is estimating 4305N17510W at 0215 at F310 and has been instructed to maintain M0.76

4.2.4.3.2 The absence of speed information in Field 14 of an AIDC message indicates that any previously assigned speed (if applicable) has been cancelled.

Example

Field 14	Explanation
SPEDY/1237F310F330B/LM083 Subsequently followed by: SPEDY/1238F310	The aircraft is estimating SPEDY at 1237, assigned F310 and will cross SPEDY at or below F330, maintaining M0.83 or less The aircraft is now estimating SPEDY at 1238, is maintaining F310 (i.e. no longer on descent at SPEDY), and

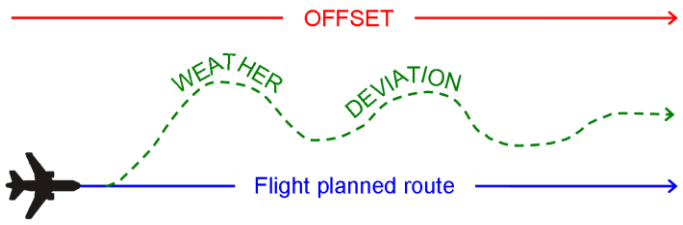
	the mach number restriction has been cancelled

4.2.4.3.3 The coordination of Mach Numbers by AIDC should only be made following bilateral agreement.

4.2.4.4 Offset and Weather Deviation Information in Field 14

4.2.4.4.1 If included in an AIDC message, any offset and weather deviation information should always be the last information in Field 14, and should be separated from preceding information by a forward slash delimiter (/).

4.2.4.4.2 From an ATC perspective, it is important to be aware of the difference between an offset and a weather deviation, as shown below.



4.2.4.4.3 An offset is a flight trajectory that is parallel to the original route, offset by a specified distance and direction. Once an aircraft is established on the offset, separation may be applied solely based on the offset path.

4.2.4.4.4 A weather deviation permits an aircraft to operate anywhere between the original route and the specified distance and direction from the original route. Separation must therefore be applied to the entire airspace in which the aircraft has been cleared to operate in.

Example

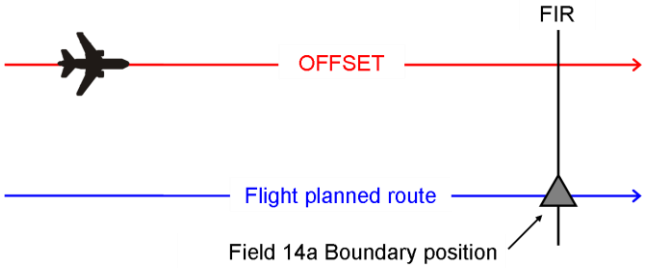
Field 14	Explanation
GOOFY/2330F310/GM084/O30R	The aircraft is estimating GOOFY at 2330, maintaining F310, instructed to maintain M0.84 or greater , and has been cleared to offset 30NM to the right of route
41N040W/0215F310F330/W25E	The aircraft is estimating 41N040W at 0215, is operating in a block of levels between F310 and F330 (inclusive), and has been cleared to deviate up to 25NM either side of route
DAFFY/0215F310F350F370B/W100L	The aircraft is estimating DAFFY at 0215, and has been assigned a block of levels between F310 and F350 (inclusive), will cross DAFFY at or below F370, and has been cleared to deviate up to 100NM to the left of route

4.2.4.4.5 The absence of offset or weather deviation in Field 14 of an AIDC message indicates that any previously notified off-track information has been cancelled.

Example

Field 14	Explanation
34N040W/1519F330/W15R Subsequently followed by: 34N040W/1520F330	The aircraft is deviating up to 15NM right of track The aircraft is back on track (and one minute later than previously coordinated)

4.2.4.4.6 When an aircraft is offsetting or deviating, the coordination point included in Field 14a should be a position based on the nominal route rather than the offset route.



4.2.4.4.7 The coordination of offsets and weather deviations by AIDC should only be made following bilateral agreement. Depending on their operational requirements, some States may choose to only implement the weather deviation format. This should also be specified in bilateral agreements.

4.2.5 **Field 15 – Route**

A number of different AIDC messages (e.g. ABI, PAC, CPL and CDN) may contain Field 15 – Route information. Depending on the AIDC message being used, this route information may be either the current cleared route of the aircraft, or a proposed amendment to it.

4.2.5.1 The following section describes the possible route elements that may be included in Field 15, as well as providing examples of how these elements may be used:

Table 4-2. Route elements in Field 15

Data	Example	Mandatory/Optional	Comment
Speed	M084	M	(Included in a flight plan as the initial requested

(15a)	N0488		speed for a flight.) In AIDC messaging: • if a speed has been specified in Field 14c, then the speed in Field 15a should be the same value; otherwise, • it should represent the expected speed of the aircraft at the coordination point included in Field 14a.
Level (15b)	F310	M	(Included in a flight plan as the initial requested flight level for a flight.) In AIDC messaging: • if a block level has been specified in Field 14, then the level in Field 15a should be a value within the block; otherwise, • it should be the level specified in Field 14c.
Route (15c)	• DAFFY • HNL • EGLL • 3415S16000E • 60N050W • A123 • AB456 • M080F350 • 49N050W/1230L • T • DCT	M	The route (or proposed route) of flight. It may contain any or all of the following elements: • Waypoint • Navigation aid • Aerodrome • Latitude/longitude • Latitude/longitude • Airway • Place/bearing/distance • Speed/level changes * • Level, time or speed restriction * • Truncation indicator ('T') • Direct to

* Flight planned speed/level changes and level/time/speed restrictions cannot be included concurrently in field 15 because in some cases they use the same format. ANSPs must therefore in a bi-lateral agreement decide which group of information will be supported.

The contents of Item 15c are defined in *PANS-ATM Appendix 3*, with the exception of level/time/speed restrictions which are described in <insert reference> "Restriction formats".

4.2.5.2 **Flight planned speed/level changes**

4.2.5.2.1 Some ATSUs may include flight planned speed/level changes as defined in *PANS-ATM, Doc 4444*. On receipt of this information, the D-ATSU may choose not to use it to update their flight plan, or forward it in any subsequent AIDC messages.

4.2.5.3 **Airways**

4.2.5.3.1 An airway may only be preceded and followed by a waypoint that is defined to be part of that airway.

4.2.5.4 **Truncation indicator**

4.2.5.4.1 While it is desirable for Field 15 to describe the entire route to destination, on occasions this may not be possible. If it is not possible to define the route to destination, it is necessary to truncate (delete the remainder of the route) and insert a truncation indicator ('T').

4.2.5.4.2 Bi-lateral agreements should define the use and meaning of the Truncation indicator. For example the truncation indicator may represent:

- the point at which the route rejoins the original route, or
- the end of the oceanic cleared route.

Comment [KD22]: *PR to review.*

4.2.5.4.3 In accordance with *PANS-ATM Appendix 3* the truncation indicator should only follow a significant point in Field 15 and should not follow an ATS Route designator

Note. A significant point also refers to a significant point followed or preceded by:

- A Speed/level change; or
- A speed/level/time restriction

Examples of Field 15

SY L521 AA	Navaid, ATS Route Note that both "SY" and "AA" are defined on airway L521
SY L521 GEROS 32S160E 3425S16300E LUNBI AA	Navaid, ATS Route, waypoint, lat/long (dd), lat/long (ddmm)
SY L521 GEROS/M085F370 L521 AA DCT BB	Speed/level change, DCT
SY L521 LUNBI T SY L521 GEROS 32S160E 3425S16300E T	Truncation indicator
SY L521 M084F350/GEROS/1230A AA	Restrictions
	More generic examples, including all combinations

4.2.6 Item 16 Requirements

4.2.6.1 In respect of Item 16, only 16a, the destination aerodrome designator is required. Items 16b (Total estimated elapsed time) and 16c (Destination alternate aerodrome(s)) are not to be transmitted.

4.3 Message group

4.3.1 The core messages shown in Table 4-3 below are to be supported by ATSUs using AIDC.

4.3.2 Optional messages may be supported by ATSUs. Such messages will be detailed in bi-lateral agreements.

Table 4-3. AIDC Messages

Core	Opt	Message Class	Message
X		Notification	ABI (Advance Boundary Information)
X		Coordination	CPL (Current Flight Plan)
X			EST (Coordination Estimate)
X			MAC(Coordination Cancellation)
	X		PAC (Pre-activation)
X			CDN (Coordination Negotiation)
X			ACP (Acceptance)
X			REJ (Rejection)
	X		TRU (Track Update)
X		Transfer of Control	TOC (Transfer of Control)
X			AOC (Assumption of Control)
X		General Information	EMG (Emergency)
X			MIS (Miscellaneous)
	X		NAT (Organized Tracks)
	X		TDM (Track Definition Message)
X		Application Management	LAM (Logical Acknowledgement Message)
X			LRM (Logical Rejection Message)
	X		ASM (Application Status

Comment [KD23]: *PR – provide definition to"core messages". Inclusion in Chap 2.*

Comment [JB24]: COMMENT from AW
Remove the non-generic reference to "APAC and NAT"

(Multiple occurrences)

SUGGESTED CHANGE TO DOCUMENT:
Suggest reword "It is recommended that all ATS providers implementing AIDC support the core messages shown in Table 4-1"

Rewording is under discussion

Comment [JB25]: COMMENT: from AW
Reword 4.22 to complement the previous paragraph

SUGGESTED CHANGE TO DOCUMENT:
Suggest reword: "ATS providers implementing AIDC may choose to support the optional messages shown in Table 4-1. Any optional messages supported should be detailed in bilateral agreements"

Rewording is under discussion

Comment [JB26]: *COMMENT---AW*
Need to discuss ASM, FAN, FCN – should these be optional or mandatory?

SUGGESTED CHANGE TO DOCUMENT:
Suggest that "NAT" is made an optional message

Core	Opt	Message Class	Message
			Monitor)
	X		FAN (FANS Application Message)
	X		FCN (FANS Completion Notification)
	X	Surveillance Data Transfer	ADS (Surveillance ADS-C)

4.4 Notification messages

Comment [JB27]: Note ADD text description of Item 14a for boundary

4.4.1 ABI (Advance Boundary Information).

Comment [JB28]: *COMMENT*---AW Suggest that an 'initial ABI' should contain ALL fields, and then subsequent ABIs only contain mandatory fields, including any data that has changed. This ensures that the receiving ATSU is holding the same details as transferring ATSU, while minimizing unnecessary data transfer

SUGGESTED CHANGE TO DOCUMENT:
I will develop words if concept supported.

4.4.1.1 Purpose.

4.4.1.2 An ABI message is used to provide advance information for a flight to affected ATS Units. The transmission of the initial ABI will normally be triggered at an agreed time or position prior to the common boundary or ACI, or possibly by a change in flight state. Before coordination occurs, amendments to information contained in a previously transmitted ABI should be notified by the transmission of another ABI.

4.4.1.3 Message format.

ATS Field	Description
3	Message type
7	Aircraft identification
13	Departure aerodrome
14	Estimate data
16	Destination aerodrome
22	Amendment

Field 22 should contain as a minimum the following fields:

9	Number, type of aircraft and wake turbulence category
15	Route

Field 22 may also optionally include any or all of the following fields:

8	Flight rules and type of flight
10	Equipment and capabilities
18	Other information as contained in the current flight plan, with the exception of the EET sub-field, which is optional. This field may contain a subset of Field 18 if specified in bilateral agreements

Example

(ABI-IBE6175-LEMD-41N040W/0700F330-KMIA-8/IS-9/B744/H-10/SABDIJ2RGXW/SB2-15/M084F350

41N030W 41N040W 41N050W 40N060W 38N065W DANER A699 NUCAR DCT HEATT-18/PBN/D1S1 NAV/GBAS SBAS)

An aircraft containing full route details until destination.

(ABI-ICE615-BIKF-62N030W/0700F350F310A-KJFK-8/IS-9/B752/M-10/SDIJ5RXW/SD1-15/M080F350 62N030W 60N040W 57N050W DCT OYSTR DCT STEAM T -18/PBN/A1L1)

An aircraft cleared to F350 but entering the ACI at or above F310. Field 15 is truncated.

(ABI-VIR2-KEWR-55N040W/2323F330-EGLL-8/IS-9/B744/H-10/SABDE1GHIJ2M1RXW/S-15/M085F330 55N040W NATY NURSI UN551 BEL UL10 HON BNN2A-18/PBN/A1L1O1T1 NAV/GBAS SBAS)

Field 15 containing a NAT track.

(ABI-BAW242-MMMX-42N050W/0623F330-EGLL-8/IS-9/B744/H-10/SIRWXY/SB2-15/M082F330 42N050W 45N040W 47N030W 49N020W BEDRA UN491 GUNSO UM197 GAPLI UR8 GIBSO-

18PBN/A1 DOF/121130 REG/GBNLI /EET/KZHU0054 CZQX0546 45N040W0556 EGGX0643 49N020W0732 BEDRA0757 GUNSO0813 EGTT0833 SEL/BPCEORGN/EGLLBAWH RALT/CYQX EIDW RMK/TCAS)

Field 18 from the original FPL message included in the ABI.

170643 YBBBZQZF 2.251169-4.130117064329-5.2728-

(ABI-ANZ716/A1565

-YSSY-ESKEL/0743F370

-NZAA-8/IS-9/A320/M-10/SDE1E3FGHIM2RW/LB1-15/N0448F370 EVONN L521

ESKEL/N0448F390 L521 LUNBI DCT-18/PBN/A1C1D1O1S2T1 REG/ZKOJI

EET/YBBB0009 NZZO0121 SEL/HLAM CODE/C8178C OPR/ANZ RALT/YSNF

RMK/TCAS EQUIPPED)ABI sent by YBBB to NZZO, containing speed level change in Field 15

170657 NZZOZQZF 2.000320-4.130117065645-5.550B-

Comment [JB29]: COMMENT from BK: Concerning field 18 within field 22: "Other information as contained in the original flight plan ….". What if corrections have been made to field 18, should they not be coordinated? (for example if the registration has been corrected to enable FANS logon).

Comment [JB30]: *COMMENT---AW*
1. Description of "Other information" needs to be resolved. NAT version states that it is 'as contained in the original flight plan', but the NAT examples show "-18/0"
I feel that 18 should either not be included in the message at all, or sent in toto as per original flight plan (as amended)
This affects other messages as well, not just the ABI)
2. Examples will have to be updated to 2012 FPL format
(This affects other messages as well, not just the ABI)

3. Care will need to be taken if the allowable fields are specified down to the sub-field. For example, only allowing "Field 7a" rather than the generic "Field 7" would prevent the inclusion of an SSR code in an ABI (or other AIDC message)

SUGGESTED CHANGE TO DOCUMENT:
I will develop words if agreement reached.

Comment [JB31]: UPDATE for Amendment 1
COMMENT---AW
All examples (not just in ABI section) need to be reviewed for accuracy, and updated to ICAO 2012 FPL format. Suggest a variety of different examples are used.

Comment [JB32]: Sample ABI examples developed by AW---the group will decide if the older ABI examples are also needed (above)

(ABI-UAE407/A0210-NZAA-SASRO/0736F400-YMML

-8/IS

-9/A388/H

-10/SADE3GHIJ2J3J4J5M1RWXYZ/LB2D1

-15/M084F400 LENGU PEBLU N759 BADGR

-18/PBN/A1B1C1D1L1O1S2T2 NAV/RNVD1E2A1 DOF/130117 REG/A6EDP

EET/NZZO0034 YBBB0128 MIKEL0202 YMMM0248 SEL/CDAF RMK/NRP HAR TCAS

ADSB)

ABI sent by NZZO to YBBB - NZZO strips speed level changes in Field 15

161520 YBBBZQZF 2.245917-4.130116152015-5.EF17-

(ABI-SQC7290/A1564

-YMML-SASRO/1620F350

-NZAA-8/IS-9/B744/H-10/SDE1E2E3FGHIJ3J5J6M1M2RWXY/LB1D1-15/N0501F350

3743S14451E 3745S14451E GEMAC/N0485F350 N759 SASRO/N0485F350 N759

PEBLU T-18/PBN/A1B1C1D1L1O1S2 DOF/130116 REG/9VSFN EET/YBBB0034

NZZO0140 SEL/KSLR OPR/SQC RMK/SIA CARGO ACASII EQUIPPED)

ABI sent by YBBB to NZZO, containing a truncation indicator

4.4.1.4 Subject to bilateral agreement, the following field may also be included in Field 22:

Text Amended Destination

Amended Destination is a free text field that may be used in the ABI message to notify an amended destination aerodrome. The field consists of an identifier ("DEST") followed by a delimiter "/" character, followed by the name or the location of the new destination. When used, the Amended destination field is the last field in Item 22.

Example

(ABI-THA179-EGLL-15N090E/0700F330-VTBD-8/IS-9/B747/H-10/S/C-15/14N093W 13N097W YAY T-18/0)

(ABI-QFA43-YSSY-ESKEL/0300F330-NZAA-8/IS-9/B747/H-10/SIDHJRW/CD-15/SY L521 ESKEL TANEN WN-DEST/NZWN)

The second example shows an ABI following a diversion from the original destination (NZAA) to a new destination (NZWN)

4.4.1.5 More information concerning the usage of the Amended Destination field is contained in Chapter 7, *Implementation Guidance Material*.

Comment [JB33]: UPDATE

4.5 Coordination messages

4.5.1 **CPL (CURRENT FLIGHT PLAN)**

4.5.1.1 Purpose.

4.5.1.1.1 A CPL message is used to initiate coordination for a flight to affected ATS Units. The transmission of the CPL will normally be triggered at an agreed time or position prior to the common boundary or ACI, or possibly by a change in flight state. The ATSU receiving the CPL should either indicate its acceptance to the proposed coordination by responding with an ACP, otherwise negotiate the proposed coordination by responding with a CDN message. A coordination dialogue initiated by a CPL message may only be closed by an ACP message.

4.5.1.2 Message format.

ATS Field	Description
3	Message type
7	Aircraft identification
8	Flight rules and type of flight
9	Number and type of aircraft and wake turbulence category
10	Equipment and capabilities
13	Departure aerodrome
14	Estimate data
15	Route
16	Destination aerodrome
18	Other information as contained in the current flight plan, with the exception of the EET sub-field, which is optional. This field may contain a subset of Item 18 if specified in bi-lateral agreements.

Comment [JB34]: Check reference/numbering

Example

(CPL-QFA811-IS-B767/H-S/C-WSSS-20N070E/1417F350-M080F350 30N060E 40N090E YAY T-EGLL-0)

(CPL-UAL815-IS

-B773/H-SDIJ5RXW/SD1

-LFPG-54N030W/1417F350

-M080F350 54N020W 54N030W 54N040W 52N050W DCT CRONO DCT DOTTY

-KIAD

-PBN/A1L1 REG/N456UA SEL/KLBF)

An aircraft in level flight. The route in field 15 is truncated.

(CPL-ICE615-IS

-B753/H-SWX/C

-BIKF-62N030W/1701F350F310A

-M080F350 62N030W 60N040W 57N050W DCT OYSTR DCT STEAM T

-KJFK

-0)

An aircraft cleared to F350 but entering the ACI at or above F310

(CPL-IBE6123-IS

-B744/H-SXWC/C

-LEMD-41N030W/1325F350

-M084F350 41N030W 41N040W 41N050W 40N060W 38N065W DANER A699 NUCAR DCT HEATT

-KMIA

-0)

The coordination point preceding the boundary as per bilateral agreement and also a full route to destination.

(CPL-VIR2-IS

-B744/H-SXW/C

-KEWR-55N040W/2323F330

-M085F330 55N040W NATY NURSI UN551 BEL UL10 HON BNN2A

-EGLL

-0)

Field 15 containing a NAT track.

(CPL-BAW242-IS

-B744/H-SIRWXY/C

-MMMX-42N050W/0623F330

-EGLL

-M082F330 42N050W 45N040W 47N030W 49N020W BEDRA UN491 GUNSO UM197 GAPLI

UR8 GIBSO

-EGLL

-EET/KZHU0054 CZQX0546 45N040W0556 EGGX0643 49N020W0732 BEDRA0757

GUNSO0813 EGTT0833 ORGN/EGLLBAWH RALT/CYQX EIDW REG/GBNLI

RMK/TCAS SEL/BPCE DOF/040212)

Field 18, other information.

4.5.2 EST (COORDINATION ESTIMATE)

4.5.2.1 Purpose.

4.5.2.1.1 An EST message is used in conjunction with (and following) an ABI to initiate coordination for a flight to affected ATS Units. The transmission of the EST will normally be triggered at an agreed time or position prior to the common boundary or ACI, or possibly by a change in flight state. The only valid response to an EST is an ACP, which closes the coordination dialogue.

4.5.2.2 Message Format

ATS Field	Description
3	Message type
7	Aircraft identification
13	Departure aerodrome
14	Estimate data
16	Destination aerodrome

Example

(EST-DLH454-EDDF-BOPUT/1248F360-KSFO)

(EST-QFA811/A2277-WSSS-20N070E/1417F350-YAYT)

4.5.3 PAC (PREACTIVATION)

4.5.3.1 Purpose.

4.5.3.1.1 A PAC message is used in conjunction with (and following) an ABI to initiate coordination to affected ATS Units for a flight that has not yet departed. This would normally occur if the departure point is close to the FIR or ACI boundary and preflight coordination is required. Because the departure point is close to the boundary, the transmission of a PAC would normally be triggered by a change in flight state. A coordination dialogue initiated by a PAC message may only be closed by an ACP message.

4.5.3.2 Message Format

ATS Field	Description
3	Message type
7	Aircraft identification
13	Departure aerodrome
14	Estimate data
16	Destination aerodrome

22	Amendment (optional field)

Field 22 may optionally include any or all of the following fields

8	Flight rules and type of flight
9	Number, type of aircraft and wake turbulence category
10	Equipment
15	Route
18	Other information as contained in the current flight plan, with the exception of the EET sub-field, which is optional. This field may contain a subset of Item 18 if specified in bi-lateral agreements.

Example

(PAC-QFA811/A2277-WSSS-20N070E/1417F250-YAYT-10/S/C)

4.5.4 MAC (CANCELLATION OF NOTIFICATION AND/OR COORDINATION)

4.5.4.1 Purpose.

4.5.4.1.1 A MAC message is used to advise an ATSU that any notification and/or coordination previously received for a flight is no longer relevant to that ATSU. A MAC should only be transmitted to an ATSU that has previously received notification and/or coordination for a flight. While a MAC might be transmitted after a flight has been cancelled, the MAC message should not to be considered as equivalent to a CNL message as it does not cancel the flight plan.

4.5.4.2 Message Format

ATS Field	Description
3	Message type
7	Aircraft identification
13	Departure aerodrome
16	Destination aerodrome
22	Amendment (optional field)

Field 22 may contain the following fields:

14	Estimate Data
18	Other information

Field 14 may be transmitted containing the estimate data previously transmitted. It may be used if required, to correctly identify the flight concerned by the MAC, when appropriate. If a MAC is

Comment [JB35]: **COMMENT from BK: Concerning field 18 within field 22: "Other information as contained in the original flight plan ….". What if corrections have been made to field 18, should they not be coordinated? (for example if the registration has been corrected to enable FANS logon).**

transmitted as a result of a diversion to a new destination (i.e. such that the receiving ATSU is no longer affected by the flight), Field 16 – Destination aerodrome – should contain the destination contained in the original Notification and/or coordination messages.

Example

(MAC-BCA789-EGKK-KLAX)

(MAC-ICE234-BIKF-EGPF)

(MAC-SIA286-NZAA-WSSS)

(MAC-THA989-VTBD-YMML-18/RMK/DIVERTED TO YPDN)

(MAC-FJI910-YSSY-NFFN-14/DUBEV/2330F370)

4.5.5 CDN (COORDINATION NEGOTIATION)

4.5.5.1 Purpose.

4.5.5.1.1 A CDN message is used to propose amendments to the coordination conditions in a previously transmitted CPL, EST, PAC, or CDN message. The initial coordination dialogue (following a CPL message) is always terminated by an ACP message; otherwise an ATSU receiving a CDN can indicate that the proposed revision is not acceptable (by replying with an REJ message) or propose an amendment to the proposed coordination by replying with a CDN message.

4.5.5.1.2 Only one CDN dialogue can be open per flight at any given time between the same two ATSUs. CDN dialogues should be closed prior to the Transfer of Control occurring.

4.5.5.1.3 ATSUs should ensure that appropriate procedures are defined in bilateral agreements for processing CDN messages that contain a number of revisions (e.g. a revised estimate and level). There may be occasions when the receiving ATSU can accept one of the amendments but not the other.

Comment [KD36]: *Guidance material*

4.5.5.2 Message Format.

ATS Field	Description
3	Message type
7	Aircraft identification
13	Departure aerodrome
16	Destination aerodrome
22	Amendment

Under normal circumstances, Field 22 may contain the following fields:

14	Boundary data
15	Route
18	Other Information (text from “Other Information” in other fields)

Subject to bilateral agreement, the following fields may also be included in Field 22.

10	Equipment and Capabilities
Text	Amended Destination

4.5.5.3 Amended Destination is a free text field that may be used in the CDN message to propose the coordination of a new destination aerodrome. The field consists of an identifier ("DEST") followed by a "/" character, followed by the name or location of the destination. When used, the Amended destination field is the last field within Field 22.

Example

Comment [KD37]: *Update later*

(CDN-NWA36-KBOS-EDDF-14/54N030W/0446F370)

Example of a CDN message with a route change

(CDN-BAW32N-KMIA-EGGL-14/37N040W/0201F360-15/M085F360

32N050W 37N040W 42N030W 45N020W OMOKO GUNSO GAPLI

UL620 GIBSO)

Example of a CDN message containing changes in field 18:

(CDN-BAW242-MMMX-EGLL-14/43N040W/0308F380-18/PBN/A1

DOF/120412 REG/GBNLI

EET/KZHU0054 LPPO0546 CZQX0606 EGGX0643 49N020W0732

BEDRA0757

GUNSO0813 EGTT0833 SEL/BPCE ORGN/EGLLBAWH RALT/CYQX

EIDW RMK/TCAS)

(CDN-NWA36-NFFN-RJTT-14/20N150E/0446F370)

(CDN-QFA1-YSSY-WSSS-10/SDGHIJRYZ/SD)

(CDN-KAL823-RJAA-NZCH-15/LTO G591 AA-DEST/NZAA)

(CDN-MAPLE1-PKMJ-ZZZZ-14/MARTI/2200F310-15/MARTI 02N168E-

DEST/0150N16745E)

4.5.5.4 The last two examples demonstrate a CDN proposing a new route to an amended destination. In example iii, there is no change to Field 14 – Estimate data. The last example shows a change of route with a corresponding change to Field 14. The "DEST/" included in this example refers to the proposed destination, rather than the original "ZZZZ" destination. Refer to Chapter 7, *Implementation Guidance Material*, for the methodology in proposing a diversion to a new destination.

4.5.6 ACP (ACCEPTANCE)

4.5.6.1 Purpose.

4.5.6.1.1 An ACP message is used to confirm that the coordination proposed in a received CPL, CDN, EST or PAC message is acceptable and to close the coordination dialogue. The coordination conditions are updated in accordance with the proposed coordination.

4.5.6.2 Message Format.

ATS Field	Description
3	Message type
7	Aircraft identification
13	Departure aerodrome
16	Destination aerodrome

Example

(ACP-ACA860-NZAA-KSFO)

4.5.7 **REJ (REJECTION)**

4.5.7.1 Purpose.

4.5.7.1.1 An REJ message is used to reject the coordination proposed in a received CDN message and to close the coordination dialogue. The previously agreed coordination conditions remain unchanged.

4.5.7.1.2 An REJ message may not be used to close an initial coordination dialogue

4.5.7.2 Message Format.

ATS Field	Description
3	Message type
7	Aircraft Identification
13	Departure Aerodrome
16	Destination Aerodrome

Example

(REJ-AAL780-KJFK-EGLL)

(REJ-AAL780-KSFO-RJAA)

4.5.8 **TRU (TRACK UPDATE)**

4.5.8.1 Purpose.

Comment [JB38]: COMMENT---BK
Sometimes it happens (at least in the NAT) that the unit receiving coordination has not received the filed FPL or a CHG message and the CPL message contains a reroute and the receiving unit has been unable to obtain the FPL using RQP. The receiving center then does not know that the aircraft has been rerouted. A way to tackle this would be to require the transferring unit to also send the receiving unit the flight plan route when the aircraft has been rerouted.
***SUGGESTED CHANGE TO DOCUMENT*:**
Add a new element to the TRU (Track Update) message as follows:
Flight Plan Route (FPR)
This optional element is preceded by the identifier 'FPR' and contains the aircraft's filed route of flight as contained in the filed FPL or as amended by CHG messages.

4.5.8.1.1 A TRU message is used to coordinate amendments to previously agreed coordination conditions, or other flight-related information, where prior coordination of the change(s) is not required. Because there is no operational response to the TRU message, use of this message must be in strict accordance with bilateral agreements between ATSUs concerned.

4.5.8.2 Message Format.

ATS Field	Description
3	Message type
7	Aircraft Identification
13	Departure Aerodrome
16	Destination Aerodrome
Text	Track Data

4.5.8.2.1 Track data is a free text field used in the TRU message to permit the transfer of updated information from one ATSU to another. This field contains a number of elements which are described below. Each element consists of an "identifier" and a value which are separated by a "/" character.

4.5.8.2.2 All of the elements within the Track data field are optional, and multiple elements may be included, separated by a single <space> character. Track data will contain at least one element. When multiple elements are to be transmitted in a single TRU message, the order of the elements within the Track data field is the order in which they are listed below. Unused elements are not included in the Track data field.

Example

4.5.8.2.3 Requested Flight Level (RFL)

This element is preceded by the identifier 'RFL' and contains the aircraft's most recent requested flight level.

Comment [KD39]: ***Verify with Nelson and Bjarni.***

Example

RFL/F390

4.5.8.2.4 Present Level (PRL)

This element is preceded by the identifier 'PRL' and contains the aircraft's last reported level.

Example

PRL/F390

4.5.8.2.5 Heading (HDG)

This element is preceded by the identifier 'HDG' and contains the magnetic heading that has been assigned to the aircraft, expressed as a three digit number between 001 and 360.

Example

HDG/080

4.5.8.2.6 Cleared Flight Level (CFL)

This element is preceded by the identifier 'CFL' and contains the amended level that the aircraft has been assigned. Block levels in accordance with Chapter 2, *Purpose, Policy and Units of Measurement*, para 2.3.5, are also supported.

Example

CFL/F330

CFL/F310F330

CFL/F310F330F210A

4.5.8.2.7 Speed (SPD)

This element is preceded by the identifier 'SPD' and contains details of the speed (Mach Number or Indicated airspeed) that the aircraft has been assigned.

Mach numbers are expressed as "M" followed by 3 figures giving the true Mach Number or to the nearest .01 Mach.

Indicated airspeeds are expressed as "I" followed by 4 figures giving the Indicated Airspeed in knots.

4.5.8.2.7.1 To cancel an assigned speed that had been previously coordinated, the SPD identifier is followed by a "/" character, followed by a zero (0).

Example

SPD/M084

SPD/I0250

SPD/0

4.5.8.2.8 Direct to (DCT)

This element is preceded by the identifier "DCT" and contains the position that the aircraft has been cleared directly to.

Example

DCT/MICKY

DCT/30S160E

4.5.8.2.9 Off track deviation (OTD)

This element is preceded by the identifier 'OTD' and contains the details of any off track clearance that has been issued to the aircraft. The format of the off track deviation is as described in Chapter 2, *Purpose, Policy and Units of Measurement*, para 2.3.8; i.e.,

a single character providing advice as to whether the clearance is an offset (O) or a weather deviation (W); and

an off track distance associated with this clearance:

a direction, indicating left (L) or right (R) or, in the case of weather deviation, either side of track (E); and

when including Offset information in and AIDC message, the direction “E” (either side of track) should not be used

4.5.8.2.9.1 To cancel a previously coordinated off track deviation, the OTD identifier is followed by a “/” character, followed by a zero (0).

Example

OTD/W20R

OTD/O30L

OTD/0

4.5.8.3 Depending on ground system automation, on receipt of a TRU message, the receiving ATSU may automatically update their flight plan data, or simply display the message to the responsible controller.

Example

(TRU-UAL73-NTAA-KLAX-CFL/F280 OTD/W20R)

(TRU-UAL73-NTAA-KLAX- OTD/0)

(TRU-QFA43-YSSY-NZAA-HDG/115 CFL/F270 SPD/I0250)

(TRU-QFA43-YSSY-NZAA-SPD/0 DCT/GEROS)

(TRU-ANZ1-NZAA-KLAX-HDG/115 CFL/F270)

4.6 Transfer of control messages

4.6.1 TOC (TRANSFER OF CONTROL)

4.6.1.1 Purpose.

4.6.1.1.1 Used to offer the receiving centre executive control of a flight

4.6.1.2 Message Format

ATS Field	Description
3	Message type
7	Aircraft identification
13	Departure aerodrome
16	Destination aerodrome

Example

(TOC-TAP451-LPPT-KJFK)

(TOC-TAP451/A2217-YMML-NZCH)

4.6.2 **AOC (ASSUMPTION OF CONTROL)**

4.6.2.1 Purpose.

4.6.2.1.1 Sent in response to a TOC to indicate acceptance of executive control of a flight.

4.6.2.2 Message Format.

ATS Field	Description
3	Message type
7	Aircraft identification
13	Departure aerodrome
16	Destination aerodrome

Example

(AOC-TAP451-LPPT-KJFK)

(AOC-TAP451/A2217-NFFN-PHNL)

4.7 General information messages

4.7.1 **EMG (EMERGENCY)**

4.7.1.1 Purpose.

4.7.1.1.1 The EMG message is used when it is considered that the contents require immediate attention by the receiving ATSU. Normally the information would be presented directly to the controller responsible for the flight or to the controller expecting to receive responsibility for the flight. When the message does not refer to a specific flight, a functional address may be used and the information presented to the appropriate ATS position. Where such an address is used it is preceded by an oblique stroke (/) to differentiate it from aircraft identification. The following are examples of circumstances which could justify the use of an EMG message.

a) Reports of emergency calls or emergency locator transmission reports.

b) Messages concerning hi-jack or bomb warnings.

c) Messages concerning serious illness or disturbance among passengers.

d) Sudden alteration in flight profile due to technical or navigational failure.

e) Communications failure.

4.7.1.2 Message format.

ATS Field	Description
3	Message type

7	Aircraft identification or functional address
18	Other information (only RMK/)

Example

(EMG-UAL123-RMK/Free Text)

(EMG-/ASUP-RMK/Free Text)

4.7.2 **MIS (MISCELLANEOUS)**

4.7.2.1 Purpose.

4.7.2.1.1 The MIS message is used to transmit operational information which cannot be formatted to comply with any other message type and for plain language statements. Normally the information would be presented directly to the controller responsible for the flight or to the controller expecting to receive responsibility for the flight. When the message does not refer to a specific flight, a functional address may be used and the information presented to the appropriate ATS position. Where such an address is used it is preceded by an oblique stroke (/) to differentiate it from an aircraft's identification.

4.7.2.2 Message format.

ATS Field	Description
3	Message type
7	Aircraft identification
18	Other information (only RMK/)

Examples

(MIS-NWA456-RMK/Free Text)

(MIS-/ASUP-RMK/Free Text)

4.8 Application management messages

4.8.1 **LAM (LOGICAL ACKNOWLEDGEMENT MESSAGE)**

4.8.1.1 Purpose.

4.8.1.1.1 Sent in response to each AIDC message (except for another LAM or LRM) that has been received, and found free of those errors that are specified in Table 5-1 or as agreed upon in bi-lateral agreements. Non-receipt of a LAM may require local action. The message identifier and reference identifier are found in the message header which is defined in Chapter 3, *Communications and Support Mechanisms*.

4.8.1.2 Message Format.

ATS Field	Description
3	Message type
Example (LAM)	

4.8.2 LRM (LOGICAL REJECTION MESSAGE)

4.8.2.1 Purpose.

4.8.2.1.1 Sent in response to each AIDC message not eligible for a LAM to be sent. The message identifier and reference identifier are found in the message header, which is defined in Chapter 3, *Communications and Support Mechanism*. The LRM will identify the first field found that contains invalid information if this field information is available.

4.8.2.2 Message Format.

ATS Field	Description
3	Message type
18	In the case of the LRM Field 18 is used to convey technical information between systems and will only include the RMK/ sub-field.

4.8.2.2.1 Field 18 will only use the RMK/ sub-field. It will comprise an error code, supporting text and the ICAO field number in which the error occurred (where applicable).

4.8.2.2.2 The following format is used in the RMK/ sub-field of the LRM to report errors:

<error code>/<field number>/<invalid text>

4.8.2.2.3 The <error code> should contain the appropriate error code number from Chapter 5, *Error Code*, Table 5-1. The error code is described using up to three numeric characters without leading zeros. When multiple errors are detected in an AIDC message, only a single LRM should be generated in response. This LRM would usually contain the error code of the first error detected.

4.8.2.2.4 The <field number> will contain the field number corresponding to the error code extracted from Table 5-1, *Error Codes*. Where multiple field numbers are assigned to an error code, only the first field number containing the error will be sent. Where no field number is referenced in Table 5-1, *Error Codes*, and the field number sub-field will be empty. The field number can be described using up to six alphanumeric characters.

> **Note:** Some ATSUs may not support non-numeric field numbers (e.g. "HEADER"). Whilst this is acceptable in order to preserve backwards compatibility with existing systems, the preferred implementation is for any non-numeric field numbers for Table 5-1 to be supported within the LRM.

4.8.2.2.5 The <invalid text> field will contain the error text corresponding to the error code extracted from Table 5-1 (not including any of 'explanatory text' that may have been included in Table 5-1). If the specific error can be identified, it may optionally be appended to the Table 5-1 error text. The invalid text field can contain up to 256 characters.

Note: Some ATSUs may not include the error text from Table 5-1, *Error Codes*, in the <invalid text> field of transmitted LRMs. Whilst this is acceptable in order to preserve backwards compatibility with existing systems, the preferred option is the LRM <invalid text> field to at least contain the error text from Table 5-1.

4.8.2.2.6 The following shows a number of LRM examples. Where more than one LRM format is shown, the format of the first one is the preferred option.

Example

(LRM-RMK/1/HEADER/INVALID SENDING UNIT)

OR

(LRM-RMK/1/ /INVALID SENDING UNIT)

(See Note following paragraph 4.7.2.7)

(LRM-RMK/17/16/INVALID AERODROME DESIGNATOR)

OR

(LRM-RMK/17/16/)

(See Note following paragraph 4.7.2.8)

(LRM-RMK/57//INVALID MESSAGE LENGTH)

(LRM-RMK/27/15/ INVALID LAT/LON 130S165E)

(The actual error "130S165E" may be optionally appended to the error text from Table 5-1, *Error Codes* see para 4.7.2.8).

170501 YBBBZQZF 2.250425-4.130117050127-5.F284-

(EST-QFA11/A1502-YSSY-3061S16300E/0541F330-KLAX)

170501 NZZOZQZF 2.003199-3.YBBB250425-4.130117050128-5.AB2A-

(LRM-RMK/27/14/INVALID LAT/LON DESIGNATOR 3061S16300E)

180538 YBBBZQZF 2.257939-4.130118053818-5.9C09-

(EST-UAL840/A1457-YSSY-3200S16300E/0618F310F290-KLAX)

180538 NZZOZQZF 2.000059-3.YBBB257939-4.130118053820-5.2F1C-

(LRM-RMK/66/14/INVALID BLOCK LEVEL F310F290)

200425 YMMMZQZF 2.431237-4.130118072515-5.87F7-

(TRU-ADM001/A0007-YSSY-NZAA-HDG/000)

180538 YBBBZQZF 2.000059-3.YMMM431237-4.130118072516-5.CCC9-

(LRM-RMK/87/TDF/INVALID HEADING IN HDG/IDENTIFIER 000)

4.8.3 **ASM (APPLICATION STATUS MONITOR)**

Comment [JB40]: REVIEW

Comment [JB41]: Verify numbering in ref.

Comment [JB42]: Verify numbering in ref.

Comment [JB43]: Verify numbering in ref.

Comment [JB44]: Examples linking LRM and original message with an error and addressing ODF. TBD Adam/Warren

Comment [KD45]: *Need introductory comment, which will be provided by Adam.*

4.8.3.1 Purpose.

4.8.3.1.1 Sent to an adjacent ATSU to confirm that end-to-end messaging is available. It is transmitted when no application messages have been received within a specified time as defined in bi-lateral agreement. Typical values should be between 5 and 30 minutes.

Comment [JB46]: COMMENT---AW Typo:

SUGGESTED CHANGE TO DOCUMENT:

"…determined based on the needs of the operational environment…"

4.8.3.2 Message Format.

ATS Field	Description
3	Message type
Example	
(ASM)	

4.8.4 FAN (FANS APPLICATION MESSAGE)

4.8.4.1 Purpose.

4.8.4.1.1 Transmitted by one ATSU (generally the C-ATSU) to another ATSU (generally the D-ATSU) to provide the required information necessary to establish CPDLC and/or ADS-C connections with FANS equipped aircraft. Use of the FAN message significantly reduces the number of data link messages required to effect a data link transfer.

4.8.4.2 Message Format.

ATS Field	Description
3	Message type
7	Aircraft identification
13	Departure aerodrome
16	Destination aerodrome
Text	Application data as described below

4.8.4.3 Receipt or transmission of a FAN message does not change the coordination state of the flight.

4.8.4.4 Application data field.

4.8.4.4.1 Application data field is a free text field used in the FAN message to permit the transfer of FANS logon information from one ATSU to another. This field contains a number of elements which are described below. The abbreviation used for the identifier corresponds to the associated ICAO abbreviation (where one exists)/ otherwise the three character MTI (Message Type Identifier) contained in the logon is used (refer to ARINC 622 for a listing of various MTIs)

4.8.4.4.2 The order of the elements within the FAN message is the order that they are listed below, with consecutive elements being separated by a single <space> character. Although some elements within the Application data field may be "optional", they should be included if the corresponding data is available (i.e. if the C-ATSU transmitting the FAN message has received this information either from a logon or a FAN message). This is for the benefit of D- ATSUs that may use the

information within these optional elements. If data is not available for an optional element, that element is not to be included in the FAN message.

4.8.4.4.3 Additional information concerning the elements described below is contained in Chapter 7, *Implementation Guidance Material*.

4.8.4.5 Standard message identifier (SMI)

4.8.4.5.1 This mandatory element is preceded by the identifier 'SMI', and contains information relating to the address uplink messages are routed to in the avionics. The value of the SMI sent in the FAN message is the downlink SMI as it was received in either the most recently received logon or FAN message.

4.8.4.5.2 Allowable values for the SMI are listed in ARINC 620. Examples of SMIs include "FML", "FMR", "FMD", FM3" and "AFD".

Example

SMI/FMD

4.8.4.6 Aircraft identification

4.8.4.6.1 This mandatory element is preceded by the identifier 'FMH' and contains the aircraft identification as it was received in either the most recently received logon or FAN message.

Example

FMH/MAS123

4.8.4.7 Aircraft registration

4.8.4.7.1 This mandatory element is preceded by the identifier 'REG' and contains the registration details of the aircraft – including the hyphen if applicable – as it was received in either the most recently received logon or FAN message.

Example

REG/N12345

REG/9V-ABC

4.8.4.8 Aircraft Address (ICAO 24 bit code)

4.8.4.8.1 This optional element is preceded by the identifier 'CODE' and contains the six character hexadecimal translation of the 24 bit aircraft address as it was received in either the most recently received logon or FAN message.

Example

CODE/ABC123

4.8.4.9 Aircraft position information

4.8.4.9.1 This optional element is preceded by the identifier 'FPO' and contains the position of the aircraft as determined by the ATSU at the time of transmission of the FAN message, if this information is available. The position of the aircraft is expressed as a latitude/longitude in either dd[NS]ddd[EW] or ddmm[NS]dddmm[EW] format.

Example

FPO/23S150E

FPO/0823N11025E

4.8.4.10 ATS Application and Version Number

4.8.4.10.1 There will usually be multiple elements associated with the ATS Application and Version number (i.e. CPDLC and ADS-C). Occurrences of this element are preceded by the identifier 'FCO' which describes the ATS data link application(s) available in the avionics, as they were received in a logon or a previously received FAN message. The FAN message must include at least one ATS data link application – a separate identifier is used for each available application. These elements may be transmitted in any order.

4.8.4.10.2 The value associated with FCO identifier consists of three letters to describe the application name immediately followed by (i.e. with no intervening spaces) two figures characters to represent the associated version number. Possible values for the three letters are "ATC" (for CPDLC) or "ADS" (for ADS-C), and the possible range of version numbers is 01 to 99.

Example

FCO/ATC01 FCO/ADS01

FCO/ADS01

4.8.4.10.3 The second example illustrates a FAN message with ADS-C application only. This may be either because the aircraft is not CPDLC equipped, or because the FAN is being used with an adjacent ATSU to enable monitoring using ADS-C by that ATSU when the aircraft is only entering the Area of Common Interest (ACI).

Example

(FAN-ACA870-CYUL-LFPG-SMI/AFD FMH/ACA870 REG/C-GOJA FPO/53N035W FCO/ATC01 FCO/ADS01)

(FAN-UAL951-EBBR-KIAD-SMI/FML FMH/UAL951 REG/N123UA CODE/A254B3 FCO/ADS01)

(FAN-QFA43-YSSY-NZAA-SMI/AFD FMH/QFA43 REG/VH-OJA FPO/34S158E FCO/ATC01 FCO/ADS01)

FAN-ANZ123-NZAA-KLAX-SMI/FML FMH/ANZ123 REG/ZK-NJP FCO/ADS01

(FAN-SIA221-WSSS-YSSY-SMI/FMD FMH/SIA221 REG/9M-MRP CODE/A254B3 FPO/1214S11223E FCO/ATC01 FCO/ADS01)

4.8.4.10.4 ATSUs should ensure that at least two of the ACID, REG, or CODE elements are used to ensure that the logon information contained in the FAN message is associated with the correct flight plan.

Note 1. If the FAN message contains information for the purpose of the next unit establishing a CPDLC connection, is should not be sent until after an appropriate CPDLC Next Data Authority message (NDA) has been transmitted to the aircraft, either by allowing a reasonable time for delivery of the NDA message or waiting until a MAS/S message has been received in response.

Note 2. Where an aircraft enters an adjacent ATSU's ACI but does not actually enter the ATSU's airspace and a FAN message is sent to the adjacent ATSU to enable monitoring using ADS-C then the FCO identifier for the CPDLC application should not be included.

4.8.5 **FCN (FANS COMPLETION NOTIFICATION)**

4.8.5.1 Purpose.

4.8.5.1.1 The FCN may be transmitted by the C- ATSU or D-ATSU to provide information concerning the CPDLC Connection status of the aircraft. It is transmitted by the C- ATSU when their CPDLC Connection with the aircraft is terminated, providing notification to the D- ATSU that they are the CPDLC Current Data Authority. It may also be transmitted by the D- ATSU to provide notification of the establishment of a CPDLC Connection or a failure of a CPDLC Connection request.

4.8.5.2 Receipt or transmission of an FCN message does not change the coordination state of the flight.

4.8.5.3 An FCN transmitted by the D-ATSU may also (optionally) include contact/monitor frequency information to be issued to the aircraft by the C-ATSU.

4.8.5.4 Message Format.

ATS Field	Description
3	Message type
7	Aircraft identification
13	Departure aerodrome
16	Destination aerodrome
18	Field 18 in the FCN message is used for the purpose of transmitting two sub-fields; the CPDLC connection identifier and the frequency identifier, both of which are described below
Text	Communication Status as described below

4.8.5.5 Communication Status field.

4.8.5.5.1 Communication Status is a free text field used in the FCN message to permit the transfer of CPDLC connection status and (optionally) frequency information from one ATSU to another. This field may contain a number of elements which are described below. Each element consists of an "identifier" and a value which are separated by a "/" character. Separate elements are separated by a single < space> character.

4.8.5.6 CPDLC Connection Status identifier (CPD)

4.8.5.6.1 This mandatory element is preceded by the identifier "CPD" and contains a single Integer value which is used to provide information concerning an aircraft's CPDLC Connection status. The value to be included in the CPDLC Connection Status field is determined from the following table.

Table 4-4. CPDLC Connection Status

CPDLC Connection Status		**Meaning**
FCN sent by transferring ATSU	FCN sent by receiving ATSU	

0		The CPDLC Connection with the aircraft has been terminated
	0	No CPDLC Connection could be established with the aircraft
	1	The CPDLC Connection Request failed due to the receiving ATSU not being the nominated CPDLC Next Data Authority
	2	A CPDLC Connection has been established with the aircraft

4.8.5.7 Frequency identifier (FREQ)

4.8.5.7.1 This optional element is preceded by the identifier 'FREQ' and may be included in an FCN message transmitted by the D-ATSU to advise of any changes to a previously notified (or a default) frequency. The FREQ/ identifier provides advice to the C-ATSU of the voice frequency to be transmitted to the aircraft in the CPDLC Contact/Monitor instruction. If no frequency information is to be transmitted this element should not be included in the FCN message.

4.8.5.7.2 When transmitted in the FCN message, the frequency variable does not contain units, spaces or leading zeroes. It may be up to 7 characters in length, containing integers or a decimal point selected from the frequency range below.

Table 4-5. Frequency Identifier

	Range	**Units**
HF	2850 to 28000	kHz
VHF	117.975 to 137.000	MHz
UHF	225.000 to 399.975	MHz

Example

FCN transmitted by receiving ATSU:

(FCN-SIA221-YSSY-WSSS-CPD/0)

The CPDLC Connection request for SIA221 failed

(FCN-ANZ15-KLAX-NZAA-CPD/2 FREQ/13261)

The CPDLC Connection request for ANZ15 was successful. Contact/Monitor voice frequency is 13261

FCN transmitted by transferring ATSU:

(FCN-ICE615-BIKF-KJFK-CPD/0)

The CPDLC Connection with ICE615 has been terminated

4.9 Surveillance data transfer service messages

4.9.1 **ADS (SURVEILLANCE ADS-C)**

4.9.1.1 Purpose.

4.9.1.1.1 Used to transfer information contained in an ADS-C report from one ATSU to another.

4.9.1.2 Message Format.

ATS Field	Description
3	Message type
7	Aircraft identification
13	Departure aerodrome
16	Destination aerodrome
Text	ADS-C Data

4.9.1.3 ADS-C data field.

4.9.1.3.1 ADS-C data is a free text field used in the ADS message to permit the transfer of information contained in an ADS-C report from one ATSU to another. The data field consists of an identifier 'ADS' followed by a delimiter "/" character, followed by a text string containing specific text extracted from the encoded ACARS ADS-C report received from the aircraft.

4.9.1.3.2 The ADS-C data field may also be used to indicate that no further ADS messages will be sent to the receiving ATSU for the flight. To indicate this state the ADS identifier is followed by a delimiter "/" character, followed by a "0" (zero). The trigger would be by bilateral agreement (e.g. an ADS-C report has been received that places the aircraft outside the ACI and the predicted route group indicates that the aircraft will not re-enter the ACI).

4.9.1.3.3 The specific text to be included in the AIDC ADS message is described in Chapter 7 – *Implementation Guidance Material*.

Example

(ADS-ANZ90-RJAA-NZAA-ADS/.ZK-OKC030007FF946B6F6DC8FC044
B9D0DFC013B80DA88FC0A64F9E4438B4AC8FC000E34D0EDC0001014
0F3E86)
(ADS-ANZ90-RJAA-NZAA-ADS/0)

Table 4-6. PAN AIDC Messages and their Field Composition

Message	3 a b c	7 a b c	8 a b	9 a b c	10 a b	13 a b	14 a b c d e	15 a b c	16 a b c	18	19	20	21	22						
														8 a b	9 a b c	10 a b	14 a b c d e	15 a b c	18	Text
ABI	M - -	MOO				M -	MMMOO		M - -					OO	MMM	OO		MMM	O	O
PAC	M - -	MOO				M -	MMMOO		M - -					OO	OOO	OO		OOO	O	
CPL	M - -	MOO	MO	MMM	MM	M -	MMMOO	MMM	M - -	M										
EST	M - -	MOO				M -	MMMOO		M - -											
CDN	M - -	MOO				M -			M - -							OO	OOOOO	OOO	OO	O
ACP	M - -	MOO				M -			M - -											
LAM	M - -																			
MAC	M - -	MOO				M -			M - -								O		O	
REJ	M - -	MOO				M -			M - -											
EMG	M - -	MOO								M										
MIS	M - -	MOO								M										

Comment [JB47]: *COMMENT---AW* Suggest "X" is added in the 'Non-ICAO fields" column for "ABI" and "CDN", because they contain a "Text" field

Comment [JB48]: Draft AIDC Table to replace previous, from AW

Message	3 a b c	7 a b c	8 a b	9 a b c	10 a b	13 a b	14 a b c d e	15 a b c	16 a b c	18	19	20	21	22						
														8 a b	9 a b c	10 a b	14 a b c d e	15 a b c	18	Text
LRM	M - -									M										
TRU	M - -	MOO				M -			M - -											M
TOC	M - -	MOO				M -			M - -											
AOC	M - -	MOO				M -			M - -											
TDM	M - -																			M
NAT	M - -																			M
ASM	M - -																			
FAN	M - -	MOO				M -			M - -											M
FCN	M - -	MOO				M -			M - -										M	O
ADS	M - -	MOO				M -			M - -											M

Comment [JB48]: Draft AIDC Table to replace previous, from AW

Chapter 5. Error Codes

5.1 Introduction

5.1.1 A set of error codes has been developed for those messages contained in the AIDC message set. A list of the codes, associated field number and error text is contained in the table below. This information is for the inclusion in any Logical Rejection Message transmitted in response to the reception of an AIDC message containing an error.

5.1.2 Error codes for incorrect message sequences, such as attempting a change in coordination conditions (CDN) while a transfer of control is in progress (TOC) have not yet been developed.

5.1.3 Error codes only refer to syntactical checking of the message and not the logical checking.

Comment [KD49]: *Rework the wording to a suitable description.*

Table 5-1. Error Codes

Error Code	Field Number	Error Text
1	HEADER	INVALID SENDING UNIT (e.g. AFTN Address)
2	HEADER	INVALID RECEIVING UNIT (e.g. AFTN Address)
3	HEADER	INVALID TIME STAMP
4	HEADER	INVALID MESSAGE ID
5	HEADER	INVALID REFERENCE ID
6	7	INVALID ACID
7	7	DUPLICATE ACID
8	7	UNKNOWN FUNCTIONAL ADDRESS
9	7	INVALID SSR MODE
10	7	INVALID SSR CODE
11	8	INVALID FLIGHT RULES
12	8	INVALID FLIGHT TYPE
13	9	INVALID AIRCRAFT MODEL
14	9	INVALID WAKE TURBULENCE CATEGORY
15	10	INVALID CNS EQUIPMENT DESIGNATOR
16	10	INVALID SSR EQUIPMENT DESIGNATOR
17	13,16,17	INVALID AERODROME DESIGNATOR

Error Code	Field Number	Error Text
18	13	INVALID DEPARTURE AERODROME
19	16	INVALID DESTINATION AERODROME
20	17	INVALID ARRIVAL AERODROME
21	13,16,17	EXPECTED TIME DESIGNATOR NOT FOUND
22	13,16,17	TIME DESIGNATOR PRESENT WHEN NOT EXPECTED
23	13,14,16,17	INVALID TIME DESIGNATOR
24	13,14,16,17	MISSING TIME DESIGNATOR
25	14	INVALID BOUNDARY POINT DESIGNATOR
26	14,15	INVALID EN ROUTE POINT
27	14,15	INVALID LAT/LON DESIGNATOR
28	14,15	INVALID NAVAID FIX
29	14,15	INVALID LEVEL DESIGNATOR
30	14,15	MISSING LEVEL DESIGNATOR
31	14	INVALID SUPPLEMENTARY CROSSING DATA
32	14	INVALID SUPPLEMENTARY CROSSING LEVEL
33	14	MISSING SUPPLEMENTARY CROSSING LEVEL
34	14	INVALID CROSSING CONDITION
35	14	MISSING CROSSING CONDITION
36	15	INVALID SPEED/LEVEL DESIGNATOR
37	15	MISSING SPEED/LEVEL DESIGNATOR
38	15	INVALID SPEED DESIGNATOR
39	15	MISSING SPEED DESIGNATOR
40	15	INVALID ROUTE ELEMENT DESIGNATOR

Error Code	Field Number	Error Text
41	15	INVALID ATS ROUTE/SIGNIFICANT POINT DESIGNATOR
42	15	INVALID ATS ROUTE DESIGNATOR
43	15	INVALID SIGNIFICANT POINT DESIGNATOR
44	15	FLIGHT RULES INDICATOR DOES NOT FOLLOW SIGNIFICANT POINT
45	15	ADDITIONAL DATA FOLLOWS TRUNCATION INDICATOR
46	15	INCORRECT CRUISE CLIMB FORMAT
47	15	CONFLICTING DIRECTION
48	18	INVALID OTHER INFORMATION ELEMENT
49	19	INVALID SUPPLEMENTARY INFORMATION ELEMENT
50	22	INVALID AMENDMENT FIELD DATA
51		MISSING FIELD nn (See Note 2) INVALID AMENDMENT FIELD DATA
52		MORE THAN ONE FIELD MISSING
53		MESSAGE LOGICALLY TOO LONG
54		SYNTAX ERROR IN FIELD nn (See Note 2)
55		INVALID MESSAGE LENGTH
56		USE APPROPRIATE ERROR
57		INVALID MESSAGE
58		MISSING PARENTHESIS
59		MESSAGE NOT APPLICABLE TO zzzz OAC (See Note 2)
60	3	INVALID MESSAGE MNEMONIC (i.e., 3 LETTER IDENTIFIER)

Error Code	Field Number	Error Text
61	Header	INVALID CRC
62-71		RESERVED FOR FUTURE USE
62		UNDEFINED ERROR
63		MSG SEQUENCE ERROR: ABI IGNORED
64		MSG SEQUENCE ERROR: INITIAL COORDINATION NOT PERFORMED
65		MESSAGE SEQUENCE ERROR: EXPECTING MSG xxx; RECEIVED MSGyyy (See Note 2)
66	14	INVALID BLOCK LEVEL
67	14	INVALID OFF-TRACK CLEARANCE TYPE
68	14	INVALID OFF-TRACK DIRECTION
69	14	INVALID OFF-TRACK DISTANCE
70	14	INVALID MACH NUMBER QUALIFIER
71	14	INVALID MACH NUMBER
72	ADF (See Note 3)	INVALID IDENTIFIER
73	ADF (See Note 3)	INVALID SMI
74	ADF (See Note 3)	INVALID ACID IN FMH/IDENTIFIER
75	ADF (See Note 3)	INVALID REGISTRATION IN REG/IDENTIFIER
76	ADF (See Note 3)	INVALID AIRCRAFT ADDRESS IN CODE/IDENTIFIER
77	ADF (See Note 3)	INVALID LOCATION IN FPO/IDENTIFIER
78	ADF (See Note 3)	INVALID DATA LINK APPLICATION FCO/IDENTIFIER
79	ADF (See Note 3)	INVALID OR UNSUPPORTED CPDLC VERSION NUMBER
80	ADF (See Note 3)	INVALID OR UNSUPPORTED ADS-C VERSION NUMBER

Error Code	Field Number	Error Text
81	ADF (See Note 3)	INVALID IDENTIFIER IN FAN MESSAGE
82	CSF (See Note 4) 18	INVALID CPDLC CONNECTION STATUS
83	CSF (See Note 4) 18	INVALID FREQUENCY IN FREQ/IDENTIFIER
84-255		RESERVED FOR FUTURE USE
84	ADF (See Note 5)	INVALID IDENTIFIER IN ADS MESSAGE
85	ADF (See Note 5)	INVALID DATA IN ADS MESSAGE **Note.** This error message refers to the encoded ADS-C data (e.g. if it contains non-hexadecimal characters), rather than whether the contents of the decoded ADS-C report itself are valid
86	TDF (See Note 6)	INVALID IDENTIFIER IN TRU MESSAGE
87	TDF (See Note 6)	INVALID HEADING IN HDG/IDENTIFIER
88	TDF (See Note 6)	INVALID POSITION IN DCT/IDENTIFIER
89	TDF (See Note 6)	INVALID OFF TRACK DEVIATION IN OTD/IDENTIFIER
90	TDF (See Note 6)	INVALID FLIGHT LEVEL IN CFL/IDENTIFIER
91	TDF (See Note 6)	INVALID SPEED IN SPD/IDENTIFIER
92-256		RESERVED FOR FUTURE USE

Note 1. It is not intended that any amplifying text contained in parenthesis "(i.e., AFTN Address)" within the error text column be transmitted in any LRM.

Note 2. The intention is that in error codes 51, 54, 59, and 65 that lower case text (e.g. "nn", or "xxx") is replaced by the applicable value when this information is available.

Note 3. In the FAN message, the "ADF" field number refers to the Application data field.

Note 4. In the FCN message, the "CSF" field number refers to the Communication Status field.

Note 5. In the ADS message, the "ADF" field refers to the ADS-C data field.

Note 6. In the TRU message, the "TDF" field refers to the Track data field.

Chapter 6. Implementation Guidance Material

6.1 Introduction

6.1.1 The AIDC Message set described in Chapter 4, *ATS Coordination Messages*, supports six ATS-related functions.

a) Notification;
b) Coordination;
c) Transfer of Control;
d) General (Text) Information Interchange;
e) Surveillance Data Transfer; and
f) Application Management (Data and Communications Integrity Monitoring).

6.1.2 This chapter contains information of an explanatory nature, including how the message set is intended to be used, as well as guidance in dealing with specific issues, The aim is to provide information and guidance that will assist software engineers responsible for developing ATM systems, as well as ATSUs that implement AIDC messaging.

6.2 Preliminaries

6.2.1 Assumptions.

6.2.1.1 Within this guidance material, the following assumptions have been made:

- The material described below generally applies only to AIDC message exchanges between two automated ATM systems.;
- It must be possible to revert to manual intervention of the Notification, Coordination, and Transfer of Control processes at any time;
- Exceptional conditions, such as loss of communications between two ATSUs are not addressed in this document and are subject to local procedures and,
- An ATSU's Area of Common Interest (ACI) is defined as "A volume of airspace as agreed between two ATS Units, within which air traffic may have an impact on both units. The size of the ACI is usually determined by the required separation minima in use in the airspace" AW: To be discussed

6.2.2 **AFTN message header.**

6.2.2.1 Every AIDC message transmitted should contain an AFTN header, as specified in Chapter 3, *Communications and Support Mechanisms*. This header should contain the optional data fields described in Chapter 3.

6.2.2.2 Message identifier numbers (optional data field 2) should be sequential. Receipt of an out of sequence message should result in a warning being issued.

6.2.2.3 A check for duplicate message identifier numbers should be made. In general, since 1,000,000 numbers are available, no duplicates should be present.

6.2.2.4 Message identifier numbers should begin at 0, proceed through 999,999, and then rollover to 0. The same sequence should be repeated when necessary.

6.2.2.5 Each unique ATSU-to-ATSU interface should select message identifier numbers from its own pool of numbers. Each pool should encompass the entire possible range, i.e., include all numbers from 0 to 999,999.

6.2.3 Responses to AIDC messages.

6.2.3.1 Application response.

6.2.3.1.1 With the exception of a LAM or LRM, every AIDC message received by an ATSU should be responded to with a LAM or LRM. This response is referred to as an "Application Response", and is generated automatically by the automation system. Each Application response has a message identification number (ODF 2), and is referenced to the original AIDC message using ODF 3 in the message header.

Comment [JB50]: ***COMMENT*---AW**
Current experience shows that there is inconsistency in LRM sending – i.e. what constitutes an "error". For example, our system sends a LAM if we receive a message that is syntactically correct, even if we cannot process it for some reason. Other systems send an LRM under the same circumstances.

***SUGGESTED CHANGE TO DOCUMENT*:**
Decide on a common standard that defines what constitutes an "error"

6.2.3.1.2 An ATSU receiving an AIDC message should transmit a LAM response when the received message is determined to be syntactically correct and the message has been forwarded for further processing or presentation. It is necessary to distinguish between a "syntactic" error and other errors that may occur (e.g. a miss spelt position name, or not having a flight plan etc)

6.2.3.1.3 If a LAM response is not appropriate, an LRM response should be transmitted.

6.2.3.1.4 While no LAM should be generated for a syntactically correct LRM, an ATSU may choose to respond to a syntactically incorrect LRM with an LRM.

6.2.3.1.5 The time out value T_{alarm} associated with an application response should typically be less than 180 seconds, measured from transmission time of the original message and may be specified by bi-lateral agreement. This time out value corresponds to the nominal value associated with the accountability timer described in Chapter 3, *Communications and Support Mechanisms*, para 3.22.2.

6.2.3.1.6 Failure to receive an expected application response within T_r seconds ($\leq T_{alarm}$) can optionally result in a re-transmission (up to a maximum number N_r) of the original message, using the same information contained in optional data fields 2 and 3 (if present) in the message header of the original AIDC message. If so, T_r should be reset upon re-transmission of the message.

6.2.3.1.7 Failure to receive an application response within T_{alarm} seconds from the transmission of the original AIDC message should result in a warning message being displayed to the controller. Receipt of an LRM should result in a warning message being displayed to the controller.

6.2.3.1.8 The transmission of an application response should be triggered by the ATC application process, not the communications process. This is because an application response indicates that the received message had been checked by the ATC application process(s), not just the communications functions. Note the distinction between an ATC application process, which is responsible for critical ATC functions such as Coordination or Transfer of Control and a communications process which is simply responsible for the reliable delivery of data, but not data interpretation.

6.2.3.1.9 Receipt of an LRM should cause the ATSU to take a corrective action before re-transmitting the rejected message, with a new message identification number. This action may be automatic, or manual.

6.2.3.2 Operational response.

6.2.3.2.1 Several AIDC messages require an Operational response in addition to the expected application response. Table 6-1 shows the required operational responses for Specific AIDC messages. AIDC messages not included in Table 6-1 have no operational response.

Table 6-1. Required Operational Response

Received Message	Required Operational Response
CPL	ACP or CDN*
EST	ACP
PAC	ACP
CDN*	ACP, CDN, or REJ
TOC	AOC

6.2.3.2.2 While an REJ is a valid response to a CDN message, it is not an appropriate response to a CDN that is a component of an Initial Coordination Dialogue initiated by a CPL message

6.2.3.2.3 Failure to receive an operational response within timeout period T_{op} should result in a warning message being displayed to the controller.

6.2.3.2.4 The value of T_{op} is dependent on whether manual processing is required to generate the operational response. In general, T_{op} should be less than 600 seconds when a manual action is required to trigger the operational response.

6.2.3.2.5 Each Operational response has a message identification number (ODF 2), and is referenced to the original AIDC message using ODF 3 in the message header. A coordination dialogue which is initiated by one message and contains a sequence of message exchanges until terminated by an ACP or REJ should always reference the original message which triggered the dialogue.

6.2.3.2.6 For example, C-ATSU may initiate a coordination dialogue by transmitting a CPL message to an D-ATSU. A sequence of CDN messages may be terminated by an ACP message. The CDN and ACP messages would all reference the original CPL message. After completion of the initial coordination dialogue in the preceding example one ATSU may initiate another coordination dialogue by transmitting a CDN message. A sequence of CDN messages may ensue terminated by an ACP message. Messages in this new coordination dialogue would reference the first CDN message in the dialogue. Santa Maria and New-York implementation supports this implementation until the dialog is closed. AW: Needs discussion

Comment [JB51]: TBD

6.2.4 **Application Management.**

6.2.4.1 Application management messages refers to Application responses (LAM and LRM, as previously described) status monitoring (ASM), and FANS data link connection transfer (FAN and FCN) capabilities.

6.2.4.2 Application Status Monitor (ASM)

6.2.4.2.1 The ASM message is used to confirm that the communication link between two ATS Units is on line, as well as confirming that the AIDC application of another ATS Unit is on-line. This message is sent by one ATSU to another if, after a mutually agreed time, no AIDC messages have been received from the other ATSU. An ATSU receiving an ASM message should respond with an appropriate application response.

6.2.4.2.2 Non receipt of a response to an ASM may indicate either a communication link failure or an ATC system failure. If an ATSU that has sent an ASM message does not receive an application response within a specified time, local contingency procedures should be executed.

6.2.4.2.3 The ASM message would normally be sent automatically, but may be sent manually for testing purposes..

6.2.4.2.4 <insert picture>

6.2.4.3 AW: Which ATSU sends the ASM?

6.2.4.4 **FANS Application Message (FAN)**

6.2.4.4.1 The FAN message may be used to transfer a data link-equipped aircraft's logon information from one ATSU to another. Implementation of this message is a replacement for the five step "Address Forwarding" process (initiated by the "Contact Request" (or FN_CAD)) that was developed for FANS-1/A. The FAN message contains all the information that is required for an ATSU to establish ADS-C and/or CPDLC connections with the aircraft.

6.2.4.4.2 In the event that only an ADS-C connection will be required, the ATSU transmitting the FAN message should include ADS-C information only. If a FAN message is transmitted containing ADS-C information only, there should be no expectation of receiving an FCN (see below) response. If a FAN message is received containing ADS-C application information only, there should be no attempt to establish a CPDLC connection.

6.2.4.4.3 Normally, one FAN message would be sent for each data link transfer per flight. However, when an FCN is received with a communication status field value of (1) indicating the D-ATSU is not the Next Data Authority the C-ATSU should send another NDA message to the aircraft and another FAN message to the D-ATSU to indicate that the NDA has been sent (refer to Figure 7-4). While the second FAN may not be required for address forwarding purposes it does provide the D-ATSU with a positive indication that another NDA has been sent to the aircraft.

6.2.4.4.4 ATSUs implementing the FAN message should consider retaining existing Address Forwarding functionality to be used as a contingency for data link transfers in the event of failure of the ground-ground link.

6.2.4.4.5 Similarly to Address Forwarding, the FAN message should be sent at a time parameter prior to the boundary with the D-ATSU. This parameter should be in accordance with guidance outlined in the ICAO Global Operational Data Link Document (GOLD). Functionality for the transmission of a FAN message manually by ATC should also be available.

6.2.4.5 Information concerning the identity of the aircraft (i.e. aircraft identification, aircraft address and registration) contained in the Application data field must not be extracted from the flight plan – it must be information that was contained in either the most recently received logon or FAN message.

Comment [JB52]: **AW**
Suggest a minor change to wording:

***SUGGESTED CHANGE TO DOCUMENT*:**
"…with the next ATSU. The timing of this ~~This~~ parameter should be in accordance with…"

Note. This requirement only applies to the aircraft identification within the Application data field of the FAN message. The aircraft identification (i.e. ATS Item 7a) at the beginning of the FAN message is the identification of the aircraft from the ATS flight plan.

6.2.4.5.1 When extracting the identity of the aircraft from the logon, the information required is the aircraft identification within the CRC protected portion of the logon – not the flight identifier (FI) that is contained in Line 4 of the ACARS logon message. In the example below, the aircraft identification is **QFA924** rather than the QF0924 contained in Line 4 of the ACARS message.

QU BNECAYA

.QXSXMXS 010019

AFD

FI QF0924/AN VH-EBA

DT QXT POR1 010019 J59A

- AFN/FMH**QFA924**, .VH-EBA,,001902/FPOS33373E150484,0/FCOADS, 01/FCOATC,01292B Take this example directly from the ICD

6.2.4.6 Under certain circumstances (e.g. FMC failure) it is possible for the SMI of an aircraft to change in flight, which will require a new logon from the aircraft to permit data link services to continue. To ensure that the next ATSU has up to date information, the SMI transmitted in any FAN message should be the SMI from the most recently received logon or FAN message.

6.2.4.7 A hyphen within the registration that was contained in either the logon or any previously received FAN message must also be included in the REG element of any transmitted FAN message. Without this hyphen, data link messages transmitted by the ATSU may not be delivered to the aircraft.

Note. ATSUs implementing the FAN message must be aware of the possible existence of the hyphen within the registration and that it does not signify a "new field" as is the case with other AIDC messages.

6.2.4.8 Any "padding" in the registration contained in the logon (e.g. preceding periods <.>s) must not be included in the FAN message. In the sample ACARS message above, the registration to be included in the FAN message would be "VH-EBA", not ".VH-EBA".

6.2.4.9 Some ATSUs may utilise the aircraft position which is an optional field that may be contained in the logon. If the aircraft position information element is to be included in any transmitted FAN message, there is little purpose in simply relaying the aircraft position from the original logon – the calculated position of the aircraft should be used instead.

6.2.4.10 The FCN message, where used, provides advice to the transferring ATSU that the receiving ATSU has established an (inactive) CPDLC connection with an aircraft. The transmission of an FCN message is triggered by an event such as the termination of a CPDLC Connection by the transferring ATSU, or the establishment of (or failure to establish) a CPDLC Connection by the receiving ATSU. FCN messages should only be transmitted when a CPDLC transfer is being effected – i.e. not for transfers involving aircraft that are only ADS-C equipped.

6.2.4.11 **Multiple FCN messages.**

6.2.4.11.1 The general philosophy for use of the FCN is that only a single FCN message is transmitted by each ATSU for each flight. Under normal conditions, changes in CPDLC status

Comment [JB53]: ***COMMENT*---AW**
Suggest a minor change to wording:

***SUGGESTED CHANGE TO DOCUMENT*:**

"Some ATS ground systems may use ~~ATSUs may utilise~~ the aircraft position, which is an optional field ~~that may be contained~~ in the logon. If the transferring ATSU includes the aircraft position ~~If the aircraft position information element is to be included~~ in any transmitted FAN message, ~~there is little purpose in simply relaying the aircraft position from the original logon~~ – the most recently calculated position of the aircraft should be used instead of simply relaying the aircraft position that may have been contained in the original logon."

after transmission of an FCN should not result in the transmission of another FCN (an exception to this is when a Connection request fails due to the receiving unit not being the nominated next data authority – see Table 6-2 below).

Table 6-2. FCN Transmission

ATSU transmitting FCN	When an FCN should be sent
Transferring ATSU	On receipt of a Disconnect Request terminating the CPDLC Connection
Receiving ATSU	On receipt of a Connection Confirm, establishing a CPDLC Connection
Receiving ATSU	On receipt of CPDLC downlink DM64 [ICAO facility designation], **Note.** This provides advice to the transferring ATSU to uplink an appropriate Next Data Authority message to the aircraft. And subsequently: On establishment of a CPDLC Connection
Receiving ATSU	Following initial failure of a CPDLC Connection request or a time parameter prior to the FIR boundary, if no CPDLC Connection has yet been established, whichever occurs later

Comment [JB54]: *COMMENT*---AW
Suggest adding CPD values to column 2 of the Table.

***SUGGESTED CHANGE TO DOCUMENT*:**
For example, in row 2, add "(CPD = 0)":

"On receipt of a Disconnect Request terminating the CPDLC Connection (CPD = 0)"

6.2.4.11.2 Procedures following a change to CPDLC Connectivity following the transmission of an FCN message should be described in local procedures (e.g. voice coordination), rather than by transmission of another FCN message.

6.2.4.11.3 Procedures for the notification of changes to the voice frequency after the transmission of an FCN message should be described in local procedures rather than via the transmission of another FCN message.

6.2.4.11.4 Sample flight threads involving FAN and FCN messages

6.2.4.11.5 The following diagrams show typical flight threads involving the FAN and FCN messages. Relevant uplink and downlink messages between the aircraft and the ATSU are also shown.

Comment [JB55]: **COMMENT: ---AW**
Suggest adding a new paragraph following 7.24.14.2 dealing with non-receipt of an FCN indicating a successful CPDLC transfer:

SUGGESTED CHANGE TO DOCUMENT:

"Non-receipt of an FCN (CPD = 0) by the receiving ATSU should prompt the receiving ATSU to ensure that they are current data authority"

Include a diagram

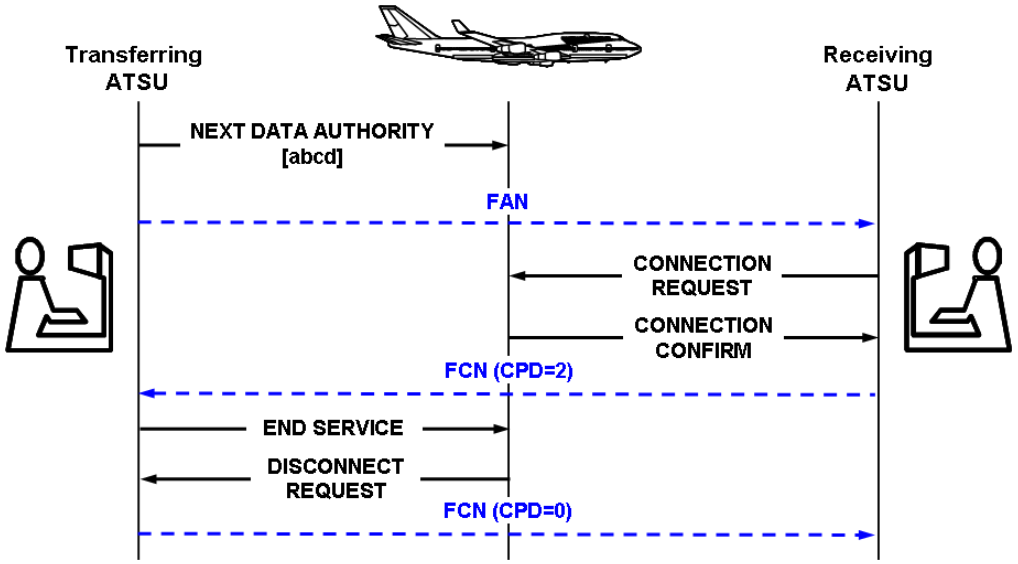


Figure 6-1. Routine Data Link Transfer Using FAN and FCN Messaging

6.2.4.11.6 Figure 6-1 shows a routine CPDLC transfer from one ATSU to the next. The first step in the transfer process is the uplinking of a CPDLC Next Data Authority message to the aircraft advising the avionics of the next centre that will be communicating with the aircraft via CPDLC. A FAN message is then sent to the next ATSU to provide them with the aircraft's logon information. The receiving ATSU then successfully establishes a CPDLC connection with the aircraft and transmits a 'successful' FCN (CPD = 2) back to the transferring ATSU. On termination of the CPDLC connection, the transferring ATSU transmits an FCN (CPD = 0) to the receiving ATSU.

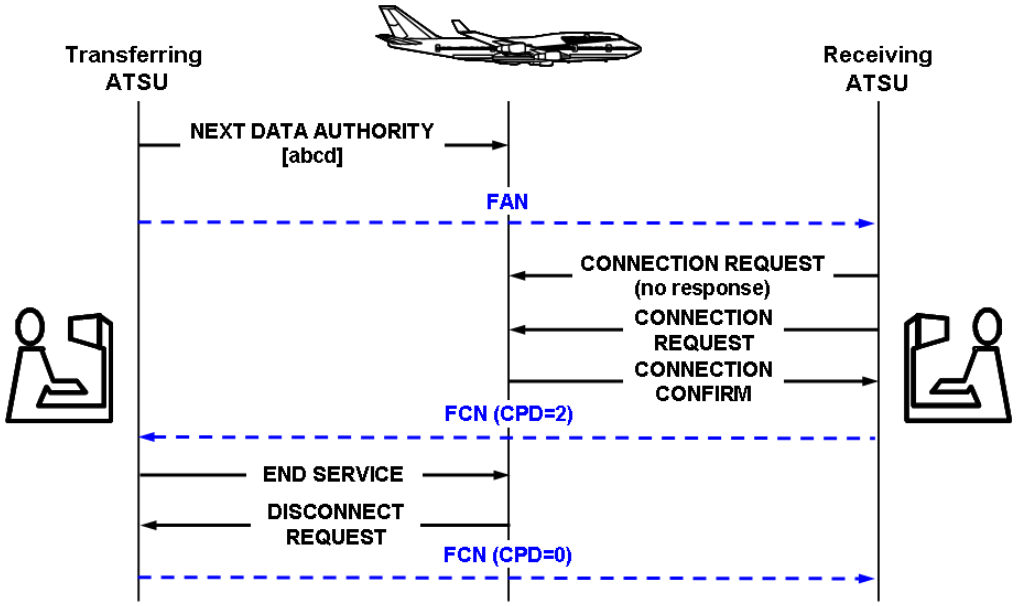


Figure 6-2 CPDLC Transfer Using FAN and FCN Messaging – Initial Connection Request Failed

6.2.4.11.7 Figure 6-2 shows a CPDLC transfer where there is no response by the avionics to the initial Connection Request uplinked by the receiving ATSU. A subsequent Connection Request is uplinked to the aircraft which is successful. Because the CPDLC connection is finally established prior to the 'time out' VSP before the FIR boundary, a successful FCN (CPD=2) is transmitted to the transferring ATSU. On termination of the CPDLC connection, the transferring ATSU transmits an FCN (CPD=0) to the receiving ATSU.

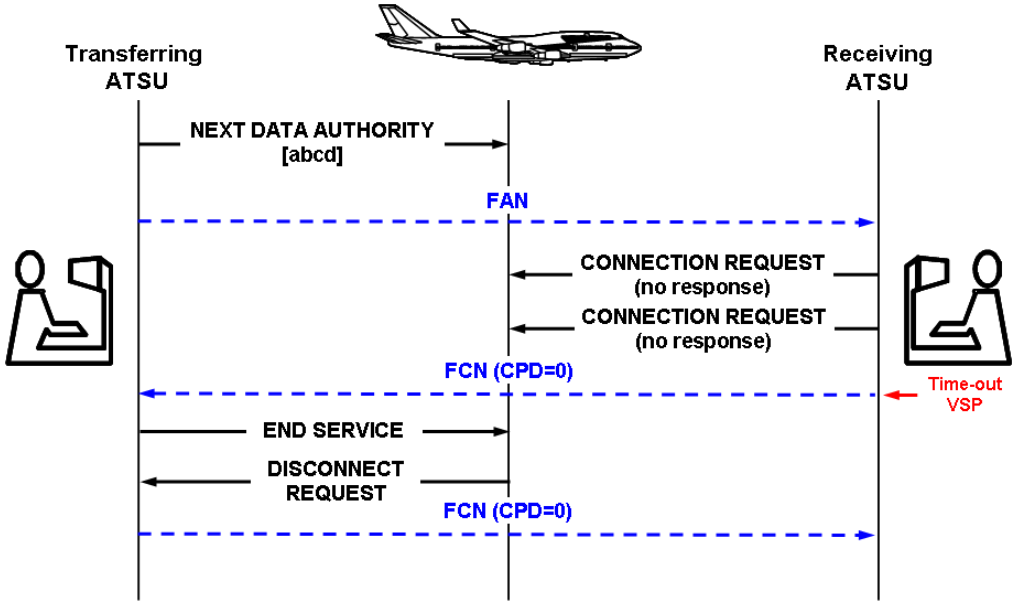


Figure 6-3 CPDLC Transfer Using FAN and FCN Messaging – Unable to Establish CPDLC Connection

6.2.4.11.8 Figure 6-3 shows an attempted CPDLC transfer where there is no response by the avionics to multiple CPDLC connection requests uplinked by the receiving ATSU before the 'time out' VSP prior to the FIR boundary. An unsuccessful FCN (CPD=0) is transmitted to the transferring ATSU. Letters of Agreement should describe the procedures to be followed in the event that the receiving ATSU establishes a CPDLC connection after this FCN has been transmitted. Even though the receiving ATSU has advised of their inability to establish a CPDLC connection, the transferring ATSU still transmits an FCN (CPD=0) when their CPDLC connection with the aircraft is terminated.

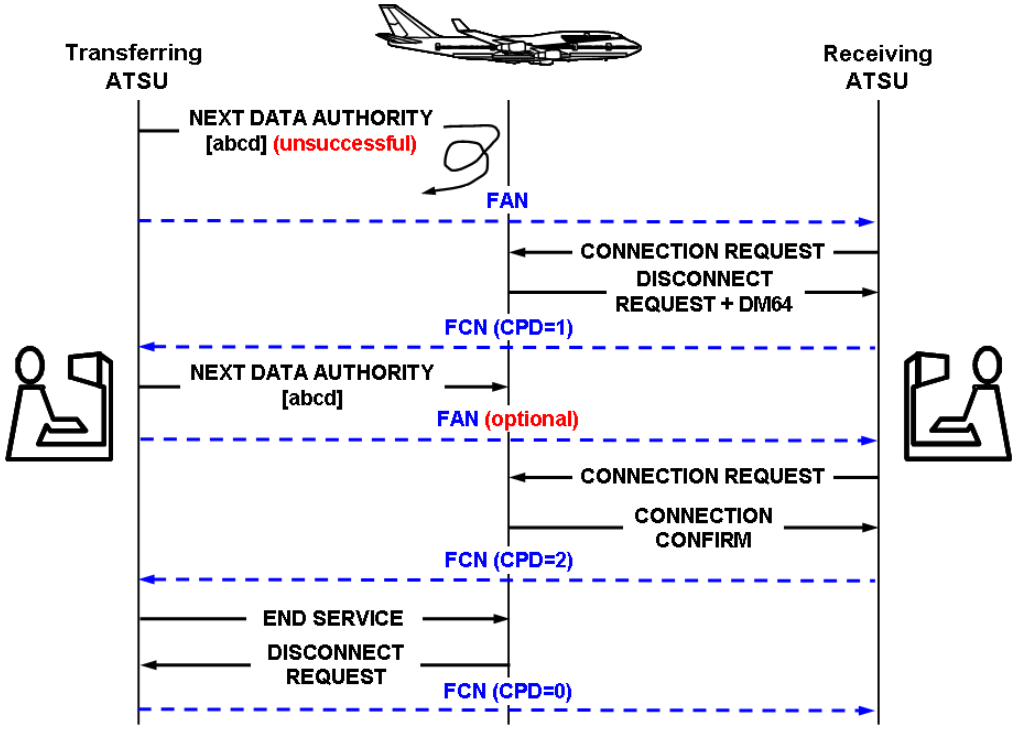


Figure 6-4 CPDLC Transfer Using FAN and FCN Messaging – Initial NDA not Delivered

6.2.4.11.9 Figure 6-4 shows a CPDLC transfer in which the original Next Data Authority message uplinked by the transferring ATSU is not delivered to the aircraft. An FCN (CPD=1) is transmitted by the receiving ATSU advising of the failure of their CPDLC Connection request. Another Next Data Authority message is uplinked to the aircraft. The transferring ATSU may send another FAN message after which the receiving ATSU successfully establishes a CPDLC connection. Because this occurs before the time out VSP prior to the FIR boundary, a successful FCN (CPD=2) is transmitted back to the transferring ATSU. On termination of the CPDLC connection, the transferring ATSU transmits an FCN (CPD=0) to the receiving ATSU.

6.3 AIDC Sequence

6.3.1 For each ATSU, a flight progresses through up to three separate states in the AIDC sequence. These states are Notification, Coordination, and Transfer of Control. There are also a number of transitional phases as the flight moves from one state to another.

6.3.1.1 xxx Need some words about different methods of coordination ABI/EST/ACP, CPL/ACP, PAC/ACP

6.3.2 **Notification State.**

6.3.2.1 At a parameter time or position prior to the FIR or ACI boundary, an ATSU transmits a Notification message for a flight which will enter another ATSU's airspace or its ACI. Receipt of an Application response places the flight into the Notification state.

6.3.2.2 During the Notification State, revised flight plan information should result in the transmission of an updated Notification message to the next ATSU.

6.3.3 Notification message.

6.3.3.1 The ABI message is used to provide notification of a flight. An ATSU transmits an ABI to other ATSUs with which it must coordinate the flight. The purpose of the ABI is to update the flight plan information held by the next ATSU. To prevent numerous superfluous ABIs being transmitted, revised estimates should not result in a new ABI unless the revised estimate has changed by more than a value specified in bi-lateral agreements..

6.3.4 Re-Route Notification.

6.3.4.1 If an aircraft has been re-routed, the revised route will be notified to all affected ATSUs as ABIs are transmitted from one ATSU to another.

6.3.5 Complete route to Destination.

6.3.5.1 Initially, an aircraft's route information is contained in the Route field of the Filed Flight Plan (FPL). As re-routes occur, the filed route must be updated by the C-ATSU, and transmitted to the next ATSU(s). To ensure the integrity of Route information being transmitted in AIDC messages requires the ATSU conducting the re-route to hold details of the complete route to destination. In cases where this is not possible, the route field should be terminated after the last known significant point with the ICAO truncation indicator, which is the letter "T".

6.3.6 Re-route to new destination.

6.3.6.1 The procedures described below apply when the notification and coordination of amended destinations has been included in bilateral agreements.

6.3.6.2 If an amendment to the destination aerodrome occurs **prior to** the transmission of the first ABI to an adjacent ATSU:

- Field 16 should contain the original destination of the aircraft; and,
- The Amended destination field should contain the new destination of the aircraft.

6.3.6.3 Subsequent AIDC messages should contain the new destination in Field 16, without reference to an amended destination.

6.3.6.4 If an amendment to the destination aerodrome occurs **after** the transmission of the first ABI to an adjacent ATSU, but before coordination has occurred, a new ABI should be transmitted.

- Field 16 should contain the original destination of the aircraft; and,
- Amended destination field should contain the new destination of the aircraft.

6.3.6.5 Subsequent AIDC messages should contain the new destination in Field 16, without reference to an amended destination.

6.3.6.6 The format of the Amended destination field should be one of the options described below:

- ICAO four-letter location indicator; or
- Name of the destination aerodrome, for aerodromes listed in Aeronautical Information Publications; or
- Latitude/Longitude in the format dd[NS]ddd[EW] or ddmm[NS]dddmm[EW]; or
- Bearing and distance from a significant point, using the following format:
    - The identification of the significant point, followed by
    - The bearing from the significantly point in the form of 3 figures giving degrees magnetic, followed by
    - The distance from the significant point in the form of 3 figures expressing nautical miles.

6.3.7 Coordination and the Area of Common Interest (ACI).

6.3.7.1 The ACI refers to a volume of airspace as agreed between two ATS Units, within which air traffic has an impact on both units. The size of the ACI is usually determined by the required separation minima of airspace that is located outside, yet within the tolerances of area of responsibility of an ATSU. These tolerances may vary between different environments, but in a procedural environment would generally be equal to the lateral separation minima being applied between aircraft.

6.3.7.2 An ATSU may be required to provide coordination on a flight if it enters the ACI of another ATSU, even if the flight does not enter that ATS Unit's airspace.

{Diagram}

In the example above, ATSU 1 may be required to provide coordination to ATSU 3, even though this flight does not enter ATSU 3's airspace. This is to ensure that appropriate separation can still be provided between aircraft that may be operating in proximity to, but not crossing, the FIR boundary of adjoining ATS Units.

Comment [AS56]: *Text related to "Coordination and the Area of Common Interest (ACI)" is duplicated. It is highlighted and needs to be re-organized.*

6.3.8 **Transfer of control State.**

6.3.8.1 This State covers Transfer of Control and Assumption of Control messages.

6.3.9 Transfer Dialogue.

6.3.9.1 The transferring ATSU transmits a TOC message to the receiving ATSU at an agreed position, level or time and the receiving ATSU responds with an AOC message. The receiving ATSU then becomes the controlling ATSU once a successful application response (LAM) for the AOC has been received.

6.3.10 Transfer of Control and the ACI.

6.3.10.1 If a flight enters an ATSU's ACI, but does not enter their airspace, under normal circumstances, no Transfer of Control to that ATSU will occur.

6.3.11 Notification Cancellation

6.3.11.1 Notification of a flight can be cancelled using a MAC message. Receipt of a MAC by an ATSU means that any Notification information previously received for the flight is no longer relevant. Filed flight plan information (and any modifications) should continue to be held, in accordance with local ATSU procedures.

6.3.12 **Coordination State.**

6.3.12.1 Coordination between adjacent ATSUs should occur when the flight will enter an ACI of D-ATSU. An initial coordination dialogue can be automatically initiated at a time or distance from the ACI boundary,, or it can be manually initiated as documented within a bi-lateral agreement. There are several types of coordination dialogues which occur, depending on where the aircraft is and what previous dialogues have occurred.

6.3.13 Initial Coordination Dialogue.

6.3.13.1 This coordination dialogue (or Abbreviated Initial Coordination dialogue) should be completed before later coordination dialogues are initiated. The C-ATSU transmits a CPL to the R-ATSU. The R-ATSU then responds with either an ACP, which signifies acceptance of the coordination conditions contained within the CPL, or a CDN which proposes a modification to the conditions contained in the CPL. If a CDN is the R-ATSU's response to the CPL, a sequence of CDNs may be exchanged between the two ATSUs. This dialogue is eventually terminated by the ATSU which last received a CDN transmitting an ACP to the other ATSU. Transmission of an ACP indicates that coordination conditions are mutually acceptable and an initial coordination has been achieved.

6.3.14 Abbreviated Initial Coordination Dialogue.

6.3.14.1 An Abbreviated Initial Coordination dialogue may be used in place of an Initial Coordination Dialogue when it is known *via bi-lateral agreements* (that a flight's coordination data is mutually acceptable to both the C-ATSU and R-ATSU, accurate route information is available at the R-ATSU (e.g., from either an ABI or FPL message), and both ATSUs have agreed to permit the use of this dialogue. The C-ATSU transmits an EST or PAC to the R-ATSU. The R-ATSU then responds with an ACP, which signifies acceptance of the coordination conditions (i.e., boundary crossing data) contained within the EST or PAC. Either this dialogue or a full (i.e., CPL-based) Initial Coordination dialogue should be successfully completed before any later coordination dialogues are initiated. Note that negotiation via CDNs is not permitted within this dialogue.

Comment [AS57]: *Text related to "Transfer of control" is duplicated. It is highlighted and needs to be re-organized.*

Comment [JB58]: **PLACEHOLDER – hemstitch flights. Statement of the issue.local solutions. Adam**

Comment [AS59]: *Not sure if "Notification Cancellation" should be mentioned under Notification State mentioned above.*

Comment [JB60]: **TBC Jose**

6.3.14.2 PAC is only used when coordination is required before departure. This normally only occurs when the FIR boundary is close to the departure airport. PAC signals to the R-ATSU that the departure is imminent as well as initiating coordination.

6.3.15 Re-Negotiation Dialogue.

6.3.15.1 This is an optional dialogue used to propose new coordination conditions after the initial dialogue has been completed. Either ATSU may initiate this dialogue by transmitting a CDN (in contrast to a CPL in the Initial Coordination Dialogue) to the other ATSU. The dialogue then proceeds with an exchange of additional CDNs as necessary. Either ATSU may terminate the dialogue in one of two ways: (1) with an ACP indicating that the coordination proposal contained in the latest CDN is acceptable; or (2) with an REJ indicating that the previously agreed upon coordination conditions remain in effect.

6.3.16 Active CDN.

6.3.16.1 For a given flight, only one CDN may be active between any pair of ATSUs. Note, however, that coordination between more than two ATSUs (for the same flight) may have a total number of active CDNs greater than one, though each pair of ATSUs is still restricted to a maximum of one active CDN per flight. In the exceptional (rare) case where a C-ATSU and D-ATSU both simultaneously transmit CDNs, the C-ATSU should transmit a REJ to the D-ATSU cancelling the D-ATSU's CDN.

6.3.17 CDNs Are Proposals.

6.3.17.1 Note that CDNs are only proposals; no changes are made in a flight's profile until an ACP is sent and acknowledged.

6.3.18 Use of CDN for alternative destinations

6.3.18.1 To ensure interoperability between ATSUs when using a CDN to propose a diversion to an alternative destination, the following procedures should be used:

6.3.18.2 The mandatory Field 16 should contain the original (i.e., the "current") destination aerodrome. The Amended Destination text field should contain the amended destination.

6.3.18.3 The format of the Amended destination field should be one of the options described below:

- ICAO four-letter location indicator; or
- Name of the destination aerodrome, for aerodromes listed in Aeronautical Information Publications; or
- Latitude/longitude in the format dd[NS]ddd{EW] or ddmm[NS]dddmm[EW]; or
- Bearing and distance from a significant point using the following format:
    - The identification of the significant point followed by
    - The bearing from the significant point in the form of 3 figures giving degrees magnetic followed by
    - The distance from the significant point in the form of 3 figures expressing nautical miles.

6.3.18.4 The mandatory Field 16 contained in the operational response (ACP, REJ, CDN) to a CDN that proposes an amended destination should contain the original (i.e. the "current") destination aerodrome.

6.3.18.4.1 Due to the complexities involved with maintaining multiple profiles for "current destination" vs. "amended destination" ATSUs should consider prohibiting (via bilateral agreement) an

operational response of CDN in any coordination renegotiation dialogues that contain an amended destination.

6.3.18.5 Provided that the proposed amendment is agreed to, all subsequent AIDC messages concerning this aircraft should contain the new destination in the mandatory Field 16.

6.3.19 Cleared Flight Profile Update.

6.3.19.1 The cleared flight profile (which is used for control purposes) should only be updated after successful completion of a coordination dialogue, i.e., an ACP has been sent and acknowledged. This will require temporarily storing a proposed flight profile undergoing coordination separate from the cleared flight profile. The cleared profile should then be updated using the newly coordinated profile upon successful completion of the coordination dialogue.

6.3.20 Automatic update of coordination conditions.

6.3.20.1 When included in bilateral agreements between ATSUs, changes to previously agreed coordination conditions may be coordinated by way of a TRU message. The intent of this message is to allow amendments to certain elements of an aircraft's clearance to be coordinated to an adjacent ATSU. In contrast to the CDN, there is no operational response to a TRU message – this message is used when there is agreement to what amendments can be made to an aircraft's clearance by the controlling ATSU after initial coordination has occurred without prior coordination.

6.3.20.2 Whilst a number of the elements that may be coordinated by TRU message may be more suited to an environment associated with an ATS Surveillance system (e.g. Heading, Direct to, etc.), other elements may be applicable in *any* ATS environment (e.g. Cleared Flight Level, Off track deviation, Speed, etc).

6.3.20.3 The TRU message makes use of the Track data field to provide updated clearance information to an adjacent ATSU. Track data may be used to update assigned heading, assigned level, off track clearance, assigned speed, or 'direct to' information.

6.3.20.4 When using the DCT/[position] element in the TRU message, [position] would normally be located on the flight planned route of the aircraft. Local procedures should specify the actions to be taken in the event that [position] is not on the flight planned route.

6.3.20.5 For the purpose of the TRU message, the format of [position] is one of the following:

- From 2 to 5 characters being coded designator assigned to an en-route point or aerodrome; or
- ddmm[NS]dddmm[EW]; or
- dd[NS]ddd[EW]; or
- 2 or 3 characters being the coded identification of a navigation aid followed by 3 decimal figures giving the bearing from the point in degrees magnetic followed by 3 decimal figures giving the distance from the point in nautical mile.

6.3.21 Coordination Cancellation.

6.3.21.1 Coordination can be cancelled using a MAC message. Receipt of a MAC by an ATSU means that any coordination data previously received for that flight is no longer relevant. Filed flight plan information (and any modification) should continue to be held in accordance with local ATSU procedures.

6.3.22 Coordination and the ACI.

Comment [AS61]: *Text related to "Coordination and the Area of Common Interest (ACI)" is duplicated. It is highlighted and needs to be re-organized*

6.3.22.1 ATSU A may need to coordinate with or provide information to ATSU B on all aircraft that enter ACI B, even if they do not enter FIR B. Consider the case of aircraft A in FIR A and aircraft B in FIR B, both flying near the FIR A – FIR B boundary, but never penetrating the other FIR's airspace. The maintenance of adequate separation between these two aircraft may require coordination between or the provision of information to adjoining ATSUs.

Comment [JB62]: REVISE WHEN NEW ACI TEXT IS READY

6.3.23 Transfer of control phase.

6.3.23.1 Transfer Dialogue.

6.3.23.1.1 This phase occurs when the C-ATSU is ready to relinquish control of the flight to the R-ATSU normally just before the FIR boundary crossing. The C-ATSU transmits a TOC message to the R-ATSU which responds with an AOC message. The R-ATSU then becomes the C-ATSU once an application response for the AOC has been received.

6.3.23.2 Transfer of Control and the ACI.

6.3.23.2.1 Note that the Transfer of Control process will not occur for all flights. Some flights fly near an FIR boundary, and may require coordination or the provision of other information, but do not actually enter the FIR

Comment [JB63]: `REVISE WHEN NEW ACI TEXT IS READY. ADD EXAMPLES

Comment [JB64]: PLACEHOLDER – hemstitch flights. Statement of the issue.local solutions. Adam

6.4 Flight state transitions

6.4.1 Notifying states.

6.4.1.1 Consider an aircraft that is currently within an FIR – FIR A – controlled by ATSU A (i.e. the C-ATSU) progressing towards the next FIR, FIR B (i.e. the R-ATSU). The aircraft is several hours from the boundary between the two FIRs. The flight is initially in a Pre-Notifying state from ATSU B's perspective. ATSU B usually will have previously received a Filed Flight Plan (an FPL message) possibly with later amendments (as contained in CHG messages). ATSU A will employ a Notification dialogue to transfer information to ATSU B. (This transfer occurs at either a system parameter time (e.g. 60 minutes), or distance prior to the flight crossing the FIR A – FIR B boundary.) This places the flight in a Notifying state from ATSU B's perspective. Additional Notification dialogues may be invoked by ATSU A as needed to inform ATSU B of flight changes. If the aircraft for some reason, such as a change in route, is no longer expected to penetrate ACI B, ATSU A sends a MAC message to ATSU B causing the flight to be placed back in Pre-Notifying state from ATSU B's perspective.

6.4.2 Initial coordination states.

6.4.2.1 An Initial Coordination Dialogue is employed to effect the initial coordination. ATSU A transmits a CPL to ATSU B when the aircraft is at a mutually agreed upon predetermined time (e.g. thirty minutes) or distance (e.g., 60nm) from the FIR A – FIR B boundary. The flight is now in Negotiating state from both ATSU A's and ATSU B's perspectives. ATSU B can accept the conditions specified in the CPL "as is" by transmitting an ACP message to ATSU A, or it can propose modifications using the CDN message. Negotiations between the two ATSUs are carried out using the CDN until a mutually acceptable flight profile is achieved. This acceptance is signaled by one ATSU sending an ACP, as before, to the other ATSU. This establishes the initial coordination conditions. From the perspective of both ATSUs the flight is now in a Coordinated state.

6.4.2.2 For an Abbreviated Initial Coordination, ATSU A transmits an EST to ATSU B when the aircraft is at a mutually agreed upon predetermined time (e.g. thirty minutes) or distance from FIR A –

FIR B boundary. The flight is now in a Coordinating state. ATSU B responds with an ACP which places the flight in a coordinated state. This sequence of messages corresponds to an Abbreviated Initial Coordination Dialogue.

6.4.3 Re-negotiation states.

6.4.3.1 On occasions it may be necessary to open a coordination negotiation dialogue after initial coordination has been completed. A coordination negotiation dialogue is used to effect profile or other changes to flight plan information. The dialogue is opened when one ATSU (either A or B) transmits a CDN to the other ATSU causing the flight to be in a Re-Negotiating state. A CDN can be replied to with a CDN which proposes another alternative.. The dialogue is closed when an ACP or REJ is received. An ACP closes the dialogue with a new mutually agreed upon flight profile. An REJ however, immediately terminates the dialogue with the previously accepted coordination conditions remaining in effect. Any proposed changes are null and void. Transmission of an ACP or REJ places the flight back into the coordinated state.

6.4.3.2 For a given flight, only one CDN may be active between any pair of ATSUs. Note, however, that coordination between more than two ATSUs (for the same flight) may have a total number of active CDNs greater than one, though each pair of ATSUs is still restricted to a maximum of one active CDN.

6.4.4 Transfer states.

6.4.4.1 Transfer of control is supported by the TOC and AOC messages. ATSU A sends a TOC to ATSU B when the aircraft is about to cross the boundary. Alternatively, ATSU A can send a TOC when it is ready to relinquish control even if the aircraft will remain in FIR A airspace several minutes before entering FIR B. The flight is now in a Transferring state from both ATSU A's and ATSU B's perspectives. ATSU B responds by transmitting an AOC to ATSU A signaling acceptance of control responsibility. The flight is now in a Transferred state from ATSU A's perspective.

6.4.4.2 The aircraft has now entered FIR B, and is under the control of ATS Unit B, progressing towards the next FIR, FIR C. The same process described above is repeated between ATS Units B and C.

6.4.4.3 No changes to the flight profile may be made while in the ACI without mutual agreement between ATS Units A and B. If a flight has entered FIR B, and either ATS Unit A or B desires a change in the coordination conditions, negotiation must occur using CDNs. This negotiation is terminated with either an ACP or REJ.

6.4.5 Backward Re-Negotiating state.

6.4.5.1 A flight's profile may occasionally require changes after Transfer of Control has been completed, but the aircraft is still within ATSU A's ACI. A Re-Negotiating dialogue is employed to effect profile changes after transfer has been completed. This places the flight in a Backward Re-Negotiating State from both ATSU's perspectives. Completion of this dialogue returns the aircraft to the Transferred state.

6.4.6 Flight state

6.4.6.1 Several flight states are identified in the above description. These states are listed in Table 6-3.

Table 6-3. Flight States

Flight State
Pre-Notifying
Notifying
Negotiating
Coordinating
Coordinated
Re-Negotiating
Transferring
Transferred
Backward Re-Negotiating Backward- Coordinating

6.4.6.2 A description of the allowable flight state transitions along with the message event that triggers the transitions is given in Table 6-4.

Table 6-4. Flight State Transitions

State Transition	Message Trigger	Description
Pre-Notifying/ Notifying	ABI	An ABI begins the Notification phase.
Notifying/ Notifying	ABI	Following any changes made to a flight, a subsequent ABI is sent to update the information a downstream ATSU maintains.
Notifying/ Pre-Notifying	MAC	A flight that was expected to enter a downstream ATSU's ACI will no longer do so.
Notifying/ Negotiating	CPL	A CPL is used to initiate the coordination process for an aircraft that will enter the downstream ATSU's ACI.
Notifying/	EST	An EST is used to initiate an Abbreviated

State Transition	Message Trigger	Description
Coordinating		Coordination process for an aircraft that will enter the downstream ATSU's ACI.
Notifying/ Coordinating	PAC	A PAC is used to initiate an Abbreviated Coordination process for an aircraft not yet airborne that will enter the downstream ATSU's ACI.
Negotiating/ Negotiating	CDN	If the downstream ATSU cannot accept the current clearance (and boundary crossing conditions), a Negotiation process is carried out using CDNs.
Negotiating/ Coordinated	ACP	The negotiation process is terminated when one ATSU signals its acceptance of the coordination conditions using an ACP.
Coordinating/ Coordinated	ACP	The Abbreviated Coordination dialogue is terminated by the receiving ATSU transmitting an ACP.
Coordinated/ Re-Negotiating	CDN	A coordination negotiation dialogue can be opened at any time after the initial coordination and before the initiation of the transfer of control procedure.
Re-Negotiating/ Re-Negotiating	CDN	A CDN counter-proposal to a previous CDN.
Re-Negotiating/ Coordinated	ACP REJ	An ACP terminates a coordination negotiation dialogue with a new mutually agreed upon profile in effect. An REJ immediately terminates the dialogue with the coordination conditions remaining as previously agreed.
Coordinated/ Coordinated	TRU	A TRU may be sent by the controlling ATSU after the initial coordination dialogue has been completed to update previously agreed coordination conditions.
Coordinated/ Pre-Notifying	MAC	A flight that was expected to enter a downstream ATSU's ACI will no longer do so.
Coordinated/ Transferring	TOC	A TOC is sent after coordination occurs. The TOC informs the accepting ATSU that it now has control authority for the aircraft

State Transition	Message Trigger	Description
Transferring/ Transferred	AOC	The formerly downstream ATSU is now the controlling ATSU.
Transferred/ Backward- Re-Negotiating	CDN	A coordination negotiation dialogue can be opened at any time after the transfer of control procedure while the aircraft is still within the ACI of the previous ATSU.
Backward- Re-Negotiating/ Backward- Re-Negotiating	CDN	A CDN counter-proposal to a previous CDN..
Backward- Re-Negotiating/ Transferred	ACP REJ	An ACP terminates a backward coordination dialogue with a new mutually agreed upon profile in effect. An REJ immediately terminates the dialogue with the coordination conditions remaining as previously agreed.

6.4.6.3 A flight state transition diagram is shown in Figure 6-5. This diagram depicts graphically how the flight transitions from one state to the next. It can be seen that the AIDC messages act as triggers forcing the necessary state transitions

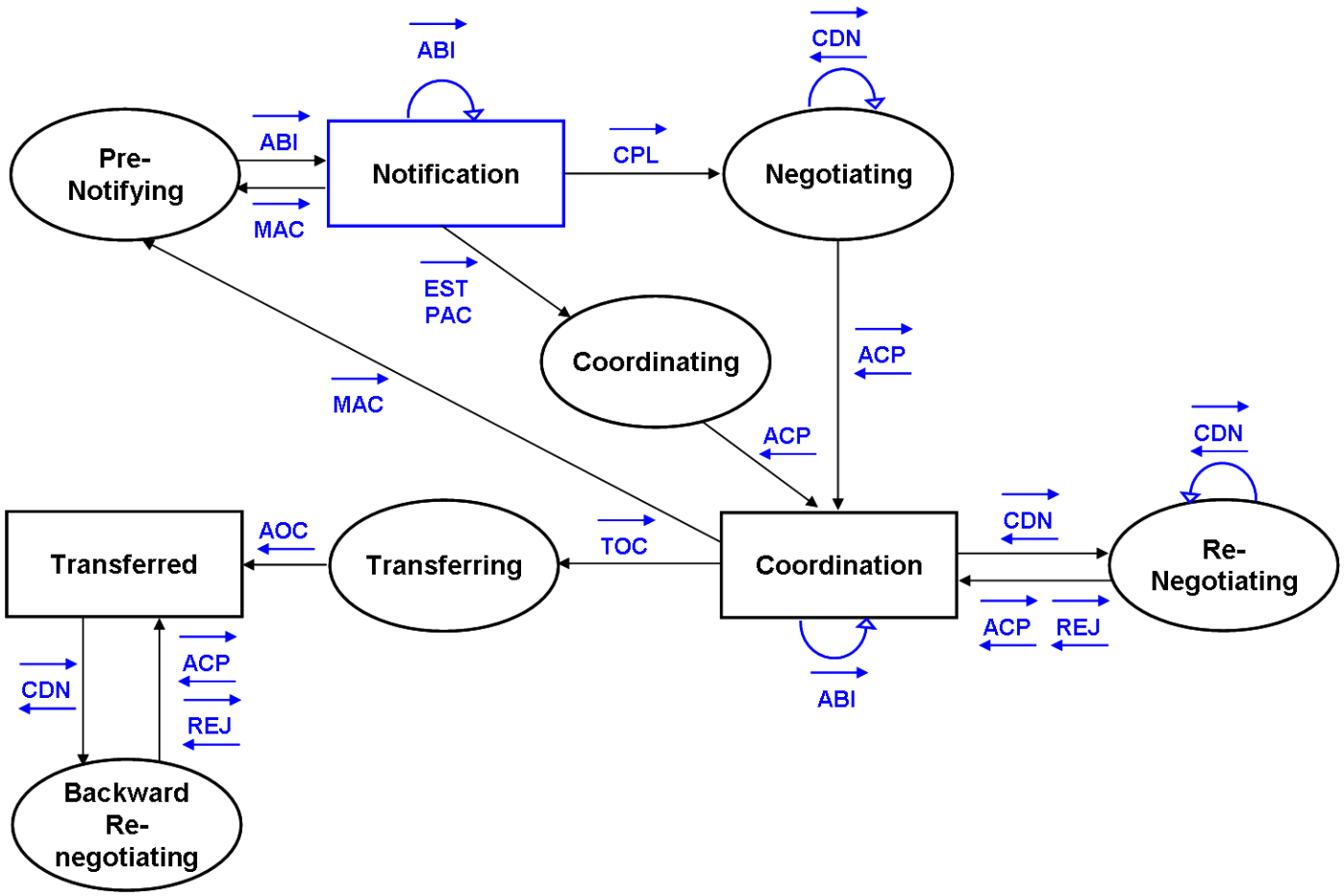


Figure 6-5 Flight State Transition Diagram

Table 6-5. Flight State Transitions

State Transition	Message Trigger	Description
Pre-Notifying/ Notifying	ABI	An initial ABI begins the Notification phase. An ABI updates the information a downstream ATS Unit maintains on a flight that is expected to enter its ACI at some future time. This data can be sent hours in advance of the actual entry.
Notifying/ Notifying	ABI	An ABI updates the information a downstream ATSU maintains on a flight that is expected to enter its ACI at some future time. This data can be sent hours in advance of the actual entry.
Notifying/ Pre-Notifying	MAC	A flight that was expected to enter a downstream ATSU's ACI will no longer do so.
Notifying/ Negotiating	CPL	A CPL is used to initiate the coordination process for an aircraft that will enter the downstream ATSU's ACI. A CPL contains the current clearance to destination landfall.
Notifying/ Coordinating	EST	An EST is used to initiate an Abbreviated Coordination process for an aircraft that will enter the downstream ATSU's ACI.
Notifying/ Coordinating	PAC	A PAC is used to initiate an Abbreviated Coordination process for an aircraft not yet airborne that will enter the downstream ATSU's ACI.
Notifying/Negotiating/ Negotiating	CDN	If the downstream ATSU does not accept the current clearance (and boundary crossing conditions), a Negotiation process is carried out using CDNs.
Negotiating/ Coordinated	ACP	The negotiation process is terminated when one ATSU signals its acceptance of the coordination conditions using an ACP.
Negotiating/Coordinating/ Coordinated	ACP	The Abbreviated Coordination dialogue is terminated by the receiving ATSU transmitting an ACP.
Coordinated/ Re-Negotiating	CDN	The coordination dialogue can be re-opened at any time after the initial coordination and before the initiation of the transfer of control procedure.
Re-Negotiating/	CDN	Either ATSU may attempt to change the previously agreed

Comment [ATO65]: **APAC ICD, APPENDIX D, TABLE D-4 – NAT ICD, APPENDIX C, TABLE 2**
Procedures material from the Asia/Pacific Regional ICD for AIDC is highlighted in green.
Procedures material from the North Atlantic Common Coordination ICD is highlighted in blue.
Procedures material contained in both the NAT ICD and APAC ICD is not highlighted.

Comment [AS66]: ***Not sure if this table should be here. There appear to be a repetition – but at the same time, there are some differences as well in text from the table 6-4 placed couple of pages back. Needs attention for which table is correct and to be retained.***

State Transition	Message Trigger	Description
Re-Negotiating		upon coordination conditions any time after the initial coordination dialogue has been completed.
Re-Negotiating/ Coordinated	ACP REJ	An ACP terminates a re-negotiation dialogue with a new mutually agreed upon profile in effect. An REJ immediately terminates the dialogue with the coordination conditions remaining as previously agreed (which is usually, but not necessarily the initial coordination conditions).
Coordinated/ Coordinated	TRU	A TRU may be sent by the controlling ATSU after the initial coordination dialogue has been completed to update previously agreed coordination conditions.
Coordinated/ Transferring	TOC	A TOC is sent after coordination occurs bur but (usually just) before the boundary is crossed to the accepting ATSU. The TOC informs the accepting ATSU that it now has control authority for the aircraft
Coordinated/ Pre-Notifying	MAC	A flight that was expected to enter a downstream ATSU's ACI will no longer do so.
Transferring/ Transferred	AOC	The formerly downstream ATSU is now the controlling ATSU.
Transferred/ Backward-Re-Negotiating Transferred/Backward-Coordinating	CDN	An attempt is made (by either the previous or new controlling ATSU) to change the coordination conditions while the aircraft is near the common boundary
Backward-Re-Negotiating/ Backward-Re-Negotiating Backward-Coordinating/Backward-Coordination/Coordinating	CDN	Either ATSU may propose changes to attempt to change the previously agreed upon coordination conditions any time after transfer of control has been completed, but while the aircraft remains in the common boundary region.
Backward-Re-Negotiating/ Transferred	ACP REJ	Similar to a Re-Negotiation/Coordinated state. An ACP terminates a backward coordination dialogue with a new mutually agreed upon profile in effect. An REJ immediately terminates the dialogue with the coordination conditions

State Transition	Message Trigger	Description
Backward-Coordinating/Transferred		remaining as previously agreed (which is usually, but not necessarily the initial coordination conditions).

6.5 Message sequencing

Comment [ATO67]: APAC ICD, APPENDIX D, PARA 5 – NAT ICD, APPENDIX C, PARA 4

6.5.1 In this section, a table of two-message sequences is constructed as shown in Table 6-6. The Table identifies the allowable messages (the next message column) that may correctly follow or be received after the message in the first column. Application Management Messages LAM and LRM are not shown but must be sent in response to any received Notification, Coordination or Transfer of Control.

Table 6-6. Message Sequences

Comment [ATO68]: APAC ICD, APPENDIX D, TABLE D-5 – NAT ICD, APPENDIX C, TABLE 3
Procedures material from the Asia/Pacific Regional ICD for AIDC is highlighted in green.
Procedures material from the North Atlantic Common Coordination ICD is highlighted in blue.
Procedures material contained in both the NAT ICD and APAC ICD is not highlighted.

Received Message	Next Valid Message
Notification and Negotiation Sequences	
ABI	ABI
	MAC
	CPL
	EST
Negotiation and Coordination Sequences	
CPL	ACP
	CDN
EST	ACP
PAC	ACP
CDN	ACP
	CDN
	REJ Only permissible if the flight has previously been in a coordinated state
TRU	CDN

Received Message	Next Valid Message
	TOC
	TRU
	MAC
ACP	CDN
	TRU
	TOC
	MAC
REJ	CDN
	TOC
	MAC
Transfer of Control Sequence	
TOC	AOC
AOC	CDN

6.5.2 Table 6-7 lists the AIDC messages which are valid for each state. The ATSU which can transmit the message is also identified.

Table 6-7. **Valid Messages by ATSU and flight states**

Flight State	Message	Sent by
Notifying	ABI	Upstream ATSU
Notifying	MAC	Upstream ATSU
Notifying	CPL	Upstream ATSU
Notifying	EST	Upstream ATSU
Notifying	PAC	Upstream ATSU
Negotiating	CDN	Either ATSU

Comment [ATO69]: APAC ICD, APPENDIX D, PARA 5.2 – NAT ICD, APPENDIX C, PARA 4.2

Comment [ATO70]: APAC ICD, APPENDIX D, TABLE D-6 – NAT ICD, APPENDIX C, TABLE 4
Procedures material from the Asia/Pacific Regional ICD for AIDC is highlighted in green.
Procedures material from the North Atlantic Common Coordination ICD is highlighted in blue.
Procedures material contained in both the NAT ICD and APAC ICD is not highlighted.

Comment [JB71]: Comment from ??
SUGGESTED CHANGE TO SWAP THE SECOND AND THIRD COLUMNS.

Flight State	Message	Sent by
Negotiating	ACP	Either ATSU
Coordinating	ACP	Downstream- ATSU
Coordinated	CDN	Either ATSU
Coordinated	TRU	Upstream ATSU
Coordinated	TOC	Controlling ATSU
Coordinated	MAC	Upstream ATSU
Re-Negotiating	CDN	Either ATSU
Re-Negotiating	ACP	Either ATSU
Re-Negotiating	REJ	Either ATSU
Transferring	AOC	Downstream ATSU
Transferred	CDN	Either ATSU
Backward-Re-Negotiating	CDN	Either ATSU
Backward-Re-Negotiating	ACP	Either ATSU
Backward-Re-Negotiating	REJ	Either ATSU

Comment [JB71]: Comment from ?? SUGGESTED CHANGE TO SWAP THE SECOND AND THIRD COLUMNS.

6.6 Other messages

6.6.1 The previous sections have discussed the use of Notification, Coordination, Transfer of Control, and Application Management messages. There are two remaining message subgroups in the AIDC messages: (1) General Information messages; and (2) Surveillance Data Transfer messages. All messages within these two subgroups require an application response; no operational response is defined.

6.6.2 General information messages.

6.6.2.1 EMG and MIS Messages.

Comment [ATO72]: APAC ICD, APPENDIX D, PARA 6 – NAT ICD, APPENDIX C, PARA 5

Comment [ATO73]: APAC ICD, APPENDIX D, PARA 6.0 – NAT ICD, APPENDIX C, PARA 5

Comment [ATO74]: APAC ICD, APPENDIX D, PARA6.1 – NAT ICD, APPENDIX C, PARA 5.2

Comment [ATO75]: APAC ICD, APPENDIX D, PARA 6.1.1 – NAT ICD, APPENDIX C, PARA 5.2.1

6.6.2.1.1 These messages support the exchange of text information between ATSUs. A communicator (usually a person, but a computer or application process is also permitted) in one ATSU can send a free text message to a functional address at another ATSU. Typical functional addresses could be an area supervisor or an ATC sector. The EMG should have an AFTN emergency priority (SS).

Comment [ATO76]: APAC ICD, APPENDIX D, PARA 6.1.1

6.6.3 Surveillance data transfer messages.

Comment [r77]: APAC ICD, APPENDIX D, PARA 6.2

6.6.3.1 The ADS message is used to transfer data contained within an ADS-C report including optional ADS-C groups to an adjacent ATSU.

Comment [r78]: APAC ICD, APPENDIX D, PARA 6.2

6.6.3.2 The ADS message contains a text field – the ADS-C data field – which contains information from the ADS-C report in its original hexadecimal format. The ADS-C data field consists of the text that immediately follows the "ADS" IMI (but excluding the 4 character CRC) within the application data portion of the ADS-C report.

Comment [r79]: APAC ICD, APPENDIX D, PARA 6.2.1

6.6.3.3 The following example shows an encoded ACARS ADS-C report – as it would be received by an ATSU – as well as an example of what information from this report would be transferred into the corresponding ADS-C data field. The ATSU receiving the AIDC ADS message simply decodes the ADS-C data field and extracts the data that is required by the ATSU.

Comment [r80]: APAC ICD, APPENDIX D, PARA 6.2.2

Comment [ATO81]: APAC ICD, APPENDIX D, PARA 6.2.2 Example

ACARS ADS-C report	QU BNECAYA .QXSXMXS 011505 PAR FI NZ0090/AN ZK-OKC DT QXT POR1 011505 F59A - ADS.ZK-OKC030007FF946B6F6DC8FC044B9D0DFC013B80DA88F COA64F9E4438B4AC8FC000E34D0EDC00010140F3E8660F3
ADS-C data field	ADS/.ZK-OKC030007FF946B6F6DC8FC044B9D0DFC013B80DA88FC0A64F9E4438B4AC8FC000E34D0EDC00010140F3E86

Note. Because it is part of the 7 character registration field the leading "." must be retained in front of the registration (".ZK-OKC"). The 4 character CRC ("60F3") at the end of the ACARS message is not included in the ADS-C data field.

Comment [ATO82]: APAC ICD, APPENDIX D, PARA 6.2.2 Note

6.6.3.4 The types of ADS-C reports (i.e. periodic or event) transmitted by the AIDC ADS message should be in accordance with bilateral agreements. When implementing the AIDC ADS message, ATSUs should consider the effect of relaying numerous ADS-C periodic reports via ground-ground links (e.g. AFTN) when a high periodic reporting rate is in effect.

Comment [r83]: APAC ICD, APPENDIX D, PARA 6.2.3

6.6.3.5 The AIDC ADS message is used to transfer ADS-C information only. Other messaging protocols exist for the transfer of ADS-B information.

Comment [r84]: APAC ICD, APPENDIX D, PARA 6.2.3, NOTE

6.6.3.6 While the AIDC ADS message may be used to transfer ADS-C information, this data may also be transferred using the ACARS ground-ground network by re-addressing the received ADS-C message to the other ATSU. States should agree on the method to be used on a bilateral basis.

Comment [r85]: APAC ICD, APPENDIX D, PARA 6.2.3, NOTE

Example: Brisbane ATSU (BNECAYA) receives an ADS-C downlink via the ACARS network from its Data link Service Provider SITA (QXSXMXS)

QU BNECAYA

.QXSXMXS 011505

PAR

FI NZ0090/AN ZK-OKC

DT QXT POR1 011505 F59A

- ADS.ZK-OKC0300FF946B6F6DC8FC044B9D0DFC013B80DA88FC0A64F9E4438B4AC8FC00

0E34D0EDC00010140F3EE8660F3

Brisbane re-addresses the downlink and forwards to Auckland via the ACARS ground-ground network:

QU AKLCBYA

.BNECAYA 011505

PAR

FI NZ0090/AN ZK-OKC

DT QXT POR1 011505 F59A

- ADS.ZK-OKC0300FF946B6F6DC8FC044B9D0DFC013B80DA88FC0A64F9E4438B4AC8FC00

0E34D0EDC00010140F3EE8660F3

6.7 Examples

6.7.1 Standard coordination: The following section contains several examples illustrating the use of the AIDC Message set. No Application Management messages are shown.

6.7.1.1 Brisbane transmits a notification message (ABI) to Auckland prior to the time that QFA108 is expected to cross the FIR boundary (1209). The destination of the flight is Christchurch.

6.7.1.2 The abbreviated coordination message (EST) is transmitted by Brisbane thirty minutes prior to the boundary estimate (which is now 1213). Auckland accepts the proposed coordination conditions by responding with an ACP.

6.7.1.3 Brisbane transfers ATC responsibility approaching the FIR boundary by transmitting a TOC. Auckland accepts ATC responsibility by responding with an AOC.

6.7.1.4 The timing of the transmission of these messages is defined in bilateral agreements between the two ATS units.

Example Standard coordination

ATSU Transmitting AIDC Message

Comment [ATO86]: APAC ICD, APPENDIX D, PARA 6.2.3 Example

Comment [r87]: APAC ICD, APPENDIX D, PARA 7 – NAT ICD, APPENDIX C, PARA 6

Comment [KD88]: *All examples should be checked against ICAO FPL 2012. Check within the entire document.*

Comment [KD89]: *Construct examples that alternate using each ICAO Region, instead of having separate tables and explanations for each Region.*

Comment [r90]: APAC ICD, APPENDIX D, PARA 7.1 – NAT ICD, APPENDIX C, PARA 6.1

Comment [r91]: APAC ICD, APPENDIX D, PARA 7.1.1

Comment [KD92]: *Re-word with generic words.*

Comment [r93]: APAC ICD, APPENDIX D, PARA 7.1.2

Comment [KD94]: *Generic words to cover this section.*

Comment [r95]: APAC ICD, APPENDIX D, PARA 7.1.3

Comment [ATO96]:

Comment [r97]: APAC ICD, APPENDIX D, PARA 7.1.3, NOTE

Comment [r98]: APAC ICD, APPENDIX D, PARA 7.1.3, Example 1

Brisbane	*Auckland*
(ABI-QFA108-YBBN-33S163E/1209F350 -NZCH-8/IS-9/B744/H-10/SDHIWRJ -15/M084F350 35S164E 36S165E…)	
(EST-QFA108-YBBN-33S163E/1213F350-NZCH)	
	(ACP-QFA108-YBBN-NZCH)
(TOC-QFA108-YBBN-NZCH)	
	(AOC-QFA108-YBBN-NZCH)

Comment [KD99]: *Update to reflect FPL 2012*

6.7.1.5 Santa Maria Oceanic Area Control (OAC) informs New York OAC several hours in advance that flight TAP001 is expected to cross the Santa Maria FIR boundary into the New York FIR at approximately 1209 PM (ABI). The flight will continue on to San Juan, Puerto Rico.

6.7.1.6 Coordination between Santa Maria OAC and New York OAC occurs approximately twenty minutes before the expected boundary crossing time, which has been revised to 1213 PM (CPL). New York OAC accepts the coordination conditions without modification (ACP).

Comment [KD100]: *Reword with generic words to cover this discussion.*

6.7.1.7 Santa Maria OAC transfers ATC responsibility near the boundary (TOC). New York OAC accepts ATC responsibility by responding with an AOC.

Comment [r101]: NAT ICD, APPENDIX C, PARA 6.1.3, Example 1

Example Standard coordination

ATSU Transmitting AIDC Message	
Santa Maria OAC	*New York OAC*
(ABI-TAP001-LPPT –34N040W/1209F350 –TJSJ-8/IS-9/B744/H-10/D1J2RSW/SB2 –15/M082F35027N050W 24N055W 22N060W 19N065W SJU) (CPL-TAP001-IS-B744/H-SW/SB2-LPPT- -34N040W/1213F350-M082F350 27N050W 24N055W 22N060W 19N065W SJU-TJSJ-PBN/A1)	(ACP-TAP001-LPPT-TJSJ)

Comment [ATO102]: NAT ICD new v1.2.9 - *ABI example: B747 is no longer a valid type designator; changed to B744; added RVSM qualifier in 10a, transponder qualifier in 10b; corrected lat/long and added a space before 27N removed space before 34N.In CPL example: B747 is no longer a valid type designator; changed to B744; added RVSM qualifier in 10a, transponder qualifier in 10b; removed space before 34N; corrected lat/long in field 15.*

Comment [ATO103]: NAT ICD new v1.3.0 - *ABI and CPL: realistic equipage for an aircraft on a transatlantic flight should include "R" in field 10a, indicating PBN capability. CPL example shows PBN/ indicator in field 18, making the example more relevant to 2012 changes. Updating 10b to reflect advanced surveillance equipment is useful in showing the new letter/number codes.*

(TOC-TAP001-LPPT-TJSJ)	(AOC-TAP001-LPPT-TJSJ)

Comment [KD104]: *Discuss the use of arrow.*

6.7.2 Negotiation of coordination conditions.

6.7.2.1 Brisbane transmits a notification message (ABI) to Auckland forty five minutes prior to the time that QFA56 is expected to cross the FIR boundary (1209). The destination of the flight is Christchurch.

6.7.2.2 The coordination message (CPL) is transmitted by Brisbane thirty minutes prior to the boundary estimate (which is now 1213).

6.7.2.3 Auckland responds with a negotiation message (CDN) requesting a change in the boundary crossing altitude to F390. Brisbane responds with an ACP indicating that the revised altitude is acceptable.

6.7.2.4 Brisbane transfers ATC responsibility approaching the FIR boundary by transmitting a TOC. Auckland accepts ATC responsibility by responding with an AOC.

6.7.2.5 The timing of the transmission of these messages is defined in bilateral agreements between the two ATS units.

Comment [ATO105]: APAC ICD, APPENDIX D, PARA 7.2 – NAT ICD, APPENDIX C, PARA 6.2

Comment [ATO106]: APAC ICD, APPENDIX D, PARA 7.2.1

Comment [ATO107]: APAC ICD, APPENDIX D, PARA 7.2.2

Comment [ATO108]: APAC ICD, APPENDIX D, PARA 7.2.3

Comment [ATO109]: APAC ICD, APPENDIX D, PARA 7.2.4

Comment [ATO110]: APAC ICD, APPENDIX D, PARA 7.2.4 Note

Example Negotiation of Coordination Conditions

Comment [ATO111]: APAC ICD, APPENDIX D, PARA 7.2.4 Example 2

ATSU Transmitting AIDC Message	
Brisbane	***Auckland***
(ABI-QFA56-YBBN-33S163E/1209F350-NZCH-8/IS-9/B744/H-10/SDHIWRJ-15/M084F350 35S164E 36S165E ...)	
(CPL-QFA56-IS-B744/H-SDHIWRJ-YBBN -33S163E/1213F350-M084F350 35S164E 36S165E NZCH -0.)	
	(CDN-QFA56-YBBN-NZCH -14/33S163E/1213F390)
(ACP-QFA56-YBBN-NZCH)	
(TOC-QFA56-YBBN-NZCH)	

	(AOC-QFA56-YBBN-NZCH)

6.7.2.6 Santa Maria OAC informs New York OAC several hours in advance that flight TAP001 is expected to cross the Santa Maria FIR boundary into the New York FIR at approximately 1209 PM (ABI). The flight will continue on to San Juan, Puerto Rico.

Comment [ATO112]: NAT ICD, APPENDIX C, PARA 6.2.1

Comment [KD113]: *Generic terminology*

6.7.2.7 Coordination between Santa Maria OAC and New York OAC occurs approximately twenty minutes before the expected boundary crossing time, which has been revised to 1213 PM (CPL). New York OAC requests a change in the boundary crossing altitude to F390 (CDN), which Santa Maria OAC signals as acceptable (ACP).

Comment [ATO114]: NAT ICD, APPENDIX C, PARA 6.2.2

6.7.2.8 Santa Maria OAC transfers ATC responsibility near the boundary (TOC). New York OAC accepts ATC responsibility by responding with an AOC.

Comment [ATO115]: NAT ICD, APPENDIX C, PARA 6.2.3

Example Negotiation of Coordination Conditions

Comment [r116]: NAT ICD, APPENDIX C, PARA 6.2.3, Example 2

ATSU Transmitting AIDC Message	
Santa Maria OAC	***New York OAC***
(ABI-TAP001-LPPT –34N040W/1209F350 –TJSJ-8/IS-9/B744/H-10/DIJ2RSW/SB2 –15/M082F35027N050W 24N055W 22N060W 19N065W SJU) (CPL-TAP001-IS-B744/H-DIJ2RSW/SB2-LPPT- -34N040W/1213F350-M082F350 27N050W 24N055W 22N060W 19N065W SJU-TJSJ-PBN/A1) (ACP-TAP001-LPPT-TJSJ) (TOC-TAP001-LPPT-TJSJ)	(CDN-TAP001-LPPT-TJSJ –14 / 34N040W/1213F390) (AOC-TAP001-LPPT-TJSJ)

Comment [ATO117]: NAT ICD new v1.2.9 - *ABI example: B747 is no longer a valid type designator; changed to B744; added RVSM qualifier in 10a, transponder qualifier in 10b; corrected lat/long and added a space before 27N removed space before 34N.In CPL example: B747 is no longer a valid type designator; changed to B744; added RVSM qualifier in 10a, transponder qualifier in 10b; removed space before 34N; corrected lat/long in field 15.*

Comment [ATO118]: NAT ICD new v1.3.0 - *ABI and CPL: realistic equipage for an aircraft on a transatlantic flight should include "R" in field 10a, indicating PBN capability. CPL example shows PBN/ indicator in field 18, making the example more relevant to 2012 changes. Updating 10b to reflect advanced surveillance equipment is useful in showing the new letter/number codes.*

6.7.3 Re-negotiation rejected.

6.7.3.1 Brisbane transmits a notification message (ABI) to Auckland forty five minutes prior to the time that QFA108 is expected to cross the FIR boundary (1209). The destination of the flight is Christchurch.

6.7.3.2 The coordination message (CPL) is transmitted by Brisbane thirty minutes prior to the boundary estimate (which is now 1213). Auckland accepts the proposed coordination conditions without modification by responding with and ACP.

6.7.3.3 Some time after the initial coordination process has been completed, but before the start of the Transfer of Control process, Auckland requests an amendment to the boundary crossing altitude by transmitting a negotiation message (CDN). Brisbane cannot accept the proposed change due to conflicting traffic in its FIR and therefore rejects the request (REJ).

6.7.3.4 Brisbane transfers ATC responsibility approaching the FIR boundary by transmitting a TOC. Auckland accepts ATC responsibility by responding with an AOC.

6.7.3.5 The timing of the transmission of these messages is defined in bilateral agreements between the two ATS units.

Example. Rejection of Renegotiated Coordination

ATSU Transmitting AIDC Message	
Brisbane	***Auckland***
(ABI-QFA108-YBBN-33S163E/1209F350 -NZCH-8/IS-9/B744/H-10/SDHIWRJ -15/M084F350 35S164E 36S165E….)	
(CPL-QFA108-IS-B744/H-SDHIWRJ-YBBN -33S163E/1213F350-M084F350 35S164E 36S165E NZCH -0.)	
	(ACP-QFA108-YBBN-NZCH)
	(CDN-QFA108-YBBN-NZCH -14/33S163E/1213F390)
(REJ-QFA108-YBBN-NZCH)	
(TOC-QFA108-YBBN-NZCH)	
	(AOC-QFA108-YBBN-NZCH)

6.7.3.6 Santa Maria OAC informs New York OAC several hours in advance that flight TAP001 is expected to cross the Santa Maria FIR boundary into the New York FIR at approximately 1209 PM (ABI). The flight will continue on to San Juan, Puerto Rico.

Comment [ATO119]: APAC ICD, APPENDIX D, PARA 7.3

Comment [r120]: APAC ICD, APPENDIX D, PARA 7.3.1

Comment [KD121]: *Generic terminology for timeframes.*

Comment [r122]: APAC ICD, APPENDIX D, PARA 7.3.2

Comment [ATO123]: APAC ICD, APPENDIX D, PARA 7.7.3

Comment [r124]: APAC ICD, APPENDIX D, PARA 7.3.4

Comment [ATO125]: APAC ICD, APPENDIX D, PARA 7.3.4 Note

Comment [r126]: APAC ICD, APPENDIX D, PARA 7.3.4, Example 3

Comment [ATO127]: NAT ICD, APPENDIX C, PARA 6.3.1

Comment [KD128]: *Generic terminology for timeframes.*

6.7.3.7 Coordination between Santa Maria OAC and New York OAC occurs approximately twenty minutes before the expected boundary crossing time, which has been revised to 1213 PM (CPL). New York OAC accepts the coordination conditions without modification (ACP).

6.7.3.8 Some time after the initial Coordination process has been completed, but before the start of the Transfer of Control process, New York OAC attempts to modify the boundary crossing altitude (CDN), due to unexpected traffic in the area. Santa Maria OAC can not accept the proposed change due to conflicting traffic in its FIR, and therefore rejects the proposal (REJ).

6.7.3.9 Santa Maria OAC transfers ATC responsibility near the boundary (TOC). New York OAC accepts ATC responsibility by responding with an AOC.

Example Rejection of Renegotiated Coordination

ATSU Transmitting AIDC Message	
Santa Maria OAC	***New York OAC***
(ABI-TAP001-LPPT –34N040W/1209F350 –TJSJ-8/IS-9/B744/H-10/DIJ2RSW/SB2 –15/M082F35027N050W 24N055W 22N060W 19N065W SJU) (CPL-TAP001-IS-B744/H-DIJ2RSW/SB2-LPPT- -34N040W/1213F350-M082F350 27N050W 24N055W 22N060W 19N065W SJU-TJSJ-PBN/A1)	
	(ACP-TAP001-LPPT-TJSJ)
	(CDN-TAP001-LPPT-TJSJ –14 / 34N040W/1213F390)
(REJ-TAP001-LPPT-TJSJ)	
(TOC-TAP001-LPPT-TJSJ)	
	(AOC-TAP001-LPPT-TJSJ)

6.7.4 Abbreviated coordination.

Comment [ATO129]: NAT ICD, APPENDIX C, PARA 6.3.2

Comment [KD130]: *Generic terminology*

Comment [ATO131]: NAT ICD, APPENDIX C, PARA 6.3.3

Comment [ATO132]: NAT ICD, APPENDIX C, PARA 6.3.4

Comment [r133]: NAT ICD, APPENDIX C, PARA 6.2.4, Example 3

Comment [KD134]: *Same as previous example. Two examples of each casefor each ICAO Region.*

Comment [ATO135]: NAT ICD new v1.2.9 - *ABI example: B747 is no longer a valid type designator; changed to B744; added RVSM qualifier in 10a, transponder qualifier in 10b; corrected lat/long and added a space before 27N removed space before 34N.In CPL example: B747 is no longer a valid type designator; changed to B744; added RVSM qualifier in 10a, transponder qualifier in 10b; removed space before 34N; corrected lat/long in field 15.*

Comment [ATO136]: NAT ICD new v1.3.0 - *ABI and CPL: realistic equipage for an aircraft on a transatlantic flight should include "R" in field 10a, indicating PBN capability. CPL example shows PBN/ indicator in field 18, making the example more relevant to 2012 changes. Updating 10b to reflect advanced surveillance equipment is useful in showing the new letter/number codes.*

Comment [r137]: APAC ICD, APPENDIX D, PARA 7.4

6.7.4.1 Several minutes before AAA842's departure time (e.g. at taxi time), coordination between Bali and Brisbane is effected by Bali transmitting a coordination message (PAC). This message alerts Brisbane that the flight is pending and indicates a boundary estimate of 1213 at f290. Brisbane accepts the coordination conditions without modification by responding with an ACP.

6.7.4.2 On departure, the aircraft's actual estimate differs from that coordinated by more than the value specified in bilateral agreements. The new estimate is coordinated to Brisbane by Bali transmitting a CDN message to Brisbane. Brisbane accepts this revised estimate by responding with an ACP message.

6.7.4.3 Bali transfers ATC responsibility approaching the FIR boundary by transmitting a TOC. Brisbane accepts ATC responsibility by responding with an AOC.

6.7.4.4 The timing of the transmission of these messages is defined in bilateral agreements between the two ATS units.

Example. Abbreviated coordination

Bali	***Brisbane***
(PAC-AAA842/A4534-IS-B737/M-WRRR--OGAMI/1213F290-YPPH…)	
	(ACP-AAA842/A4534-WRRR-YPPH)
(CDN-AAA842/4534-WRRR-YPPH-14/OGAMI/1219F290)	
	(ACP-AAA842/A4534-WRRR-YPPH)
(TOC-AAA842/A4534-WRRR-YPPH)	
	(AOC-AAA842/A4534-WRRR-YPPH)

6.7.5 Multiple modifications + AIDC cancellation.

6.7.5.1 Brisbane transmits a notification message (ABI) to Auckland forty five minutes prior to the time that QFA11 is expected to cross the FIR boundary (1105). The destination of the flight is Los Angeles.

6.7.5.2 Prior to transmitting the coordination message, a modification to the cleared flight level is made resulting in the transmission of another notification message. This ABI contains the latest boundary information of the aircraft showing that the current boundary estimate is now 1107.

6.7.5.3 The abbreviated coordination message (EST) is transmitted by Brisbane thirty minutes prior to the boundary estimate (which is now 1108). Auckland accepts the proposed coordination conditions by responding with an ACP.

6.7.5.4 Due to weather QFA11 requests and is issued an amended route clearance that will now no longer affect Auckland. To advise of the cancellation of any previously transmitted AIDC messages, a MAC message is transmitted to Auckland.

Comment [r138]: APAC ICD, APPENDIX D, PARA 7.4.1

Comment [r139]: APAC ICD, APPENDIX D, PARA 7.4.2

Comment [r140]: APAC ICD, APPENDIX D, PARA 7.4.3

Comment [r141]: APAC ICD, APPENDIX D, PARA 7.4.3, NOTE

Comment [r142]: APAC ICD, APPENDIX D, PARA 7.4.3, *Example 4*

Comment [KD143]: *Keep this table with the specific APAC example because it's not used in the NAT.*

Comment [r144]: APAC ICD, APPENDIX D, PARA 7.5

Comment [r145]: APAC ICD, APPENDIX D, PARA 7.5.1

Comment [KD146]: *Generic time reference needed.*

Comment [r147]: APAC ICD, APPENDIX D, PARA 7.5.2

Comment [r148]: APAC ICD, APPENDIX D, PARA 7.5.3

Comment [r149]: APAC ICD, APPENDIX D, PARA 7.5.4

6.7.5.5 The timing of the transmission of these messages is defined in bilateral agreements between the two ATS units.

Example. Multiple notifications + AIDC cancellation

Brisbane	***Auckland***
(ABI-QFA11-YSSY-31S163E/1105F290 -KLAX-8/IS-9/B744/H-10/SDHIWRJ-15/M085F29033S158E 30S168E….)	
(ABI-QFA11-YSSY-31S163E/1107F310 KLAX-8/IS-9/B744/H-10/SDHIWRJ 15-M084F29033S158E 30S168...)	
(EST-QFA11-YSSY-31S163E/1108F310-KLC	
	(ACP-QFA11-YSSY-KLAX
(MAC-QFA11-YSSY-KLAX)	

6.7.6 Multiple negotiations.

6.7.6.1 Brisbane transmits a notification message (ABI) to Auckland forty five minutes prior to the time that QFA108 is expected to cross the FIR boundary (1209). The destination of the flight is Christchurch.

6.7.6.2 The abbreviated coordination message (EST) is transmitted by Brisbane thirty minutes prior to the boundary estimate (which is now 1213). Auckland accepts the proposed coordination conditions by responding with an ACP.

6.7.6.3 QFA108 requests F370. The bilateral Letter of Agreement between Brisbane and Auckland requires that prior coordination is completed before issuing a change of level after initial coordination. Brisbane transmits a negotiation message (CDN) proposing the change of level to F370. This level is not available in Auckland's airspace, but an alternative level is available. Auckland therefore responds with a negotiation message proposing F360. Brisbane responds with an ACP indicating that this level is acceptable to Brisbane (and QFA108).

6.7.6.4 Brisbane transfers ATC responsibility approaching the FIR boundary by transmitting a TOC. Auckland accepts ATC responsibility by responding with an AOC.

6.7.6.5 The timing of the transmission of these messages is defined in bilateral agreements between the two units.

6.7.6.5.1 Complex re-negotiations may be more easily solved by voice communication.

Example. Multiple negotiations

Comment [ATO150]: APAC ICD, APPENDIX D, PARA 7.5.4 Note

Comment [r151]: APAC ICD, APPENDIX D, PARA 7.5.5, *Example 5*

Comment [KD152]: *Used only in the APAC. Therefore, leave with APAC examples.*

Comment [r153]: APAC ICD, APPENDIX D, PARA 7.6

Comment [r154]: APAC ICD, APPENDIX D, PARA 7.6.1

Comment [KD155]: *Generic time reference needed.*

Comment [r156]: APAC ICD, APPENDIX D, PARA 7.6.2

Comment [r157]: APAC ICD, APPENDIX D, PARA 7.6.3

Comment [r158]: APAC ICD, APPENDIX D, PARA 7.6.4

Comment [r159]: APAC ICD, APPENDIX D, PARA 7.6.4, NOTE 1

Comment [r160]: APAC ICD, APPENDIX D, PARA 7.6.4, NOTE 2

Comment [r161]: APAC ICD, APPENDIX D, PARA 7.6.4, Example 6

Brisbane	*Auckland*
(ABI-QFA108-YBBN-33S163E/1209F350 -NZCH-8/IS-9/B744/H-10/SDHIWRJ -15/M084F350 35S164E 36S165E….)	
(EST-QFA108-YBBN-33S163E/1213F350-NZCH)	
	(ACP-QFA108-YBBN-NZCH)
(CDN-QFA108-YBBN-NZCH -14/33S163E/1213F370)	
	(CDN-QFA108-YBBN-NZCH -14/33S163E/1213F360)
(ACP-QFA108-YBBN-NZCH)	
(TOC-QFA108-YBBN-NZCH)	
	(AOC-QFA108-YBBN-NZCH)

6.7.7 Standard coordination with proposed amended destination.

6.7.7.1 Brisbane transmits a notification message (ABI) to Auckland forty five minutes prior to the time that ANZ136 is expected to cross the FIR boundary (1400). The destination of the flight is Christchurch.

6.7.7.2 The abbreviated coordination message (EST) is transmitted by Brisbane thirty minutes prior to the boundary estimate (which is now 1401). Auckland accepts the proposed coordination conditions by responding with an ACP.

6.7.7.3 ANZ136 requests a deviation to Auckland (NZAA). Brisbane transmits a Coordination message (CDN) to Auckland proposing changes to the previously agreed coordination conditions (route and boundary estimate) as well as the new destination. Auckland accepts the proposed revision(s) by the transmission of an ACP. All subsequent AIDC messages for ANZ136 contain "NZAA" as the destination aerodrome.

6.7.7.4 Brisbane transfers ATC responsibility approaching the FIR boundary by transmitting a TOC. Auckland accepts ATC responsibility by responding with an AOC.

6.7.7.5 The timing of the transmission of these messages is defined in bilateral agreements between the two ATS units.

Example Coordination of amended destination

Brisbane	*Auckland*

Comment [r162]: APAC ICD, APPENDIX D, PARA 7.7

Comment [r163]: APAC ICD, APPENDIX D, PARA 7.7.1

Comment [r164]: APAC ICD, APPENDIX D, PARA 7.7.2

Comment [r165]: APAC ICD, APPENDIX D, PARA 7.7.3

Comment [r166]: APAC ICD, APPENDIX D, PARA 7.7.4

Comment [r167]: APAC ICD, APPENDIX D, PARA 7.7.4, NOTE

Comment [r168]: APAC ICD, APPENDIX D, PARA 7.7.4, Example 7

(ABI-ANZ136-YBBN-RUNOD/1400F350 -NZCH-8/IS-9/A320/M-10/SDHIWR -15/M078F350 SCOTT Y32 LOKET L503 LALAP DCT ...)	
(EST-ANZ136-YBBN- RUNOD33S163E/1401F350-NZCH)	
	(ACP-ANZ136-YBBN-NZCH)
(CDN-ANZ136-YBBN-NZCH -14/ESKEL/1357F350-15/ SCOTT Y32 LOKET WOOLY ESKEL L521 AA- DEST/NZAA)	
	(ACP-ANZ136-YBBN-NZAA)
(TOC-ANZ136-YBBN-NZAA)	
	(AOC-ANZ136-YBBN-NZAA)

6.7.8 Standard coordination including FAN/FCN exchange.

6.7.8.1 Brisbane transmits a notification message (ABI) to Auckland forty five minutes prior to the time that UAL815 is expected to cross the FIR boundary (0330).

6.7.8.2 The abbreviated coordination message (EST) is transmitted by Brisbane thirty minutes prior to the boundary estimate. Auckland accepts the proposed coordination conditions by responding with an ACP.

6.7.8.3 Brisbane transmits a FAN message to Auckland providing the logon information that Auckland requires to establish a CPDLC connection as well as ADS contracts.

6.7.8.4 When a CPDLC connection is established, Auckland transmits a FCN to Brisbane containing the appropriate frequency for the aircraft to monitor.

6.7.8.5 Brisbane transfers ATC responsibility approaching the FIR boundary by transmitting a TOC. Auckland accepts ATC responsibility by responding with an AOC.

6.7.8.6 Brisbane terminates the CPDLC connection with UAL815 and transmits an FCN to Auckland to advise them that the CPDLC connection has been terminated.

6.7.8.7 The timing of the transmission of these messages is defined in bilateral agreements between the two ATS units.

Example. Standard coordination including FAN and FCN exchanges

Brisbane	***Auckland***

Comment [r169]: APAC ICD, APPENDIX D, PARA 7.8 – NAT ICD, APPENDIX C, PARA 6.4

Comment [ATO170]: APAC ICD, APPENDIX D, PARA 7.8.1 – NAT ICD, APPENDIX C, PARA 6.4.1

Comment [r171]: APAC ICD, APPENDIX D, PARA 7.8.2

Comment [r172]: APAC ICD, APPENDIX D, PARA 7.8.3 – NAT ICD, APPENDIX C, PARA 6.4.2

Comment [ATO173]: APAC ICD, APPENDIX D, PARA 7.8.4 – NAT ICD, APPENDIX C, PARA 6.4.3

Comment [ATO174]: APAC ICD, APPENDIX D, PARA 7.8.5 – NAT ICD, APPENDIX C, PARA 6.4.5

Comment [ATO175]: APAC ICD, APPENDIX D, PARA 7.8.6 – NAT ICD, APPENDIX C, PARA 6.4.6

Comment [ATO176]: APAC ICD, APPENDIX D, PARA 7.8.6 Note – NAT ICD, APPENDIX C, PARA 6.4.6 Note

Comment [ATO177]: APAC ICD, APPENDIX D, PARA 7.86. Example 8 – NAT ICD, APPENDIX C, PARA 6.4.6, Example 4

(ABI-UAL815-YSSY-3050S16300E3200S16300E/0330F290 -KLAX-8/IS-9/B744/H- 10/SDHIRZYWJ1P/SB2G1-15/N0499F310 NOBAR A579 JORDY DCT 3200S16000E 3050S16300E 2800S16500E-PBN/A1L1)	
(EST-UAL815-YSSY-3050S16300E33S163E/0330F290-KLAX)	
	(ACP-UAL815-YSSY-KLAX)
(FAN-UAL815-YSSY-KLAX-SMI/FML FMH/UAL815 REG/N123UA FPO/3330S15910E FCO/ATC01 FCO/ADS01)	
	(FCN-UAL815-YSSY-KLAX-CPD/2- FREQ/13261)
(TOC-UAL815-YSSY-KLAXz)	
	(AOC-UAL815-YSSY-KLAX)
(FCN-UAL815-YSSY-KLAX-CPD/0)	

Comment [ATO178]: NAT ICD new v1.2.9 - *Added hyphen before field 10. Improper '/' after UAL815 in ABI corrected. Added 'DAT/' in field 18 to link with filed 'J', ABI and CPL.*

Comment [ATO179]: NAT ICD new v1.3.0 - *Updated examples to include new equipment and capabilities in field 10, changed J to J1 in ABI---removed D from 10b, which will not be valid after 2012---changed DAT/SHV to PBN/A1L1.*

6.7.9 Standard coordination with TRU update.

Comment [r180]: APAC ICD, APPENDIX D, PARA 7.9

6.7.9.1 An abbreviated coordination message (EST) is transmitted by Melbourne as soon as UAE412 departs Sydney. Brisbane accepts the proposed coordination conditions by responding with an ACP.

Comment [r181]: APAC ICD, APPENDIX D, PARA 7.9.1

6.7.9.2 The Sydney Departure controller assigns the aircraft a heading of 100 degrees magnetic and issues instructions to maintain FL200. A TRU is transmitted to update the Brisbane controller's flight details.

Comment [r182]: APAC ICD, APPENDIX D, PARA 7.9.2

6.7.9.3 Melbourne transfers ATC responsibility approaching the FIR boundary by transmitting a TOC. Brisbane accepts ATC responsibility by responding with an AOC.

Comment [r183]: APAC ICD, APPENDIX D, PARA 7.9.3

Example Coordination of amended clearances via TRU

Comment [r184]: APAC ICD, APPENDIX D, PARA 7.9.3, *Example 9*

Brisbane	***Auckland***
(EST-UAE412-YSSY-EVONN/0130F280-	

NZAA)	
	(ACP-UAE412-YSSY-NZAA)
(TRU-UAE412-YSSY-NZAA-HDG/100 CFL/F200)	
(TOC-UAE412-YSSY-NZAA)	(AOC-UAE412-YSSY-NZAA)

6.8 Notes

6.8.1 Initialization and termination conditions.

6.8.1.1 Only material pertaining to flights within NAT/APAC oceanic FIRs is included. Most flights depart from aerodromes outside the region, then transition into the NAT/APAC. Similarly, most flights transition from a NAT/APAC FIR into a non-NAT/APAC FIR. These transitions are not discussed. The required Notification, Coordination and Transfer of Control processes are dependent on the particular transition. For example, the transition from New York oceanic FIR to New York domestic is different than the transition from Shanwick oceanic to UK domestic. These transitions must be accounted for when designing and implementing an ATC system; however, they are outside the scope of the NAT Common Coordination ICD.

6.8.2 Air/ground events.

6.8.2.1 Certain air/ground events may be associated with the particular flight states. These include ADS contract establishment and Data Link Transfer. Assume that an aircraft is ADS equipped, and that the current controlling centre is receiving ADS reports. The flight then undergoes a coordination process, leaving it in Coordinated state with one or more downstream ATS Units. These ATS Units may now establish separate ADS contracts with the aircraft to monitor its position just before and after entry into a new FIR. The Coordinated state has been linked with a specific A/G event – establish an ADS contract.

6.8.2.2 Similarly, Transfer of a Data Link connection may be linked with the Transferred state. Only one ATS Unit has control authority over an aircraft at any given time. This unit would transfer its Data Link connection during the Transfer of Control process.

Comment [r185]: APAC ICD, APPENDIX D, PARA 8 – NAT ICD APPENDIX C, PARA 7

Comment [ATO186]: NAT ICD APPENDIX C, PARA 7.1

Comment [ATO187]: NAT ICD APPENDIX C, PARA 7.1

Comment [KD188]: *PR to rewrite to reflect that this is for global use and not just for these two Regions.*

Comment [ATO189]: NAT ICD APPENDIX C, PARA 7.2

Comment [ATO190]: NAT ICD APPENDIX C, PARA 7.2

Comment [ATO191]: NAT ICD APPENDIX C, PARA 7.3

Comment [KD192]: *PR to rewrite.*

Comment [KD193]: *Develop as letters-of-agreement between respective ATSUs. Adjacent FIRs should determine their unique requirements.*

Chapter 7. Interim Operational Support

7.1 Introduction

7.1.1 This ICD describes the end-state messages to be used within the ~~ASIA/PAC~~ NAT/APAC regions to ensure interoperability between automated ATS systems. However, during the transition to this end state architecture, current operations must be documented and supported. This chapter is the repository of messages not found in other ICD sections which will be used to support current operations during the interim transition period.

7.1.2 Each interim message will be described in a separate paragraph. Those ATS Providers employing an interim message contained in this chapter should document this usage in the appropriated bilateral agreements.

7.1.3

7.2 Interim messages

7.2.1 Estimate (EST) message.

7.2.1.1 The Estimate message is contained within the Core Message set. However, its use has been constrained to those situations in which a flight will cross an FIR boundary in accordance with existing letters of agreement.

7.2.1.2 An EST message may be used in any situation in which a CPL is permitted. The EST is in actuality an abbreviated CPL contingent upon prior receipt of route and ancillary information. This information could be provided by an FPL or ABI message.

7.2.1.3 Those ATS Provider States employing an EST in the more general manner during the interim transition period should document this usage in the appropriate bi-lateral agreements.

7.2.1.4 The EST message format should be as described in the Core Message set.

Comment [ATO194]: APAC ICD, APPENDIX F

Comment [r195]: APAC ICD, APPENDIX F, PARA 1

Comment [r196]: APAC ICD, APPENDIX F, PARA 1.1

Comment [r197]: APAC ICD, APPENDIX F, PARA 1.2

Comment [ATO198]: APAC ICD, APPENDIX F, PARA 2

Comment [r199]: APAC ICD, APPENDIX F, PARA 2.1

Comment [r200]: APAC ICD, APPENDIX F, PARA 2.1.1

Comment [r201]: APAC ICD, APPENDIX F, PARA 2.1.2

Comment [r202]: APAC ICD, APPENDIX F, PARA 2.1.3

Comment [r203]: APAC ICD, APPENDIX F, PARA 2.1.4

Comment [KD204]: *AW will review for portions of this section in other sections of the document. Otherwise, this chapter will be deleted.*

Appendix A Templates for Bilateral Letter of Agreement on AIDC

At an organizational level, the implementation of AIDC to enable data transfers between automated ATS systems is accomplished under the authority and strict operational terms of a bilateral letter of agreement or memorandum of understanding on AIDC arrangements that must be established between the two ATSUs involved. Depending on the particular circumstances, the legally less sophisticated Memorandum of Understanding (MOU) format could be used for the initial implementation of AIDC until the more formalized Letter of Agreement (LOA) is put in place. The choice of legal instrument will be a decision made by the two ATSUs as they prepare the formal agreement to enable AIDC data transfer between States.

In order to provide guidance in the structure and content of bilateral arrangements, templates have been included in this appendix to assist States in preparing suitable memorandums of understandings/letters of agreement on AIDC arrangements. The templates are based upon documentation developed by Airways New Zealand in implementation evolving AIDC arrangements between Auckland Oceanic and all neighbouring States over a period of approximately 10 years commencing from the mid 1990's. Three templates are included:

Template 1 provides a generic example of a basic Letter of Agreement

Template 2 is an example of an actual Letter of Agreement between Auckland Oceanic (New Zealand) and Brisbane ATS Centre (Australia); and

Template 3 is an example of an actual Memorandum of Understanding between Auckland Oceanic (New Zealand) and Nadi ATM Operations Centre (Fiji).

The templates are intended as guidance material only. It is important to note that although changes in the AIDC arrangements applicable to Auckland Oceanic will occur over time, Templates 2 and 3 will NOT be routinely updated. Accordingly, as the circumstances for each bilateral implementation will differ, appropriate adjustments should be made to the content of the templates to ensure that the resulting MOU or LOA is fit for the purpose intended.

Template 1

Generic Letter of Agreement

AIDC Procedures

1. The format of AIDC messages (*List messages used e.g. ABI, PAC, CDN, CPL, ACP, REJ, MAC, LAM and LRM)* are as defined by the Asia/Pacific/North Atlantic Regional AIDC Interface Control Document (ICD) as amended from time to time, unless described otherwise in this LOA.
2. List messages not supported (*e.g. "EST, TOC, AOC* messages are not supported").
3. Acceptance of CPL or CDN message is approval of the flight's profile and requires no further voice communication (i.e. Non-Standard Altitudes, Block Altitudes, and Deviations).
4. (*Describe other procedures applicable to the use of AIDC for this LOA. Some examples are listed below)*
    a. *Example only. If there is any doubt with regard to the final coordination data, voice coordination should be used for confirmation.*
    b. *Example only. Receipt of a MAC message must not be interpreted as meaning that the flight plan has been cancelled. Voice coordination must be conducted by the transferring controller to confirm the status of the flight.*
    c. *Example only. Each facility should advise the other facility of any known equipment outage that affects AIDC. In the event of AIDC outage, voice communication procedures will apply.*
    d. *Example only. Truncation. Where route amendment outside the FIR is unavoidable.*
        i. *Terminate the route details at the farthest possible flight plan significant point of the flight and enter "T" immediately following this.*
        ii. *Without amending the originally received details, every effort is to be made to truncate the route at a minimum of one significant point beyond the adjacent FIR to provide an entry track in that FIR.*

AIDC Messages

(For each message used describe when it will be sent by each ATSU under the parameter column and use the Notes column to describe other applicable information for the message use by each ATSU. The data below provides an example of the type of information that could be incorporated.)

Messages	Parameter	Notes
ABI	***ATSU1*:** Sends ABI approx. 80 minutes prior to boundary (73 min prior to the 50 nm expanded sector boundary). ***ATSU2:*** Sends ABI approx. 87 minutes prior to boundary (80 min prior to the 50 nm expanded sector	***ATSU1 : ATSU2*** *Updated ABI's will be sent automatically if there is any change to profile. ABI is sent automatically and is transparent to the controller. ABI automatically updates the receiving unit's flight data record.*

	boundary). (*Note: An updated ABI will not be sent once a CPL has been sent.)*	
CPL	***ATSU1 : ATSU2*** *Send CPL messages approx 37 minutes prior to the boundary (30 minutes prior to the 50 nm expanded sector boundary).*	***ATSU1 : ATSU2*** *CPL messages should be sent by the transferring controller in sufficient time to allow the completion of coordination at least 30 minutes prior to the boundary or 30 minutes prior to the aircraft passing within 50nmof the FIR boundary for information transfers.*
CDN	***ATSU1 : ATSU2*** *CDN messages are sent by either the transferring or receiving facility to propose a change once the coordination process has been completed, i.e., CPL sent and ACP received. CDN's must contain all applicable profile restrictions (e.g. weather deviations, speed assignment, block altitude). If the use of a CDN does not support this requirement, then verbal coordination is required.*	***ATSU1 : ATSU2*** *The APS will display a flashing "DIA" until receipt of ACP. If ACPJ not received within ten (10) minutes, controller is alerted with a message to the queue.* *CDN messages are not normally used for coordination of reroutes; however, with the receiving facilities approval a CDN may be used to coordinate a reroute on a critical status aircraft such as in an emergency.*
PAC	***ATSU1 : ATSU2*** *PAC messages will normally be sent when the time criteria from the departure point to the boundary is less than that stipulated in the CPL.*	***ATSU1 : ATSU2*** *Will respond to a PAC message with an ACP. PAC messages should be verbally verified with receiving facility.*
ACP	***ATSU1 : ATSU2***	***ATSU1 : ATSU2*** *The APS will display a flashing "DIA" until receipt of ACP. If ACP not received within ten (10) minutes, controller is alerted with a message to the queue.*

Messages	**Parameter**	**Notes**
TOC	***ATSU1 : ATSU2*** *Not supported. Implicit hand in/off.*	***ATSU1 : ATSU2***

AOC	***ATSU1 : ATSU2*** *Not supported. Implicit hand in/off.*	
MAC	***ATSU1 : ATSU2*** *MAC messages are sent when a change to the route makes the other facility no longer the "next" responsible unit.*	***ATSU1 : ATSU2*** *Receipt of a MAC message must not be interpreted as meaning that the flight plan has been cancelled. Voice coordination must be conducted by the transferring controller to confirm the status of the flight.*
REJ	***ATSU1 : ATSU2*** *REJ messages are sent in reply to a CDN message when the request change is unacceptable*	***ATSU1 : ATSU2*** *REJ messages are sent only as a response to a CDN message.*

Template 2

***Example*: Auckland Oceanic – Brisbane ATS Centre**

Letter of Agreement

Coordination – General

Transfer of Control Point

The Transfer of Control Point (TCP) should be either on receipt of an Acceptance of Control (AOC) to a Transfer of Control (TOC) or the common FIR boundary, whichever occurs first. The TCP should also be the point of acceptance of primary guard.

All ATS units should coordinate an estimate for the FIR boundary at least thirty (30) minutes prior to the boundary. Such coordination constitutes an offer of transfer of responsibility.

After the estimate for the FIR boundary has been sent, units should coordinate any revised estimate that varies by 3 minutes or more.

Communication Systems

Use of communications systems coordination between adjacent units should be in the following order of priority:

a. ATS Interfacility Data Communication (AIDC)
b. AIDC messages and procedures are specified in the following sections;
c. ATS direct speech circuits;
d. International telephone system;
e. Any other means of communication available.

AIDC Messages

AIDC message format will be in accordance with the Asia/Pacific/North Atlantic Regional Interface Control Document (ICD), as amended from time to time, unless described otherwise in the LOA.

Successful coordination via AIDC occurs on receipt of an ACP message in response to an EST message.

Each centre should advise the other of any known equipment outage that affects AIDC.

AIDC Message The following table details the AIDC parameters and message to be used.

Parameters

Message	Parameter	Notes
ABI	EUROCAT: 5-60 minutes prior to COP (Note: An updated ABI will not be sent once an EST has been sent) OCS: 40 minutes prior 50nm expanded boundary	ABI is sent automatically and is transparent to controller. ABI automatically updates flight plan.
EST	EUROCAT: 40 minutes prior to COP OCS: 40 minutes prior 50mn expanded boundary	Any changes to EST level or estimate conditions as detailed in LOA to be notified by voice after initial coordination completed. See notes below on voice procedures. EST is required to track generation in EUROCAT.
ACP	EUROCAT: Sends automatic ACP on receipt of EST OCE: Sends automatic ACP on receipt of EST	EUROCAT: If ACP not received within 4 minutes the sending controller is alerted. Sending controller will initiate voice coordination if ACP is not received within 4 minutes of sending EST. Receiving controller will initiate voice coordination if proposed EST conditions are not acceptable. OCS: If ACP is not received within 5 minutes the sending controller is alerted. Sending controller will not initiate voice coordination if ACP is not received within 5 minutes of sending EST. Receiving controller will initiate voice coordination if proposed EST conditions are not acceptable.
TOC	EUROCAT: Sent automatically 5 minutes prior to boundary OCS: Sent automatically 2 minutes prior to boundary	
AOC	EUROCAT: Sent automatically on controller acceptance of a TOC OCS: Sent automatically on receipt of a TOC	

Coordination – General, Continued to next page

AIDC Message (continued)

Parameters

Message	Parameter	Notes
CDN	EUROCAT: Manually by the controller when required	• Responses to the CDN should be ACP or REJ only – there will be no CDN negotiations. • CDN messages will be sent by Brisbane only to revise coordination on eastbound flights. • CDN messages may be used to coordinate changes to estimate or assigned altitude only. • Only on CDN dialogue may be open per aircraft at any time. • Not to be used if the aircraft will not be maintaining the assigned altitude 10 minutes prior to the TCP.
MAC	As per ICD	
LRM	As per ICD. Controller alerted on receipt	
LAM	As per ICD. Controller alerted on non-receipt	

Amendment to Flight Data Record

Route amendment – routes/waypoints may be added/deleted as long as they do not change the original intent or integrity of the flight plan information.

Truncation – where route amendment outside the FIR unavoidable:

a. Terminate the route details at the farthest possible 'flight planned' point of the flight outside the FIR and enter "T" immediately following this.

b. If insufficient 'flight planned' point exist outside the FIR for truncation, insert the first 'defined' point in the adjoining FIR and enter "T" immediately following this.

c. The minimum acceptable truncation point must be at least the first point in the adjoining FIR.

d. Every effort is to be made to truncate the route at a minimum of one point beyond the adjacent international FIR to provide an entry track in to that FIR.

Continued on next page

Coordination – General, Continued

Address Forwarding And Next Data Authority

Brisbane ATSC and Auckland OAC should send automatic Next Data Authority (NDA) and Address Forwarding (CAD) for data link aircraft as per the following table:

Brisbane ATSC	Auto NDA sent 22 minutes prior to the FIR boundary Auto CAD sent 20 minutes prior to the FIR boundary
Auckland OAC	Auto NDA sent 40 minutes prior to the FIR boundary Auto CAD sent 35 minutes prior to the FIR boundary

Voice Coordination

Voice coordination is not required when AIDC messaging has been successful to offer and accepts transfer of control.

However, the receiving controller will initiate voice coordination if the proposed AIDC EST conditions are not acceptable.

If AIDC messaging is not to be sent following voice coordination, it should be stated as part of the voice coordination by use of the phrase "AIDC messaging will not be sent". A read back is required.

Voice Coordination is required for aircraft operating under any of the following conditions:

- block level clearance;
- weather deviations;
- offset track; or
- Mach Number technique.

Read backs should comprise all elements of the voice coordination passed by the transferring controller. Read back by the receiving unit confirms acceptance of the offer of transfer of control subject to any other conditions negotiated.

Hemstitch Flights

A hemstitch flight is any flight that will remain within the New Zealand FIR for less time than the NDA VSP (40 minutes) prior to the flight entering the Brisbane FIR.

Auckland AOC should voice coordinate any hemstitch flight.

Continued on next page

Coordination – General, Continued

Near Boundary Operations ATS units should relay significant details of any flight which is, or intends operating within fifty nautical miles (50NM0 of the common FIR boundary.

HF Frequencies Brisbane ATC and Auckland ATC should update each other as to the current voice backup frequency for use by ATC data link equipped aircraft.

Template 3

Example: Auckland Oceanic – Nadi ATM Operations Centre

Memorandum of Understanding

Between

Airways New Zealand Limited

And

Nadi ATM Operations Centre

Subject **Air Traffic Services Inter-facility Data Communications (AIDC) Coordination Procedures**

Validity Period This Memorandum of Understanding should be effective from 0506300300 UTC and may be cancelled by either party with written notice.

Signatories The following signatories have ratified this Agreement:

Authority	**Signature**	**Date**
(Name of Officer) Oceanic Business Unit Manager Airways New Zealand		
(Name of Officer) Manager, Operations Strategic Air Services Limited Fiji		
(Name of Officer) Chairman, ATM Projects Committee, Airports Fiji Limited Fiji		

Continued on next page

Memorandum of Understanding, Continued

Purpose To establish procedures to permit AIDC messages for coordination purposes to be transmitted by Auckland Oceanic and received by Nadi Air Traffic Management Operations Centre (ATMOC).

Scope This MOU between Auckland and Nadi is supplementary to the procedures contained in the Airways Corporation of New Zealand Limited and Airport Fiji Limited LOA, dated 25 November 2004. Revision to this MOU should be made only with the concurrence of all parties.

Procedures The format of AIDC messages (ABI, EST, PAC, CDN, CPL, ACP, REJ, TOC, AOC, MAC, LAM and LRM) is defined by the Asia/Pacific/North Atlantic Regional AIDC Interface Control Document (ICD) version 2.0. The optional formats for the coordination of block levels, weather deviations and Mach Number Technique have not been implemented.

Each facility should advise the other facility of any known equipment outage that will affect AIDC. In the even of AIDC outage, voice coordination procedures will apply.

The following table details the messaging parameters and additional information for each message.

Message	Parameter	Notes
ABI Non Hem-stitching flights	**Auckland:** Sends ABI 48 minutes prior to boundary (Note: An updated ABI will no be sent once an EST has been sent)	Updated ABIs will be sent automatically if there is any change to profile. ABI is sent automatically and is transparent to the controller. ABI automatically updates the receiving units flight data record
EST (general) Non Hem-stitching flights	**Auckland:** Sends EST 38 minutes prior to boundary	EST is sent automatically and automatically coordinates the receiving unit's flight data record. Any change to the EST (level or estimate) conditions as detailed in LOA are to be notified by voice after the initial coordination completed. See section below on voice procedures
ABI & EST Hem-stitch flights	**Auckland:** Sends ABI & EST messages for flights that re-enter the Nadi FIR as soon as the aircraft enters NZZO FIR	In these cases the ABI and EST are sent automatically
PAC	**Auckland:** Voice coordination will take place in those situations when a PAC is sent	

Continued on next page

Memorandum of Understanding, Continued

Message	Parameter	Notes
ACP	**Auckland:** Sent automatically on receipt of EST **Nadi:** Sent automatically on receipt of EST or PAC	**Auckland:** The APS will display a flashing "DIA" until receipt of ACP. If ACP not received within ten (10) minutes, controller is alerted with a message to the queue
TOC	**Auckland:** Sent automatically 2 minutes prior to boundary	This proposes a hand-off to the receiving unit
AOC	**Auckland:** Sent automatically on receipt of TOC **Nadi:** Sent by the controller on acceptance of TOC	This completes the hand-off proposal
MAC	**Auckland:** Sent manually when a change to the route makes Nadi no longer the "next" responsible unit	Receipt of a MAC message should not be interpreted as meaning that the flight plan has been cancelled. Voice coordination should be conducted by the receiving controller to confirm the status of the flight

Procedures, Continued

Block levels, offsets, and weather deviations, or Mach Number Techniques are not included in the current version of AIDC messaging. Voice coordination should be conducted for aircraft operating under these circumstances.

If there is any doubt with regard to the final coordination conditions, voice coordination should be used for confirmation.

Truncation – Where route amendment outside the FIR is unavoidable:

- Terminate the route details at the farthest possible 'flight planned' point of the flight and enter "T" immediately following this.
- Without amending the originally received details, every effort is to be made to truncate the route a minimum of one point beyond the adjacent FIR to provide an entry track in to that FIR

For any reason where changes to this MOU are advisable the requesting unit should propose the pertinent revision. The revision should be emailed of faxed to the

appropriate Manager for action. The Manager or the designated deputies should agree by email or telephone, followed by a confirming fax message signed by all parties. Formal exchange of signed copies of the amended MOW should take place as soon as practicable thereafter.

Hemstitch Flights

A Hemstitch flight is any flight that vacates FIR 1 and transits FIR 2 before re-entering FIR 1.

When a hemstitching flight vacates FIR 1 and then re-enter FIR 2 30 minutes or less later, the re-entry coordination is considered to have been completed when coordination for the initial entry is completed and further coordination is only required if the aircraft requests:

- A weather deviation, or
- A level change, or
- Any change to the EST time is received or
- If there is any doubt that the receiving FIR has the correct boundary information

AIDC messages (ABI and EST) will still be sent by Auckland, but only when the aircraft flight state becomes active control. For hem stitching flights this will usually be when the aircraft enters the NZZO FIR, therefore these messages will normally be sent at less that 30 minutes prior to the TCP.

Voice Coordination

The following is provided as a summary of occasions when voice coordination is required:

- In the event of an AIDC outage;
- Aircraft operating under any of the following conditions:
    - Block level clearance;
    - Unfulfilled time constraints;
    - Weather deviations;
    - Offset track; or
    - Mach Number technique
- Any change to the EST (level or time) conditions;
- On receipt of a warning that an ACP has not been received;
- On receipt of a MAC message;
- If there is any doubt with regard to the final coordination conditions;

Continued on next page

Memorandum of Understanding, Continued

- If the receiving controller can not accept the aircraft at the coordinated level

Notwithstanding the above, voice coordination should take place for any flight that departs an airfield within the NZZO FIR and enters the NFFF FIR within 30 mins after departure.

For aircraft on fixed routes this specifically applies to:

- Aircraft departing Norfolk and entering the Nadi FIR via UBDAK or OSVAR/
- Aircraft departing Fua'amotu and entering the Nadi FIR via APASI;
- Aircraft departing Faleolo and entering the Nadi FIR via OVLAD or KETOT

Auckland OCA will obtain the appropriate level approval for these flights and will pass Nadi an "Estimate" based on the aircrafts probed profile at the same time as obtaining the level approval.

A PAC message will also be sent containing the time at the TCP and the climbing condition.

Time revisions will only be passed when the "Estimated" time changes by more than 2 minutes from that previously passed.

Level changes to that previously coordinated and/or off track request should be verbally coordinated in the usual manner.

Notification of Descent Restrictions by Nadi

Auckland OCS controllers may issue descent to aircraft entering the NZZO FIR from the NFFF FIR and landing at Norfolk, Tonga or Samoa without requesting descent restrictions from Nadi provided descent is commenced after the aircraft has passed the following positions. Should Nadi have any restrictions for descent, they will advise Auckland at least 10 mins prior to these positions:

For aircraft entering NZZO FIR via:

- UPDAK descent to commence after NOGOL
- OSVAR descent to commence after OSVAR minus 10 mins
- APASI descent to commence after ASAPI
- All other occasions, descent to commence after the aircraft has crossed the FIR boundary.

Appendix B Regionally Specific Messages

B-1 TDM (TRACK DEFINITION MESSAGE)

B.1.1 Purpose.

B.1.1.1 Used to distribute Pacific track information to affected ATSUs and Airline Operational Control Centres (AOCs) (TBC Adam) for flight planning. Details could be found in Appendix X. The message contains track definition and activity time periods.

B.1.2 Message Format.

B.1.2.1 Track Name. The track name consists of two fields. The first field is always 'TRK'. The second field is the track identifier. The track identifier consists of 1 to 4 alphanumeric characters.

B.1.2.2 General Information. General information contains:

a. Date and time the track was generated and message number tor that particular track in YYMMDDHHMMNN format where NN represents the message number. The initial TDM date/time message number group will look like: 941006134501. Message numbers 02 to 99 indicate TDM amendments or revisions. Note that an additional preceding zero may be required to provide the correct number of digits.

b. Track status. Blank field for initial message or "AMDT" for amendment.

B.1.2.3 Activity Time Interval. This field consists of two date/time pairs, separated by a blank character, in the following format: YYMMDDHHMM YYMMDDHHMM.

The first date/time pair represents the track activation, while the second is the track termination date/time.

Example: 9410070300 9410071500.

This example represents an activation date/time of October 7, 1994, at 0300 UTC and a termination date/time of October 7, 1994 at 1500 UTC.

B.1.2.4 Track Waypoint. This field contains the set of waypoints defining the track from the ingress fix to the egress fix. Waypoints are represented as latitude/longitude or named en route points. Waypoints are separated from each other by a blank space. Note that an additional preceding zero may be required to provide the correct number of digits For example:

60N150W 60N160W, or NORMU NUMMI, or FINGS 5405N13430W, etc.

B.1.2.5 Optional Fields

a. Level: This optional field will not be used in the Pacific operations since levels are published in separate documents, e.g. Pacific SUPPS (Doc 7030) . A rack level list may be specified for the east and westbound directions of flight and a track level list would contain the complete list of levels available on the track for the specified direction of flight. The levels would apply to all waypoints in the track waypoint list.

b. Connecting routes (RTS): The RTS field is an optional field not normally used by automated ATS systems. When used, it is located after the waypoint list (before the remarks field) and begins with the keyword 'RTS/' at the beginning of a line. Each line of the RTS field contains a single connecting route (to the ingress fix or from the egress fix).

B.1.2.6 Remarks: The Remarks subfield is a free text field that can contain additional comments. If there are no remarks a zero (0) is inserted as the only text. The remarks subfield begins with 'RMK/'.

Examples

The following TDM describes a route connecting Honolulu and Japan:

(TDM TRK A 940413124001
9404131900 9404140800
LILIA 27N170W 29N180E 31N170E 32N160E MASON
RTS/PHNL KEOLA2 LILIA
MASON OTR 15 MOLT OTR 16 SUNNS OTR20 LIBRA RJAA RMK/0)

The following TDM Revision describes a revision to the TDM shown above.

(TDM TRK A 940413131502 AMDT
9404131900 9404140800
LILIA 27N170W 29N180E 30N170E 32N160E MASON
RTS/PHNL KEOLA2 LILIA
MASON OTR15 SMOLT OTR16 SUNNS OTR20 LIBRA RJAA RMK/0)

In the example given above, the message number (as delineated by the last two digits of the message generation date/time group) indicates it as the second ("2") message for the track. This is followed by 'AMDT' to signify the previous message has been amended.

ADD examples with FLs

B.2 NAT (ORGANIZED TRACK STRUCTURE)

B.2.1 Purpose.

B.2.1.1 Used to publish the NAT organized track structure and the levels available. Details could be found in Appendix X. The message may be divided into several parts to enable it to be transmitted.

B.2.2 Message Format.

ATS Field Description

3	Message type
Text	Structured text

B.2.3 Structured Text Format.

B.2.3.1 It is required to adhere strictly to the syntax described hereafter in order to facilitate automated processing of NAT messages.

B.2.3.2 In the examples below, text between angle brackets should be understood to represent characters by their ASCII name. E.g. <sp> stands for 'space character', <cr> for 'carriage return>, <lf> for 'line feed', and any combination <crlf> is the same as <cr><lf>. No control character should be inserted in the message text unless specified as in the examples below. This restriction of course applies to <cr> and <lf> as well as any other control character.

B.2.3.3 It should be noted that NAT Track messages should otherwise follow current AFTN syntax requirements as expressed in ICAO Annex 10, , e.g. that the alignment function with the message text, header and trailer is composed of a single <cr> followed by a single <lf>. However modern systems should also be able to process the older alignment function composed of a double <cr> followed by a single <lf> as if it were a single <cr> followed by a single <lf> for backward compatibility reasons and to facilitate transition.

B.2.3.4 Characters in **bold underlined** in Message Text (syntax) column are to be replaced or dealt with as explained in the Description column.

B.2.3.5 The structured text is first composed of a NAT message header, as follows:

Id	Message Text (syntax)	Description (semantics)
1	(NAT-**a**/**b**<sp> TRACKS<sp>	**a** designates the part number in the **b** parts of the NAT message (**a** and **b** are one decimal digit)
2	FLS<sp>**nnn**/**mmm** <sp>INCLUSIVE	**nnn** and **mmm** designating the minimum and maximum concerned flight levels in hundreds of feet (three decimal digits)
3	<crlf>	
4	**month**<sp>**d1/h1m1**Z <sp>TO<sp>	Validity time with: **month**: for the month of validity full month name in letters
	month<sp>**d2/h2m2**Z	**d1/h1m1**: beginning time of validity **d2/h2m2**: ending time of validity(day/hour minute, 2 digits each, no space, leading zero required if number is less than 10)

5	<crlf>	
6	PART<sp>**a** decimal <sp>OF<SP> referred to	**a** and **b** textual numbers (ONE, TWO, THREE, FOUR) or one digit. Both numbers should represent the same digits as in item Id 1 above.
	b<sp> PARTS-	Terminal character **S** may be omitted if **b** is ONE.
7	<crlf><crlf>	

B.2.3.6 Following the NAT message header is a repeat of the following structure for each North Atlantic Track part of the message. If the resulting NAT message text is longer than 1800 characters, it must be separated into as many parts as necessary. Separation must happen between individual North Atlantic Track descriptions, not within an individual description.

Id	Message Text (syntax)	Description (semantics)
8	**L**	letter designating the name of the NAT track. One of: ABCDEFGHIJKLM for Westbound tracks. The most northerly Track of the day is designated as NAT Track Alpha, the adjacent Track to the south as NAT Track Bravo, etc. NPQRSTUVWXYZ for Eastbound tracks The most southerly Track of the day is designated as NAT Track Zulu, the adjacent Track to the north as NAT Track Yankee, etc. Tracks must be defined in sequence starting at any letter in the appropriate set, each following track using the immediately following letter in that set, e.g. UVWXYZ or ABCDE etc. The first track in the message should be the most northerly one and each subsequent track should be the next one towards the south.
9	<sp>	
10	**list of points**	Each point, separated by a space, is either significant points (named points from the published ICAO list of fixes) or a

		LAT/LONG given in degrees or degrees and minutes. At present only whole degrees are used. Acceptable LAT/LONG syntaxes are: ➢ xx/yy ➢ xxmm/yy ➢ xx/yymm ➢ xxmm/yymm Where xx is the north latitude, yy the west longitude, and mm the minutes part of the latitude or longitude.
11	<crlf>	
12	EAST LVLS<sp>**List of allowed levels**	list the allowed flight levels for eastbound flights. This list can contain NIL if there is no allowed level or a list of numbers (3 decimal digits) for each allowed level separated by a space.
13	<crlf>	
14	West LVLS<sp>**List of allowed levels**	list the allowed flight levels for westbound flight. This list can contain NIL if there is no allowed level or a list of numbers (3 decimal digits) for each allowed level separated by a space.
15	<crlf>	
16	EUR<sp>RTS<sp> WEST<sp>**XXX** <sp> VIA<sp>**RP** OR EUR<sp>RTS<sp> WEST<sp> NIL	(optional field) Note that the indentation does not indicate the presence of space characters, it is a presentation mechanism to highlight two variant syntaxes for this field. Description of European links to the tracks, this description will be given separately for Eastbound and/or Westbound flights.

		XXX designating the Irish/UK route structure linked to the NAT track. **RP** designating the point recommended to be over flown by westbound flights for joining the NAT track. The text "VIA<sp>**RP**" is optional. Or There is no European link.
17	<crlf>	
18	NAR<sp>**list** OR NAR<sp>NIL	(optional) Description of North American links to the tracks list list of North American airways recommended to be overflown by flights for joining or leaving the NAT track Or There are no recommended North American airways
19	-	
20	<crlf><crlf>	

B.2.3.7 And to terminate the NAT message is composed of a trailer

Id	**Message Text (syntax)**	**Description (semantics)**
21	<crlf>	
22	REMARKS<crlf>**text** <crlf>	This field is optional and can only be present in the last part of a multipart NAT message, or in the unique part in case of a mono-part NAT message.

		The remark text must contain the Track Message Identifier (TMI). It is recommended to consistently place the TMI in the first remark. The syntax for the TMI is as follows: Any text may precede the keywords that identify the TMI. The TMI is recognised as the first occurrence of the string (without the quotes) "TMI<sp>IS<sp>**xxx"** is the TMI and "**a**" the optional track message revision letter. To facilitate automated processing, this string should be followed by a space character before any subsequent remark text is inserted in the track message. The TMI should be the Julian calendar day in the year – i.e. starting at one (001) on the first of January or each year, 002 for second of January etc.
23	END<sp>OF<sp>PART or one <sp>**a**<sp>OF<sp>**b** <sp>PART**S**)	**a** and **b** textual numbers (ONE, TWO, THREE, FOUR) decimal digit. Both numbers must be the same as in field 6 above. Terminal character **S** may be omitted if **b** is ONE.

B.2.3.8 Example of westbound message set.

(NAT-1/3 TRACKS FLS 310/390 INCLUSIVE
JULY 01/1130Z TO JULY 01/1800Z
PART ON OF THREE PARTS-

A 57/10 59/20 61/30 62/40 62/50 61/60 RODBO
EAST LVLS NIL
WEST LVLS 320 340 360 380
EUR RTS WEST NIL
NAR N498C N4996C N484C-

B 56/10 58/20 60/30 61/40 60/50 59/60 LAKES
EAST LVLS NIL
WEST LVLS 310 330 350 370 390
EUR RTS WEST 2

NAR N434C N428C N424E N416C

C 55/10 57/20 59/30 60/40 59/50 PRAWN YDP
EAST LVLS NIL
WEST LVLS 310 32 330 340 350 360 370 380 390
EUR RTS WEST NIL
NAR N322B N326B N328C N336H N346A N348C N352C N356C N362B-

D MASIT 56/20 58/30 59/40 58/50 PORGY HO
EAST LVL NIL
WEST LVLS 310 320 330 340 350 360 370 380 390
EUR RTS WEST DEVOL
NAR N284B N292C N294C N298H N302C N304E N306C N308E N312A-

E 54/15 55/20 57/30 57/40 56/50 SCROD VALIE
EAST LVLS NIL
WEST LVLS 310 320 330 340 350 360 370 380 390
EUR RTS WEST BURAK
NAR N240C N248C N250E N252E N254A N256A N258A N260A-

END OF PART ONE OF THREE PARTS

(NAT-2/3 TRACKS FLS 310.390 INCLUSIVE
JULY 01/1130Z TO JULY 01/1800Z
PART TWO OF THREE PARTS

F 53/15 54/20 56/30 56/40 55/50 OYSTR STEAM
EAST LVLS NIL
WEST LVLS 310 320 330 340 350 360 370 380 390
EUR RTS WEST GUNSO
NAR NIL-

END OF PART TWO OF THREE PARTS)

(NAT-3/3 TRACKS FLS 310/390 INCLUSIVE

JULY 01/1130Z TO JULY 01/1800Z

PART THREE OF THREE PARTS-

H BANAL 43/20 44/30 44/40 43/50 JEBBY CARAC

EAST LVLS NIL

WEST LVLS 310 350 370

EUR RTS WEST DIRMA

NAR N36E N44B-

REMARKS

1. TMI IS 182 AND OPERATORS ARE REMINDED TO INCLUDE THE TMI NUMBER AS PART OF THE OCEANIC CLEARANCE READ BACK.

2. OPERATORS ATTENTION IS DRAWN TO CZUL NOTAM A2152/01

3. OPERATORS ATTENTION IS DRAWN TO UK NOTAMS A1098/01 AND G0120/01

4. MNPS AIRSPACE EXTENDS FROM FL285 TO FL420. OPERATORS ARE REMINDED THAT SPECIFIC MNPS APPROVAL IS REQUIRED TO FLY IN THIS AIRSPACE. IN ADDITION, RVSM APPROVAL IS REQUIRED TO FLY BETWEEN FL310 AND FL390 INCLUSIVE.

5. EIGHTY PERCENT OR GROSS NAVIGATION ERRORS RESULT FROM POOR COCKPIT PROCEDURES. ALWAYS CARRY OUT PROPER WAY POINT CHECKS.-

END OF PART THREE OR THREE PARTS)

B.2.3.9 Example of eastbound message set.

(NAT-1/1 TRACKS FLS 310/390 INCLUSIVE

JULY 01/0100Z TO JULY 01/0800Z

PART ONE OF ONE PART-

V YAY 53/50 54/40 55/30 56/20 56/10 MAC

EAST LVLS 310 320 330 340 350 360 370 380 390

WEST LVLS NIL

NAR N125A N129B-

W DOTTY 52/50 53/40 54/30 55/20 55/10 TADEX

EAST LVLS 310 320 330 340 350 360 370 380 390

WEST LVLS NIL

EUR RTS WEST NIL

NAR N109E N113B-

X CYMON 51/50 52/40 53/30 54/20 54/15 BABAN

EAST LVLS 310 320 330 340 350 360 370 380 390

WEST LVLS NIL

EUR RTS WEST NIL

NAR N93B N97B-

Y YQX 50/50 51/40 52/30 53/20 53/15 BURAK

EAST LVLS 310 320 330 340 350 360 370 380 390

WEST LVLS NIL

EUR RTS WEST NIL

NAR 77B N83B-

Z VIXUN 49/50 50/40 51/30 52/20 52/15 DOLIP

EAST LVLS 310 320 330 340 350 360 370 380 390

WEST LVLS NIL

EUR RTS WEST NIL

NAR 61B N67B-

REMARKS:

1. TMI IS 182 AND OPERATORS ARE REMINDED TO INCLUDE THE TMI NUMBER AS PART OF THE OCEANIC CLEARANCE READ BACK.

2. CLEARANCE DELIVERY FREQUENCY ASSIGNMENTS FOR AIRCRAFT OPERATING FROM MOATT OT BOBTU INCLUSIVE: MOATT – SCROD 128.7 OYSTR – DOTTY 135.45 CYMON – YQX 135.05 VIXUN – COLOR 128.45 BANCS AND SOUTH 119.42

3. PLEASE REFER TO INTERNATIONAL NOTAMS CZUL A2152/01

4. MNPS AIRSPACE EXTENDS FROM FL285 TO FL420. OPERATORS ARE REMINDED THAT SPECIFIC MNPS APPROVAL IS REQUIRED TO FLY IN THIS

AIRSPACE. IN ADDITION, RVSM APPROVAL IS REQUIRED TO FLY WITHIN THE NAT REGIONS BETWEEN FL310 AND FL390 INCLUSIVE.

5. 80 PERCENT OF GROSS NAVIGATIONAL ERRORS RESULT FROM POOR COCKPIT PROCEDURES. ALWAYS CARRY OUT PROPER WAYPOINT CHECKS.

6. REPORT NEXT WAYPOINT DEVIATIONS OF 3 MINUTES OR MORE TO ATC.

7. EASTBOUND UK FLIGHT PLANNING RESTRICTIONS IN FORCE. SEE NOTAMS A1098/01.

END OF PART ONE OF ONE PART)

Appendix C - Additional Implmentation Guidance Material (to be developed and provided by Paul)

Appendix D - Change Proposal (to be verified)

Attachment A - Relationship to ICAO AIDC Messages

A.1 Introduction

A 1.1 The AIDC message set can be tailored to satisfy regional requirements. The ADS Panel, OPLINKP documentation defining the AIDC data link application provides three means for achieving regional adaptation of the AIDC messages:

The selected messages are tailored by mandating the usage of optional components into one of three classes:

a) The optional component that must always be used;

b) The optional component that must never be used; and,

c) The optional component is truly optional.

A 1.2 For interim, pre-ATN implementations, encoding rules may be specified by a region. The most frequently used encoding rules today employ ICAO ATS fields and messages. The default encoding rules are the ISO Packed Encoding rules.

A 1.3 Using the regional tailoring procedure stated above, the NAT/APAC Core messages are related to a subset of the AIDC messages and are shown in Table 9-1.

A 1.4 The encoding rules employed within the NAT/APAC will remain for the foreseeable future as the ICAO ATS field and message-based, character-oriented rules currently defined in the NAT/APAC AIDC Interface Control Document (ICD) (and ICAO PANS-ATM Doc 4444).

Comment [r205]: APAC ICD, APPENDIX E, PARA 1 – NAT ICD, ATTACHMENT 2,

Comment [ATO206]: APAC ICD, APPENDIX E, PARA 1 b) – NAT ICD, ATTACHMENT 2, b)

Comment [ATO207]: APAC ICD, APPENDIX E, PARA 1 b) (1) – NAT ICD, ATTACHMENT 2, b) i)

Comment [ATO208]: APAC ICD, APPENDIX E, PARA 1 b) (2) – NAT ICD, ATTACHMENT 2, b) ii)

Comment [ATO209]: APAC ICD, APPENDIX E, PARA 1 b) (3) – NAT ICD, ATTACHMENT 2, b) iii)

Comment [ATO210]: APAC ICD, APPENDIX E, PARA 1 c) – NAT ICD, ATTACHMENT 2, c)

Comment [ATO211]: APAC ICD, APPENDIX E, PARA 2 – NAT ICD, ATTACHMENT 2

Comment [ATO212]: APAC ICD, APPENDIX E, PARA 3 – NAT ICD, ATTACHMENT 2

Table Att A-1. PAN ICD AIDC/ICAO AIDC Relationship

ICAO AIDC message	PAN ICD AIDC message	ICAO AIDC message	PAN ICD AIDC message	ICAO AIDC message	PAN ICD AIDC message	PAN ICD AIDC message
		Mandatory data fields		Optional data fields		Optional data fields usage
Notify	ABI	Aircraft identification Departure Aerodrome Destination Aerodrome Boundary estimate data	Aircraft identification SSR Mode and Code (where applicable) Departure Aerodrome Destination Aerodrome Boundary estimate data Number of aircraft Aircraft type Wake turbulence category Route	Flight rules Type of flight Number of aircraft (if more than one in the flight) Aircraft type Wake turbulence category CNS equipment Route Amended destination Code (SSR) Other information	Flight rules Equipment Route Other information Amended destination	Always used Always used Always used Optional
Coordinate Initial	CPL	Aircraft identification Departure	Aircraft identification SSR Mode and Code	Flight rules Type of flight Number of aircraft	Flight rules Equipment Route	Always used Always used Always used

Comment [JB213]: COMMENT---WB Review Non used and defined "ICAO AIDC messages" COORD Standby, transfer Initiate,Transfer conditions accept, Transfer communications request, Transfer communications request, Transfer communications, Transfer communications assume, General point, and General EExecutive data"

SUGGESTED CHANGE TO DOCUMENT: Consider removing these from the document altogether

Comment [ATO214]: APAC ICD, APPENDIX E, TABLE E-1 – NAT ICD, ATTACHMENT 2, TABLE 1
Procedures material from the Asia/Pacific Regional ICD for AIDC is highlighted in green.
Procedures material from the North Atlantic Common Coordination ICD is highlighted in blue.
Procedures material contained in both the NAT ICD and APAC ICD is not highlighted.

Comment [KD215]: *Does this help an ANSU? PR to review.*

ICAO AIDC message	PAN ICD AIDC message	ICAO AIDC message	PAN ICD AIDC message	ICAO AIDC message	PAN ICD AIDC message	PAN ICD AIDC message
		Mandatory data fields		Optional data fields		Optional data fields usage
		Aerodrome Destination Aerodrome Boundary estimate data	(where applicable) Departure Aerodrome Destination Aerodrome Boundary estimate data Flight Rules Number of aircraft Aircraft type Wake turbulence category Equipment Route Other information	(if more than one in the flight) Aircraft type Wake turbulence category CNS equipment Route Amended destination Code (SSR) Other information	Other information	Optional
Coordinate Initial Estimate	EST	Aircraft identification Departure Aerodrome Destination Aerodrome	Aircraft identification SSR Mode and Code (where applicable) Departure	Flight rules Type of flight Number of aircraft (if more than one in the flight)		

ICAO AIDC message	PAN ICD AIDC message	ICAO AIDC message	PAN ICD AIDC message	ICAO AIDC message	PAN ICD AIDC message	PAN ICD AIDC message
		Mandatory data fields		Optional data fields		Optional data fields usage
		Boundary estimate data	Aerodrome Destination Aerodrome Boundary estimate data	Aircraft type Wake turbulence category CNS equipment Route Amended destination Code (SSR) Other information		
Coordinate Initial	PAC	Aircraft identification Departure Aerodrome Destination Aerodrome Boundary estimate data	Aircraft identification SSR Mode and Code (where applicable) Departure Aerodrome Destination Aerodrome Boundary estimate data	Flight rules Type of flight Number of aircraft (if more than one in the flight) Aircraft type Wake turbulence category CNS equipment Route Amended	Flight rules Number of aircraft Aircraft type Wake turbulence category Equipment Route Other information	

ICAO AIDC message	PAN ICD AIDC message	ICAO AIDC message	PAN ICD AIDC message	ICAO AIDC message	PAN ICD AIDC message	PAN ICD AIDC message
		Mandatory data fields		Optional data fields		Optional data fields usage
				destination Code (SSR) Other information		
Coordinate Negotiate	CDN	Aircraft identification Departure Aerodrome Destination Aerodrome Boundary estimate data	Aircraft identification SSR Mode and Code (where applicable) Departure Aerodrome Destination Aerodrome Boundary estimate data	Flight rules Type of flight Number of aircraft (if more than one in the flight) Aircraft type Wake turbulence category CNS equipment Route Amended destination Code (SSR) Other information	Equipment Boundary estimate data Route Other information Amended destination	Optional
Coordinate Accept	ACP		Aircraft identification SSR Mode and Code	Aircraft identification Departure		

ICAO AIDC message	PAN ICD AIDC message	ICAO AIDC message	PAN ICD AIDC message	ICAO AIDC message	PAN ICD AIDC message	PAN ICD AIDC message
		Mandatory data fields		Optional data fields		Optional data fields usage
			(where applicable) Departure Aerodrome Destination Aerodrome	aerodrome Destination aerodrome		
Coordinate Reject	REJ		Aircraft identification SSR Mode and Code (where applicable) Departure Aerodrome Destination Aerodrome	Aircraft identification Departure aerodrome Destination aerodrome		
Coordinate Standby	N/A			Aircraft identification Departure aerodrome Destination aerodrome		
Coordinate Cancel	MAC	Aircraft identification	Aircraft identification	Fix Reason for	Boundary Estimate Data	Never used

ICAO AIDC message	PAN ICD AIDC message	ICAO AIDC message	PAN ICD AIDC message	ICAO AIDC message	PAN ICD AIDC message	PAN ICD AIDC message
		Mandatory data fields		Optional data fields		Optional data fields usage
		Departure aerodrome Destination aerodrome	SSR Mode and Code (where applicable) Departure Aerodrome Destination Aerodrome	cancellation	Other Information	Never used
Coordinate Update	TRU	Aircraft identification Departure aerodrome Destination aerodrome Boundary estimate data	Aircraft identification SSR Mode and Code (where applicable) Departure Aerodrome Destination Aerodrome Track data	Flight rules Type of flight Number of aircraft (if more than one in the flight) Aircraft type Wake turbulence category CNS equipment Route Amended destination Code (SSR) Other information		

ICAO AIDC message	PAN ICD AIDC message	ICAO AIDC message	PAN ICD AIDC message	ICAO AIDC message	PAN ICD AIDC message	PAN ICD AIDC message
		Mandatory data fields		Optional data fields		Optional data fields usage
Transfer Initiate	N/A	Aircraft identification Executive Data (if available		Track Data		
Transfer Conditions Proposal	N/A	Aircraft identification Executive data (if available		Track Data		
Transfer Conditions Accept	N/A	Aircraft identification		Frequency		
Transfer Communication Request	N/A	Aircraft identification		Frequency		
Transfer Communication	N/A	Aircraft identification Executive data and/or Release indication (if available)		Frequency Track data		

ICAO AIDC message	PAN ICD AIDC message	ICAO AIDC message	PAN ICD AIDC message	ICAO AIDC message	PAN ICD AIDC message	PAN ICD AIDC message
		Mandatory data fields		Optional data fields		Optional data fields usage
Transfer Communication Assume	N/A	Aircraft identification				
Transfer Control Transfer Proposal	TOC	Aircraft identification	Aircraft identification SSR Mode and Code (where applicable) Departure Aerodrome Destination Aerodrome	Departure Aerodrome Destination Aerodrome Executive data	Departure Aerodrome Destination Aerodrome Executive data	Always used Always used Never used
Transfer Control Assume Transfer Assume	AOC	Aircraft identification	Aircraft identification SSR Mode and Code (where applicable) Departure Aerodrome Destination Aerodrome	Departure Aerodrome Destination Aerodrome	Departure Aerodrome Destination Aerodrome	Always used Always used
General Point	N/A	Aircraft		Sector designator		

ICAO AIDC message	PAN ICD AIDC message	ICAO AIDC message	PAN ICD AIDC message	ICAO AIDC message	PAN ICD AIDC message	PAN ICD AIDC message
		Mandatory data fields		Optional data fields		Optional data fields usage
		identification Departure aerodrome Destination aerodrome		(sending) Sector designator (receiving) Flight rules Type of flight Number of aircraft (if more than one in flight) Aircraft type Wake turbulence category CNS equipment Route Track data Code (SSR) Other information		
General Executive Data	N/A	Aircraft identification		Executive data Frequency		
Track System	NAT		NAT track system name		Generation time	Optional

ICAO AIDC message	PAN ICD AIDC message	ICAO AIDC message	PAN ICD AIDC message	ICAO AIDC message	PAN ICD AIDC message	PAN ICD AIDC message
		Mandatory data fields		Optional data fields		Optional data fields usage
			NAT tracks		Start time Stop time Other information	Always used Always used Optional
Free Text Emergency	EMG	Facility designation or Aircraft identification Free text	Functional address or Aircraft identification SSR Mode and Code (where applicable) Other information			
Free Text General	MIS	Facility designation or Aircraft identification Free text	Functional address or Aircraft identification SSR Mode and Code (where applicable) Other information			
Application Accept	LAM					
Application Reject	LRM	Error code	Other information	Error data	Error data	Optional

ICAO AIDC message	PAN ICD AIDC message	ICAO AIDC message	PAN ICD AIDC message	ICAO AIDC message	PAN ICD AIDC message	PAN ICD AIDC message
		Mandatory data fields		Optional data fields		Optional data fields usage
Application Error			Message type Component type Error code			
Application Status	ASM	N/A	N/A			
N/A	FAN		Aircraft identification SSR Mode and Code (where applicable) Departure aerodrome Destination aerodrome Application data			
N/A	FCN		Aircraft identification SSR Mode and Code (where applicable) Departure aerodrome Destination			

ICAO AIDC message	PAN ICD AIDC message	ICAO AIDC message	PAN ICD AIDC message	ICAO AIDC message	PAN ICD AIDC message	PAN ICD AIDC message
		Mandatory data fields		Optional data fields		Optional data fields usage
			aerodrome Communication status			
N/A	ADS		Aircraft identification SSR Mode and Code (where applicable) Departure aerodrome Destination aerodrome ADS-C data			

Attachment B ATM Application Naming Conventions

1.1 Eight character AFTN addresses will be used by the AIDC application to identify automated ATS end-systems. The first four characters identify the ATS unit location, while the last four characters identify an organization, end-system, or application process at the given location.

1.2 The table below describes a proposed naming convention, developed by the ATN Panel for identifying ATM end-systems and applications. The last (eighth) character of the end-system's or application's AFTN address should be selected in accordance with Table D-1.

Table Att. B-1 - Proposed ATM Application Naming Convention

8th character	**ATM ground system application process**
A	Air space management
B	Unassigned
C	Unassigned
D	Dynamic track generation
E	Unassigned
F	Flight data processing (processor routes to appropriate control sector based on internal configuration information).
G	Reserved for State use
H	Reserved for State use
I	Reserved for State use
J	Reserved for State use
K	Reserved for State use
L	Reserved for State use
M	OPMET data bank
N	AIS data bank
O	Oceanic data processing

P	Unassigned
Q	Unassigned
R	Radar data processing (processor routes to appropriate control sector based on internal configuration information).
S	System management
T	Air traffic flow management
U	Unassigned
V	Unassigned
W	Unassigned
X	Default value
Y	Service function
Z	Unassigned