



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

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

Version 1.0 — September 2014

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.	October 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	November 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.	January 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.	February 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.	April 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 Chapter 6 relocated as Attachment B to the ICD.	July 2013
0.85	PAN ICD	IRAIDTF/3 updated Version 0.83 in Chapters 3, 4, 5 and 6. Renumbering Appendices A,B and C	March 2014

0.86	PAN ICD	Subsequent to Web/3 held on 11 June 2014, IRAIDTF updated Version 0.85 in Chapters 2, 4 and 6. Additional Implementation Guidance Material appended as Appendix C	June 2014
0.91	PAN ICD	Subsequent to Web/4 held on 9 July 2014, IRAIDTF updated Version 0.86 in Chapters 2, 3, 4 and 6.	July 2014
0.92	PAN ICD	Subsequent to Web/5 held on 6 August 2014, IRAIDTF updated Version 0.91 in Chapters 2, 3, 4 and 6 mainly related to Restriction Formats and Field 15.	August 2014
1.0	PAN ICD	A few editorial corrections to Version 0.92	September 2014

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;
- d) The implementation activities; and,
- e) 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),

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 ATSU's. AIDC standards, as defined in the PAN ICD, provide a harmonized means for data interchange between ATS units during the notification, coordination, confirmation 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 ATS Message Handling System (AMHS) and/or Aeronautical Fixed Telecommunications Network (AFTN). They can also be exchanged over dedicated private communication lines. In the interest of global standardization, 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 ATSU's concerned;
- c) Implementation guidance material;

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:

- a) Annex 2 — Rules of the Air,
- b) Annex 10 — Aeronautical Telecommunications,
- c) Annex 11 — Air Traffic Services,
- d) PANS - Air Traffic Management (Doc 4444),
- e) PANS - Regional Supplementary Procedures (Doc 7030),
- f) PANS – ICAO Abbreviations and Codes (Doc 8400).

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. 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 document is updated.

Amendments to the PAN ICD

Amendment	Source(s)	Subject(s)	Approved applicable
1 st 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 Abbreviations and AIDC Messages

1.1 Abbreviations

1.1.1 When the following abbreviations are used in the present document they have the following meanings. Where the abbreviation has “(ICAO)” annotated, the term has already been decoded in ICAO DOC 8400 (*PANS-ICAO Abbreviations and Codes, Eighth Edition-2010*).

Abbreviations	
ACARS	Aircraft Communication Addressing and Reporting System (ICAO)
ACI	Area of Common Interest
ACID	Aircraft Identification
ADF	Application Data Field (FAN Message)
ADF	ADS-C Data Field (ADS Message)
ADS-B	Automatic Dependent Surveillance - Broadcast (ICAO)
ADS-C	Automatic Dependent Surveillance – Contract (ICAO)
AFD	Standard Message Identifier (SMI) for ATS Facility Notification (ARINC622)
AFN	ATS Facilities Notification
AFTN	Aeronautical Fixed Telecommunication Network (ICAO)
AIDC	ATS Interfacility Data Communications (ICAO)
AMHS	ATS Message Handling System
ANSPs	Air Navigation Service Providers
APAC	Asia and Pacific Office
APANPIRG	Asia/Pacific Air Navigation Planning and Implementation Regional Group
ARINC	Aeronautical Radio Inc.
ARR	Arrival (ICAO)
ATC	Air Traffic Control (ICAO)
ATM	Air Traffic Management (ICAO)
ATMOC	Air Traffic Management Operations Centre
ATS	Air Traffic Services (ICAO)
ATSC	Air Traffic Service Center (ICAO)
ATSU	Air Traffic Service Unit
ATSU-1	Transferring/Upstream ATSU
ATSU-2	Receiving/Downstream ATSU
CFL	Cleared Flight Level

CHG	Modification Message (ICAO)
CNL	Cancel (ICAO)
COP	Change Over Point (ICAO)
CPD	CPDLC Connection Status identifier
CPDLC	Controller Pilot Data Link Communications (ICAO)
CPs	Change proposals
CRC	Cyclic Redundancy Check (ICAO)
CSF	Communication Status Field
DCT	Direct (ICAO)
DEP	Departure (ICAO)
DEST	Destination (ICAO)
DIA	Coordination Dialogue
DLA	Delay (ICAO)
DOF	Date of Flight
EOBT	Estimated Off Block Time (ICAO)
FANS	Future Air Navigation System
FI	Flight Identifier
FIR	Flight Information Region (ICAO)
FM3	Standard Message Identifier (SMI) for the Center (#3) Flight Management Computer (ARINC622)
FMC	Flight Management Computer (ICAO)
FMD	Flight Management Computer (Selected)
FMH	Facilities Notification Message Header
FML	Flight Management Computer (Left)
FMR	Flight Management Computer (Right)
FN_CAD	AFN Contact Advisory
FPL	Filed Flight Plan (ICAO)
FPO	Facilities Notification Current Position
FREQ	Frequency (ICAO)
GOLD	Global Operational Data Link Document
HDG	Heading (ICAO)
HQ	Head Quarter

PAN ICD

IA-5	International Alphabet
ICAO	International Civil Aviation Organization
ICD	Interface Control Document
IMI	Imbedded Message Identifier
IRAIDTF	Inter-Regional AIDC Task Force
LOA	Letter of Agreement
MAS	Message Assurance
MOU	Memorandum of Understanding
MTI	Message Type Identifier
NAT CC ICD	North Atlantic Common Coordination ICD.
NAT SPG	North Atlantic Systems Planning Group
NDA	Next Data Authority
OAC	Oceanic Area Control Centre (ICAO)
OCA	Oceanic Control Area (ICAO)
OCS	Oceanic Control System
ODF	Optional Data Field
OTD	Off track deviation
PAN ICD	Pan Regional Interface Control Document
PANS	Procedures for Air Navigation Services (ICAO)
PANS-ATM	Procedures for Air Navigation Services – Air Traffic Management
PIRGs	Planning and Implementation Regional Groups
PRL	Present Level
RFL	Requested Flight Level
RMK	Remark (ICAO)
RNP	Required Navigational Performance (ICAO)
RQP	Request Flight Plan (ICAO)
SARPs	Standards and Recommended Practices (ICAO)
SMI	Standard Message Identifier
SOH	Start of Header
SPD	Speed
STX	Start of Text
T	Truncation indicator

TDF	Track Data Field
UTC	Coordinated Universal Time (ICAO)
VSP	Variable System Parameter

1.2 AIDC Messages

- 1.2.1 Where the AIDC Message has “(ICAO)” annotated, the term has already been decoded in ICAO DOC 8400 (*PANS-ICAO Abbreviations and Codes, Eighth Edition-2010*). AIDC message abbreviations marked with “*” may have different formats from ICAO ATS Messages.

AIDC Messages with some of its fields and elements	
ABI *	Advance Boundary Information (ICAO)
ACP *	Acceptance (ICAO)
ADS	Surveillance ADS-C
AOC	Acceptance of Control
ASM	Application Status Monitor
CDN *	Coordination Negotiation [CDN: Coordination (ICAO)]
CPL *	Current Flight Plan (ICAO)
EMG	Emergency
EST *	Coordination Estimate [EST: Estimate (ICAO)]
FAN	FANS Application Message
FCN	FANS Completion Notification
FCO	Facilities Notification Contact
LAM *	Logical Acknowledgement Message (ICAO)
LRM	Logical Rejection Message
MAC	Cancellation of Notification and/or Coordination
MIS	Miscellaneous
NAT	NAT Organized Tracks message; or North Atlantic (ICAO)
PAC	Preliminary Activate
PCA	Profile Confirmation Acceptance
PCM	Profile Confirmation Message
REJ	Rejection
TDM	Track Definition Message
TOC	Transfer of Control
TRU	Track Update

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, confirmation, 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 to replace or supplement traditional voice coordination between ATS Units should be based on a step-by-step data distribution scheme comprising three (3) operational phases: NOTIFICATION, COORDINATION, and TRANSFER OF CONTROL. In support of these operational phases, application management messages are required to support application level dialogues between automated ATS systems.
- 2.2.2 The Advance Boundary Information (ABI) message should be used for notification, subject to bilateral agreement. The ABI can also be used to update the cleared profile of an aircraft, particularly when using abbreviated coordination and not utilizing the CPL message.
- 2.2.3 For the coordination phase, the Current Flight Plan (CPL) message should be used to coordinate the initial cleared profile in conjunction with the Coordination (CDN) message to negotiate changes. Coordination dialogues must be terminated using an Acceptance (ACP) or a Rejection (REJ) message. If abbreviated coordination is in use, the EST or PAC message should be used for coordination.
- 2.2.4 Towards the end of the coordination phase, the Profile Confirmation Message (PCM) should be used to confirm that the coordinated information is correct prior to the aircraft crossing the control area boundary. The ATSU receiving the PCM transmits a Profile Confirmation Acceptance (PCA) message to confirm that information in the PCM is in compliance with the previously coordinated information.
- 2.2.5 The Transfer of Control (TOC) and Acceptance of Control (AOC) messages should be used for the automatic transfer of control function.
- 2.2.6 In addition to the above, additional AIDC messages are provided, supporting the transfer of FANS-1/A logon information and confirmation of CPDLC connection status from one ATSU to another.
- 2.2.7 The capability to revert to verbal coordination, manual transfer of control and manual data link transfers (i.e. Address forwarding) should be retained.
- 2.2.8 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.**
- 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 and cruise climb, level information – including supplementary crossing data and crossing conditions – should be specified in accordance with *PANS-ATM, Appendix 3*.
- 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 Cruise Climb Information

- 2.3.6.1 Where a cruise climb is to be included in an AIDC message, it should be expressed as the upper level followed by lower level, then the single letter C.

Example

Format	Explanation
F340F320C	The aircraft is cruise climbing from F320 to F340

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

2.3.7 Speed Information

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

2.3.8 Mach Number Information

2.3.8.1 Where Mach Number 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 specified Mach Number, expressed as the letter M followed by 3 figures specifying the Mach Number to the nearest hundredth of unit Mach.

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 information may be included in Field 14 of any AIDC message

2.3.9 Offset and Weather Deviation Information

2.3.9.1 Where Offset or weather deviation information is to be included 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 lateral distance off 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

- 2.3.9.2 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.
- 2.3.9.3 When *transmitting an AIDC message containing Offset information, the direction “E” (either side of route) should not be used.*
- 2.3.9.4 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).

Note: Refer to Chapter 4 for more information concerning the use of Fields 14 and 15

2.3.10 Functional Addresses.

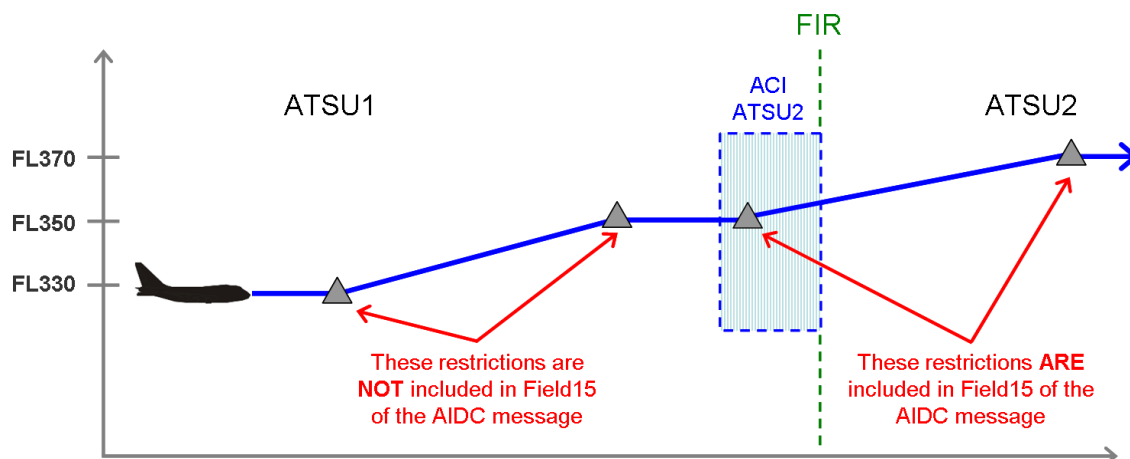
- 2.3.10.1 A functional address, which refers to a function within an ATS unit (e.g. an ATC watch supervisor), may be substituted in the MIS and EMG messages for the aircraft identification found in Field 7. Where such an address is used, it is preceded by an oblique stroke “/” to differentiate it from 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 either at, prior to, or after a specific time or position. This instruction may involve a speed, level or speed/level change, or a required time to cross a position.
- 2.4.1.2 The use of restrictions is optional. This section describes the conventions and formats used to permit the inclusion of a restriction in Field 15 of an AIDC Message transmitted from one ATSU to another.
- 2.4.1.3 The use of restrictions should be prescribed by bilateral agreement. ATS Units may agree to use all types of restrictions described below, or only a sub-set of them.
- 2.4.1.4 Restrictions may only be included in Field 15 of AIDC messages.
- 2.4.1.5 The Field 15 formats described in this section DO NOT support:
- the inclusion of a restriction containing a block level or a cruise climb;
 - the inclusion of a crossing condition as defined for Field 14 (e.g. F350F330A). Where Field 15 contains a restriction containing a change of level, climb or descent to that level is implied;
 - a restriction involving only a speed change, where that speed change is to be completed at or before a time or position.
- 2.4.1.6 The Field 15 formats described in this section DO support the coordination of:
- level changes, speed changes or speed/level changes that are commencing at or after a time or position;
 - level changes or speed/level changes that are to be completed at or before a time or position;
 - requirements to cross a position AT, AT OR BEFORE, or AT OR AFTER a specified time.

- 2.4.1.7 The restriction information provided by ATSU 1 to ATSU 2 should be limited to the flight profile at and beyond the ACI boundary associated with ATSU 2. Restrictions prior to the ACI boundary should not be included in AIDC messages transmitted to ATSU 2.



- 2.4.1.8 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.
- 2.4.1.9 If a position that is not in Field 15 of the original flight plan is used in a restriction associated with a speed/level change, this position must be included in Field 15 of the AIDC message.

2.4.2 Terminology.

- 2.4.2.1 For the purpose of this section of the document, the following terminology applies.

Terminology	Refers to...
level change	Refers to a clearance solely relating to the cleared level of the aircraft
speed change	Refers to a clearance solely relating to the cleared speed of the aircraft
speed/level change	Refers to a clearance relating to the cleared speed and level of the aircraft
speed and/or level change	Refers to a clearance relating to either a speed change, a level change, or a speed/level change (as described above)
level or speed/level change	Refers to a clearance relating to either a level change, or a speed/level change (as described above). It specifically excludes clearances relating solely to a speed change

2.4.3 Level and/or Speed Restrictions associated with a position.

2.4.3.1 Route, speed and level information contained in Field 14 and Field 15 represent the current cleared (or proposed) profile of the aircraft. The following section describes the required format of a restriction involving a speed and/or level change associated with a position in an AIDC message.

- Where a clearance issued to an aircraft requires a speed and/or level change to be **commenced after** passing a position, then the format of [position] followed by an oblique stroke “/” and the new speed and/or level will be used;
- Where a clearance issued to an aircraft requires a level or speed/level change to be **completed prior to** passing a position then the format of the new level or speed/level followed by an oblique stroke “/” and the [position] will be used;
- Where a clearance issued to an aircraft requires a level and/or speed/level change to be **commenced after** passing a position **and to be completed prior to** passing the subsequent position then a combination of the two formats described above shall be used.

Intent/Format

- i. After passing the specified position, the aircraft is cleared to maintain the specified speed and/or level:
 - a. [position]/[level]
 - b. [position]/[speed]
 - c. [position]/[speed][level]

Examples

- a. MICKY/F350
- b. 10N150W/M084
- c. 2030N05045W/M084F350

- ii. The aircraft is cleared to maintain the specified level or speed/level and to be maintaining the level or speed/level before the specified position:
 - a. [level]/[position]
 - b. [speed][level]/[position]

Examples

- a. F350/2030S15030E
- b. M084F350/36S163E

- iii. After passing the first specified position, the aircraft is cleared to maintain the specified level or speed/level and to be maintaining the level or speed/level before the second specified position:
 - a. [position1]/[level]/[position2]
 - b. [position1]/[speed][level]/[position2]

Examples

- a. MICKY/F370/30S160E
- b. 1020N14040W/M084F350/DAFFY

- 2.4.3.2 The intent is that the elements in Field 15 remain in chronological order. If the clearance issued to an aircraft requires a level or speed/level change to be **commenced after** passing one position **and to be completed prior** to passing a subsequent position (that is not the next position), then the format shown in the example below shall be used:

Intent/Format

After passing the first specified position, the aircraft is cleared to maintain the specified level or speed/level and to be maintaining the level or speed/level before a subsequent position that is not the next position:

- a. [position1]/[level] [position2] [position3] [level]/[position4]
- b. [position1]/[speed][level] [position2] [position3] [speed][level]/[position4]

Examples

- a. MICKY/F390 MINNY 05S080E F390/PLUTO
- b. 1020N14040W/M084F350 DAISY DONLD M084F350/DAFFY

Note. Other valid Field 15 information (e.g. an ATS route designator or DCT) may be included between the two restrictions:

MICKY/M084F350 A123 DONLD M084F350/DAFFY

2.4.4 Time Restrictions relating to crossing a position

- 2.4.4.1 A clearance may require an aircraft to cross a position at a specified time. There are three variations to such a clearance, requiring an aircraft to cross the position either AT the specified time, AT OR BEFORE the specified time, or AT OR LATER than the specified time. The following section describes the required format of a clearance involving a time restriction for a position in an AIDC message.

- The position with which the restriction is associated; followed by
- An oblique stroke “/”; and
- The appropriate 4 digit time; and
- A single letter suffix qualifying the type of restriction as described below.

Restriction type	Suffix
AT	A
AT OR BEFORE	B
AT OR LATER	L

Intent/Format

- i. The aircraft has been instructed to cross the specified position at (exactly) the specified time:
[position]/[time]A

Example

DAFFY/1230A

- ii. The aircraft has been instructed to cross the specified position at or before the specified time:

[position]/[time]B

Example

2540N16300E/0005B

- iii. The aircraft has been instructed to cross the specified position at or later than the specified time:

[position]/[time]L

Example

10N140W/1845L

- 2.4.4.2 A time restriction may also be combined with a speed and/or level change restriction. Where a position has a combination of restrictions associated with it, the time restriction always follows immediately after the associated position.

Intent/Format

- i. The aircraft has been instructed to cross the specified position at the specified time or later, and after crossing the specified position, the aircraft is cleared to maintain the specified speed and/or level:
 - a. [position]/[time]L/[speed]
 - b. [position]/[time]L/[level]
 - c. [position]/[time]L/[speed][level]

Examples

- a. MICKY/1640L/M084
- b. 05N030W/0200L/F350
- c. 3030S16300E/1045L/M084F350

Note. Time restriction types “A” or “B” can be used instead of “L” as appropriate

DAFFY/2330A/F390

- ii The aircraft has been cleared to maintain the specified level or speed/level and is required to be maintaining the level or speed/level at or before crossing the specified position, and to cross the specified position at the specified time:

- a. [level]/[position]/[time]A
- b. [speed][level]/[position]/[time]A

Examples

- a. F350/2030S16300E/0428A
- b. M084F350/MICKY/0450A

Note. Time restriction types “L” or “B” can be used instead of “A” as appropriate
F390/05N030W/2200B

- iii. After crossing [position1] the aircraft is cleared to maintain the specified level or speed/level and is required to be maintaining the level or speed/level at or before [position2]. In addition the aircraft has been instructed to cross [position2] at or before the specified time
- [position1]/[level]/[position2]/[time]B
 - [position1]/[speed]/[level]/[position2]/[time]B

Examples

- DAFFY/F350/10N150W/1645B
- 0830N14500W/M084F350/10N150W/1645B

Note. Time restriction types “A” or “L” can be used instead of “B” as appropriate

MICKY/F390/2000S16000E/2245A

- iv. The aircraft has been instructed to cross [position1] at the specified time, and after crossing [position1] the aircraft is cleared to maintain the specified level or speed/level and is required to be maintaining the level or speed/level at or before [position2]. In addition the aircraft has been instructed to cross [position2] at or after the specified time
- [position1]/[time1]A/[level]/[position2]/[time2]L
 - [position1]/[time1]A/[speed]/[level]/[position2]/[time]L

Examples

- MICKY/1550A/F350/10N150W/1645L
- 06N145W/0200A/M084F350/10N150W/0300L

2.4.5 Level and/or Speed Restrictions associated with a time

2.4.5.1 A clearance may require an aircraft to change speed and/or level at or after a specified time, or for a level or speed/level change to be completed at or before a specified time. The following section describes the required format of a restriction involving a speed and/or level change associated with a time in an AIDC message.

- Where a clearance issued to an aircraft requires a speed and/or level change to be **commenced** at or **after** a specific time, then the format of [time] followed by an oblique stroke “/” and the new speed and/or level will be used;
- Where a clearance issued to an aircraft requires a level or speed/level change to be **completed prior to** a specific time then the format of the new level or speed/level followed by an oblique stroke “/” and the [time] will be used;
- Where a clearance issued to an aircraft requires a level or speed/level change to be **commenced after** a specific time **and to be completed prior** to a later time then a combination of the two formats described above shall be used.

Intent/Format

- i After the specified time, the aircraft is cleared to maintain the specified speed and/or level:
- [time]/[speed]
 - [time]/[level]

- c. [time]/[speed][level]

Examples

- a. 1545/M084
- b. 2030/M084F350
- c. 0230/F350

- ii The aircraft is cleared to maintain the specified level or speed/level and to be maintaining the level or speed/level at or before the specified time:

- a. [level]/[time]
- b. [speed][level]/[time]

Examples

- a. F350/2250
- b. M084F350/1245

- iii After the first specified time, the aircraft is cleared to maintain the specified level or speed/level and to be maintaining the level or speed/level before the second specified time:

- a. [time1]/[level]/[time2]
- b. [time1]/[speed][level]/[time2]

Examples

- a. 1230/F350/1330
- b. 1800/M084F370/1900

- 2.4.5.2 A time restriction associated with a level or speed/level change may be used in conjunction with a restriction associated with a position

Intent/Format

- i After the specified time, the aircraft is cleared to maintain the specified level or speed/level and to be maintaining the level or speed/level before the specified position:

- a. [time1]/[level]/[position]
- b. [time1]/[speed][level]/[position]

Examples

- a. 1130/F370/SCUBY
- b. 0200/M080F350/05N030W

- ii After passing the specified position, the aircraft is cleared to maintain the specified level or speed/level and to be maintaining the level or speed/level before the specified time:

- a. [position]/[level]/[time]
- b. [position]/[speed][level]/[time]

Examples

- a. GOOFY/F350/1230
- b. 2000S16300E/M084F350/2245

- 2.4.5.3 The intent is that the contents in Field 15 remain in chronological order. If the clearance issued to an aircraft requires a level or speed/level change to be **commenced at or after** a specified time (or after passing a position) **and to be completed prior** to a time that is after the next position, then the format shown in the example below shall be used:

Intent/Format

After the first specified time (or position), the aircraft is cleared to maintain the specified level or speed/level and to be maintaining the level or speed/level before the subsequently specified time (or position) (and there are one or more positions between the commencement and completion times of the clearance):

- a. [time1]/[level] [position1] [position2] [level]/[time2]
- b. [time]/[speed][level] [position1] [position2] [speed][level]/[position3]
- c. [position1]/[level] [position2] [position3] [level]/[time]
- d. [position1]/[speed][level] [position2] [position3] [speed][level]/[position4]

Examples

- a. 0830/F350 DAISY DAFFY F350/1030
- b. 1000/M084F350 MICKY 05S175E M084F350/PLUTO
- c. DAFFY/F390 DAISY MICKY F390/1030
- d. 4030S16300E/M084F350 DAISY 39S170E M084F350/3730S16500E

Additional permutations are also possible using the previously described rules for formatting restrictions.

Note. Other valid Field 15 information (e.g. an ATS route designator or DCT) may be included between the two restrictions:

1200/M084F350 GOOFY A123 DONLD DCT M084F350/1400

- 2.4.5.4 A combination of all the previously described restriction formats is permitted.

- 2.4.5.5 The following table provides a variety of examples of different restrictions that may be included in Field 15.

Field 15	The aircraft has been instructed...
10N150W/M084	• After crossing 10N150W maintain M0.84
0130/FL310	• At or after 0130 climb/descend to FL310
F350/2030S15030E	• Be maintaining FL350 at or before 2030S15030E
FL390/2245	• Be maintaining FL390 at or before 2245
1020N14040W/M084F350/DAFFY	• After crossing 1020N14040W climb/descend to

	FL350 and to maintain M0.84 <ul style="list-style-type: none"> • Be maintaining FL350 and M0.84 prior to DAFFY
MICKY/M084F350 A123 DONLD M084F350/DAFFY	<ul style="list-style-type: none"> • After crossing MICKY climb/descend to FL350 and to maintain M0.84 • Be maintaining FL350 and M0.84 prior to DAFFY, where DAFFY is not the position after MICKY
2540N16300E/0005B	<ul style="list-style-type: none"> • Cross 2540N16300E at or before 0005
05N030W/0200L/F350	<ul style="list-style-type: none"> • Cross 05N030W at 0200 or later • After crossing 05N030W, climb/descent to FL350
DAFFY/2200L/M085F370/DAISY/2300A	<ul style="list-style-type: none"> • Cross DAFFY at 2200 or later • After crossing DAFFY climb/descent to FL370 and to maintain M0.85 • Be maintaining FL370 and M0.85 prior to DAISY • Cross DAISY at 2300
34S160E/1500B/F390 DCT 3200S16200E/1545A F390/1615 3025S16415E/1700L	<ul style="list-style-type: none"> • Cross 34S160E at or before 1500 • After crossing 34S160E climb/descent to FL390 • Cross 3200S16200E at 1545 • Be maintaining FL390 before 1615 • Cross 3025S16415E at or after 1700

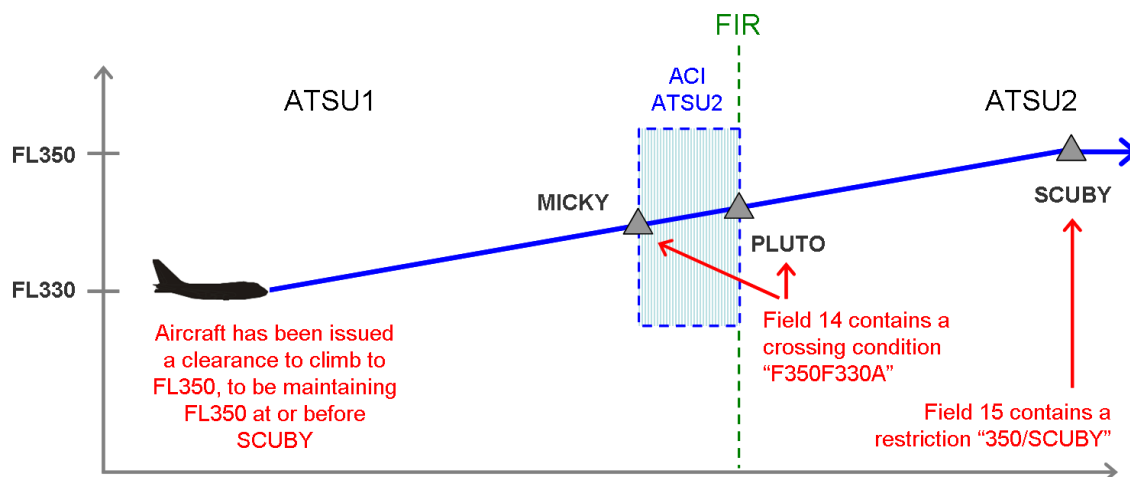
2.4.5.6 Under normal circumstances, restrictions in Field 15 would consist of:

- A [position] or [time] that a change of speed and/or level is to commence; or
- A [position] or [time] that a change of level or speed/level is to commence, as well as a [position] or [time] that a change of level or speed/level is to be completed by

However, when used in conjunction with a crossing condition in Field 14, it is also allowable for Field 15 to contain a restriction consisting only of a [position] or [time] that a change of level is to be completed by.

Field 14	Field 15	The aircraft has been instructed to...
PLUTO/1330F350F330A	...F350/SCUBY ...	<ul style="list-style-type: none"> • Climb to FL350 (and the aircraft will enter the ACI, or cross the FIR

		boundary, at or above FL330) • Be maintaining FL350 at or before SCUBY
1020N14030W/0400F370F350A	... F370/0600 ...	• Climb to FL370 (and the aircraft will enter the ACI, or cross the FIR boundary, at or above FL350) • Be maintaining FL370 at or before 0600



Chapter 3 Communications and Support Mechanisms

3.1 Introduction

- 3.1.1 Coordination communication requirements are divided between the need for voice communications as well as data communications between ATS Units. It is anticipated that the continuing implementation of automated data communications between ATSUs will result in a reduction in the utilization of voice communications, with a corresponding increase in data communications.
- 3.1.2 AIDC messages can be exchanged over either AMHS and/or AFTN. The exchange of AIDC messages can also be supported by dedicated private communication lines.

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 (ODF), will be utilized for the exchange of all AIDC messages. The AFTN message header (referred to as the AIDC message header within this document) is defined in ICAO Annex 10, Vol. II. When AMHS or a dedicated line is used, the ODF in AFTN IA-5 Message Header is still required to be included as the first line of the message text. Standard IA-5 Message Header including ODF should be employed at AMHS/AFTN gateway.

3.2.2 AFTN Priority

- 3.2.2.1 The AFTN priority indicator FF should normally be used for all AIDC messages, except for EMG, which should be assigned a priority indicator SS.

3.2.3 Optional Data Field (ODF)

- 3.2.3.1 The ODF provides a flexible means to transmit and respond to AIDC messages, without being affected by the communication processes along the network path.
 - 3.2.3.2 ODF 1 has already been allocated for additional addressing uses, and is described in ICAO Annex 10, Vol II. ODF 2 and 3 have been defined for computer applications to convey message identification and message reference information and are adopted in this ICD.
 - 3.2.3.3 The use of ODF is required to ensure the successful exchange of AIDC messages. When AMHS or AFTN/AMHS gateways are used for AIDC message exchanges, the ODFs specified in this ICD must be supported.
 - 3.2.3.4 The proposed encoding has no impact on AFTN switching centers as they ignore this part of the origin line.
- #### 3.2.4 Addressing.
- 3.2.4.1 The Origin 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.
 - 3.2.4.2 The first four characters in the address 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 is determined by the ATSU.

3.2.5 Message Identification Number.

- 3.2.5.1 The message identification number is a six digit number and is encoded in the AIDC message header in ODF 2.
- 3.2.5.2 Each AIDC message will be assigned a message identification number. A check for duplicate message identification numbers received from each ATSU should be made.
- 3.2.5.3 Message identifier numbers should be sequential. Receipt of an out of sequence message should result in a warning being issued.

3.2.6 Reference Information.

- 3.2.6.1 The message reference number provides a means of linking an AIDC response to a previously transmitted or received AIDC message.
- 3.2.6.2 The message reference number consists of two parts:
- The ICAO location indicator of the immediately preceding message in the dialogue. This is required because the AIDC message being referenced could have originated from a number of sources (i.e. different ATS Units); and
 - The message identification number of the first message in the dialogue.

Examples are found in paragraph 3.2.11. Refer to paragraphs 6.2.4.3.5 – 6.2.4.3.7.

- 3.2.6.3 The message reference number is encoded in the AIDC message header in ODF 3

3.2.7 Time Stamp.

- 3.2.7.1 The time stamp is expressed as 12 digits in year, month, day, hours, minutes, and seconds (YYMMDDHHMMSS) and represents the time that the AIDC message was released from the ATS system. Because the resolution of the time stamp is in seconds, it will support the computation of transmission delays.
- 3.2.7.2 The time stamp is encoded in the AIDC message header in ODF 4.

3.2.8 Cyclic Redundancy Check (CRC).

- 3.2.8.1 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 must be excluded from the CRC calculation.
- 3.2.8.2 The CRC is encoded in the AIDC message header in ODF 5.
- 3.2.8.3 A number of different methods of calculating the CCITT CRC are available. It is important to ensure that the XModem method is used. A number of ATS Units have encountered AIDC interoperability problems by using a different CRC. To assist in AIDC system testing, a number of AIDC messages as well as their associated CRC are included in the Table below.

AIDC message	CRC
(ABI-ANZ124/A1405-YMML-SASRO/0332F350-NZAA-8/IS-9/B77W/H-10/SDE1E2E3GHIJ3J4J5M1RWXY/LB1D1-15/N0479F350 CORRS DCT	1025

RIKUS DCT GEMAC N759 MIKEL/N0476F370 N759 SASRO DCT LUNBI DCT-18/PBN/B1C1D1L1O1S2T1 REG/ZKOKQ EET/YBBB0034 NZZO0142 SEL/EFQ CODE/C81E22 OPR/ANZ RALT/NZCH YSSY RMK/TCAS EQUIPPED)	
(EST-QFA143/A1425-YSSY-ESKEL/0050F360-NZAA)	B60B
(CDN-QFA149/A1403-YSSY-NZAA-14/ESKEL/0909F360)	6586
(TOC-VOZ188/A1024-YBBN-NZAA)	5500

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. 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 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 identification number as the original message.

3.2.10 Interpretation of the AIDC header

3.2.10.1 The contents of the following AIDC message header are listed separately in the Table below

140010 NZZOZQZF 2.000922-3.YBBB019042-4.131214000932-5.284E-

Optional Data Field	Use	Example
1	AFTN address	NZZOZQZF
2	Message identification number	000922
3	Message reference number	YBBB019042
4	Time stamp	131214000932
5	CRC	284E

Note. The hyphen following the CRC (ODF 5) is required to separate the AIDC message header from the AIDC message text.

- 3.2.11 The following examples show two AIDC Messages encoded in accordance with the previous procedures.

The first AIDC message is EST message (message identification number 019042) transmitted by Brisbane Centre (YBBBZQZF) to Auckland Oceanic (NZZOZQZF) at time 131214000930:

```
FF NZZOZQZF
140009 YBBBZQZF 2.019042-4.131214000930-5.B60B-
(EST-QFA143/A1425-YSSY-ESKEL/0050F360-NZAA)
```

The next AIDC message shows the ACP response from NZZO in reply to the EST message from the previous example.

Auckland Oceanic (NZZOZQZF) accepts the proposed coordination received from Brisbane Centre (YBBBZQZF) by sending an ACP message with message identification number 000922 from NZZOZQZF to YBBBZQZF at 131214000932. The message refers to the message transmitted earlier by YBBBZQZF, with message reference number YBBB019042. This message reference number is a combination of the location indicator (YBBB) and the message identification (019042) of the original message.

```
FF YBBBZQZF
140010 NZZOZQZF 2.000922-3.YBBB019042-4.131214000932-5.284E-
(ACP-QFA143/A1425-YSSY-NZAA)
```

3.3 Engineering considerations

- 3.3.1 AIDC messages have traditionally been exchanged via the AFTN. However, the use of AMHS through AMHS/AFTN gateways may also be 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, ATSUs should monitor the performance of the communication links to ensure the required performance is achieved. This monitoring should measure the latency of the AIDC message traffic between ATS systems in terms of the time measured between message transmission at the originating ATS system and receipt of the message at the receiving ATS system.

- 3.3.2.2 The performance of the communications links should be such that 95% of all messages should be received within 12 seconds of transmission and 99.9% of all messages should be received within 30 seconds of transmission. In bilateral agreements, ATSUs, may agree on different performance requirements.

- 3.3.2.3 The communication signal speed between ATS systems using AFTN/AMHS should be greater than 2400 bps.

3.3.3 Measuring AIDC performance

- 3.3.3.1 Monitoring AIDC performance ensures that AFTN or AMHS delays are detected, as well as identifying AIDC interoperability issues with adjacent ATS Units. As described below, there are a number of different methods that may be used to measure AIDC performance.

3.3.3.2 One way performance for a transmitted AIDC message

- Calculate the difference between the time stamp in the message header of the transmitted message and the time stamp in the message header of the Application response (LAM/LRM):

Example:

ATSU	Message	Time stamp	Transit time
ATSU 1	270646 YBBBZQZF 2.013490-4.140627064655-5.C997- (EST-QFA147/A1551-YSSY-ESKEL/0727F390-NZAA)	140627064655	
ATSU 2	270647 NZZOZQZF 2.024216-3.YBBB013490-4.140627064658-5.CF71- (LAM)	140627064658	3 sec

3.3.3.3 One way performance for a received AIDC message

- Calculate the difference between the time stamp in the message header of the received message and the time stamp in the measure header of the Application response (LAM/LRM):

Example:

ATSU	Message	Time stamp	Transit time
ATSU 2	160503 NZZOZQZF 2.000751-4.140627064655-5.FCE9- (EST-QFA146/A0277-NZAA-OLREL/0540F390-YSSY)	140627064655	
ATSU 1	160502 YBBBZQZF 2.158853-3.NZZO000751-4.140627064659-5.CF71- (LAM)	140627064659	4 sec

Note. Instead of using the time stamp in the message header of the Application response, an alternative method is to use the network time stamp for the receipt of the EST message sent by ATSU 2.

3.3.3.4 Round trip performance for an AIDC message dialogue

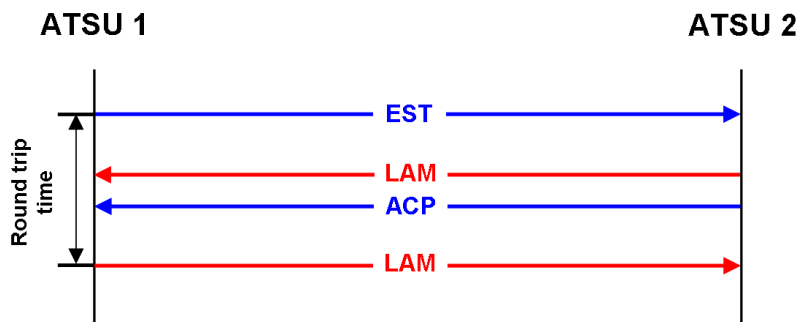
Round trip performance can be calculated by:

- Adding the one way performance for the individual messages in the dialogue; or
- Comparing a combination of time stamps in message headers and network time stamps for the first and last messages in the AIDC dialogue.

An alternative method that uses information derived solely from the AIDC message is outlined below.

- Calculate the difference between the time stamp in the message header of the first AIDC message in the dialogue and the time stamp in the message header of the Application

response (LAM/LRM) that is sent when the Operational response to the first message is received :



Example:

ATSU	Message	Time stamp	Transit time
ATSU 1	270646 YBBBZQZF 2.013490-4.140627064655-5.C997- (EST-QFA147/A1551-YSSY-ESKEL/0727F390-NZAA)	140627064655	
ATSU 2	270647 NZZOZQZF 2.000454-3.YBBB013490-4.140627064658-5.6454- (ACP-QFA147/A1551-YSSY-NZAA)	140627064658	3 sec
ATSU 1	270647 YBBBZQZF 2.013491-3.NZZO000454-4.140627064700-5.CF71- (LAM)	140627064700	2 sec 5 sec (Round trip)

3.3.3.5 Other parameters to consider monitoring may include the percentage of successful EST/ACP, PAC/ACP and CPL/ACP dialogues, the percentage of successful TOC/AOC exchanges, and the average delay for CPL and CDN negotiations.

3.3.3.6 Ongoing analysis of LRMs received is also recommended to identify any AIDC interoperability issues between adjacent ATS Units.

3.3.4 Recording of AIDC data.

3.3.4.1 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.

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

3.4 Test considerations

3.4.1 Non-operational test systems should be considered as an alternative to testing on the operational ATS system.

3.4.2 When required to use the operational system to conduct AIDC testing, the AIDC “test” messages should have the same format as operational messages, but be distinguishable from operational

traffic by the use of non-operational call signs. These call signs should be specified in bilateral agreements.

3.5 Scheduled Maintenance and Failures

- 3.5.1 ANSPs should be aware that maintenance on AIDC and AFTN systems may have an operational effect on other ANSPs. Such an effect may for example include loss of the AIDC function due to flooding of messages or out of sequence messages following an AIDC server reboot. Any maintenance affecting the AIDC and AFTN systems should therefore be prior coordinated with the ANSP counterparts and backup procedures decided.
- 3.5.2 Failure of the AIDC and/or AFTN systems should be immediately notified to the ANSP counterparts and backup or recovery procedures implemented.

Chapter 4 AIDC Messages

4.1 Introduction

- 4.1.1 This chapter describes the permitted fields and formats of AIDC messages. AIDC message fields conform to ICAO definitions contained in PANS-ATM Appendix 3 except as described below for Fields 14 and 15, as well as a “Text” field that is used in some AIDC messages.
- 4.1.2 ATS data in AIDC messages is enclosed between parentheses. Only one ATS message is permitted to be included in each transmission.
- 4.1.3 Unless specified otherwise by the ATSU, the optional elements in the AIDC message fields described in this chapter and shown in Table 4-6 should be made available in the system by the manufacturer and be user configurable.

4.2 Message Field Requirements

Fields in AIDC messages do not always require the full contents of the defined ICAO message field. This section specifies the usage of specific elements from message fields defined in the PANS-ATM as well as additional information that may be included in Fields 14 and 15.

4.2.1 Field 3 requirements.

- 4.2.1.1 All AIDC messages should use Field 3a (Message type) only.
- 4.2.1.2 Fields 3b (Message number) and 3c (Message reference data) are not used, since in AIDC messages the reference numbers contained in these fields are included in the Optional Data Field (ODF), option 2 and 3. See Chapter 3, Para 3.2.3.2.

4.2.2 Field 7 requirements.

- 4.2.2.1 Where Field 7 is required in an AIDC message, Field 7a (Aircraft Identification) must 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 Field 13 requirements.

- 4.2.3.1 Where Field 13 is required in an AIDC message only Field 13a (Departure aerodrome), is required. Field 13b (Departure time) is not to be transmitted. The use of ZZZZ in Field 13 is supported.

4.2.4 Field 14 requirements

The following section describes the allowed contents of Field 14 (Estimate data), as well as providing examples of how Field 14 data can be incorporated in an AIDC message.

- 4.2.4.1 Field 14 may contain a number of mandatory and optional items. The following Table 4-1 provides an overview on the type of information that may be included in Field 14.

Table 4-1. Contents of Field 14

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

	GOOFY		by bilateral agreement. Field 14a is followed by an oblique stroke “/”
Estimated time (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 C	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 (C) The aircraft is cruise climbing from the level specified in 14d. The support for the cruise climb format is optional
Mach Number	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 O30L	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 item of optional information in Field 14 is separated from the previous item by an oblique stroke “/”;

Note2. The order that the item is included in Field 14 is the order in which it is listed in Table 4-1. 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 in Field 14.

4.2.4.2 Supplementary Crossing Data and Crossing Conditions in Field 14

4.2.4.2.1 Field 14 may contain information that an aircraft is on climb, descent or cruise climb to the specified level. This is achieved by including supplementary crossing data and crossing conditions in Field 14.

4.2.4.2.2 The inclusion of cruise climb information in AIDC messages should only be made following bilateral agreement.

Example:

Field 14	Explanation
DUMBO/2130F310F290A	The aircraft is estimating DUMBO at 2130, assigned F310 and is climbing from (or “above”) F290.
30N160W/0215F310F330B	The aircraft is estimating 30N160W at 0215, assigned F310 and is descending from (or “below”) F330.
ADSAM/1547F360F340C	The aircraft is estimating ADSAM at 1547 and is cruise climbing from F340 to F360.

4.2.4.3 Block level information in Field 14

4.2.4.3.1 Field 14 may contain information that an aircraft is operating in a block level clearance. It is permissible to include supplementary crossing data and a crossing condition with a block level, but if this occurs the supplementary information 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 is climbing to the cleared block and will be at or above F290 at 46N150W.

4.2.4.3.2 The AIDC format does not support a cruise climb into a block clearance.

4.2.4.3.3 The inclusion of block level information in AIDC messages should only be made following bilateral agreement.

4.2.4.4 Mach Number information in Field 14

4.2.4.4.1 Field 14 may contain information that an aircraft has been assigned a speed restriction (Mach Number). When 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 an oblique stroke “/”.

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

4.2.4.4.2 The absence of speed information in Field 14 of an AIDC message provides advice that any previously notified speed has been cancelled.

Example:

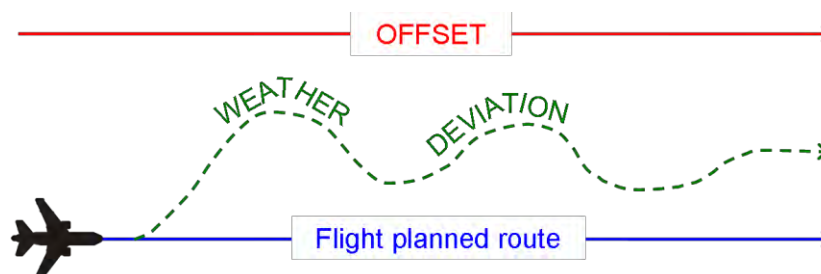
Field 14	Explanation
SPEDY/1237F310F330B/LM083	The aircraft is estimating SPEDY at 1237, assigned F310 and will cross SPEDY at or below F330, maintaining M0.83 or less.
Subsequently followed by: SPEDY/1238F310	The aircraft is now estimating SPEDY at 1238, is maintaining F310 (i.e. no longer on descent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

4.2.4.4.3 The inclusion of Mach Number information in AIDC messages should only be made following bilateral agreement.

4.2.4.5 Offset and Weather Deviation Information in Field 14

4.2.4.5.1 Field 14 may contain information that an aircraft is subject to either a weather deviation or offset clearance. When 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 an oblique stroke “/”.

4.2.4.5.2 It is important that the difference between an offset and a weather deviation is correctly understood. This difference is depicted in the diagram below.



4.2.4.5.3 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.

4.2.4.5.4 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.

4.2.4.5.5 The following examples show various combinations of weather deviations and offsets, combined with other optional information allowed in Field 14.

Example:

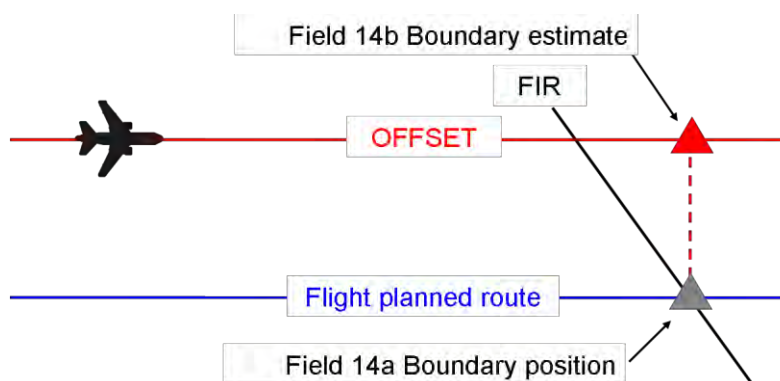
Field 14	Explanation
2830S16300E/0140F330/W20L	The aircraft is estimating 2830S16300E at 0140, maintaining F330, and has been cleared to deviate up to 20NM to the left of route.
GOOFY/2330F310/GM084/O30R	The aircraft is estimating GOOFY at 2330, maintaining F310, instructed to maintain M0.84 or greater, 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.

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

Example:

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

4.2.4.5.7 When an aircraft is offsetting or deviating, the coordination point included in Field 14a should be a position based on the flight planned route rather than the offset route. The estimate included in Field 14b shall be the estimate for the “abeam” position for the position included in Field 14a.



4.2.4.5.8 The inclusion of offsets and weather deviation information in AIDC messages should only be made following bilateral agreement. Depending on their operational requirements, some ATS Units may choose to only implement the weather deviation format. If applicable, this should also be specified in bilateral agreements.

4.2.5 Field 15 requirements

4.2.5.1 The following section describes the allowed contents of Field 15 (Route), as well as providing examples of how Field 15 data can be incorporated in an AIDC message.

4.2.5.2 A number of different AIDC messages (e.g. ABI, PAC, CPL, CDN and PCM) 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.

4.2.5.3 While Field 15 may be optional in an AIDC message (refer Table 4-6), if it is included, all Field 15 sub-fields (15a, b and c) must also be included.

Table 4-2. Contents of Field 15

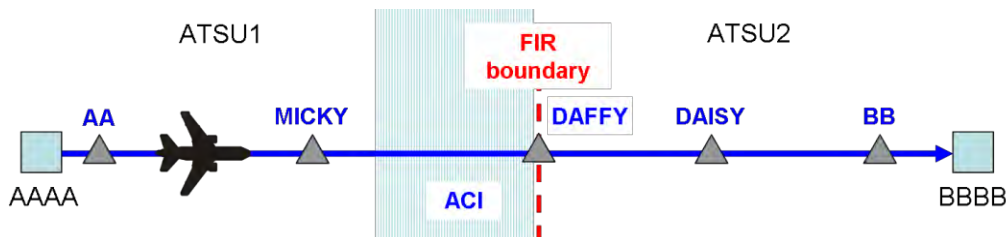
Data	Example	Mandatory /Optional	Comment
Speed (15a)	M084 N0488	M	<p>(Included in a flight plan as the initial requested speed for a flight).</p> <p>In AIDC messaging:</p> <ul style="list-style-type: none"> if a speed has been specified in Field 14c, then the speed in Field 15a should be the same value; otherwise, it should represent the expected speed of the aircraft at the coordination point included in Field 14a.

Level (15b)	F310	M	<p>(Included in a flight plan as the initial requested flight level for a flight).</p> <p>In AIDC messaging:</p> <ul style="list-style-type: none"> if a block level has been specified in Field 14, then the level in Field 15a should be a single level within the block; otherwise, it should be the level specified in Field 14c.
Route (15c)	<ul style="list-style-type: none"> DAFFY HNL EGLL 3415S16000E 60N050W A123, AB456 BLI235100 M080F350 M084 F370 M084F370 1230 T DCT 	M	<p>The route (or proposed route) of flight. It may contain any or all of the following elements:</p> <ul style="list-style-type: none"> Waypoint Navigation aid Aerodrome Latitude/longitude Latitude/longitude ATS route Place/bearing/distance Speed/level changes (See Note 2) Speed restriction Level restriction Speed/Level restriction (See Note 2) Time associated with a restriction. May include a suffix of “A”, “B” or “L” Truncation indicator (“T”) Direct to

Note 1: The contents of Field 15c are defined in PANS-ATM Appendix 3, with the exception of level/time/speed restrictions which are described within this document in paragraph 2.4 **Restriction Formats**. Planned speed/level changes from the filed FPL are included in some AIDC implementations although they do not reflect the current cleared profile of the aircraft.

Note 2: Flight planned speed/level changes and level/time/speed restrictions as defined in 2.4 **Restriction Formats** cannot both be included in Field 15 because in some cases they both use the same format. ATS Units should specify in bilateral agreements which group of information (if any) will be supported.

4.2.5.4 At the minimum, Field 15 in an AIDC message should commence at a position prior to the ACI associated with the adjacent FIR. Some ATS Units may include route information commencing at the Departure aerodrome.



4.2.5.5 Field 15 information transmitted by ATSU1 to ATSU2 should commence at (or before) MICKY. This permits ATSU2 to calculate the profile of the aircraft commencing at the ACI boundary.

4.2.5.6 **ATS Route**

4.2.5.6.1 An ATS route may only be preceded and followed by a waypoint that is defined to be on that ATS route.

4.2.5.7 **Latitude/Longitudes**

4.2.5.7.1 Latitude and longitude in Field 15 must either be both in whole degrees, or both in degrees and minutes.

4.2.5.8 **Flight Planned Speed/Level Changes**

4.2.5.8.1 Some ATSUs may include flight planned speed/level changes in Field 15c although they do not reflect the current cleared profile of the aircraft. An ATSU receiving Field 15c data containing planned FPL level speed changes should accept the information. However, the receiving ATS Unit may choose not to use the planned FPL level speed changes to update their flight plan, and may choose not to forward it in any subsequent AIDC messages.

4.2.5.9 **Time/Speed/Level Restrictions**

4.2.5.9.1 While the information in Field 14 defines the conditions for crossing the ACI or FIR boundary, ATSU 1 may include in Field 15 time/speed/level restrictions that have been issued in a clearance to an aircraft. These clearances may include a requirement for an aircraft to cross a position at a specific time or to change level and/or speed at or by a specific time or position.

4.2.5.10 **Truncation Indicator**

4.2.5.10.1 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').

4.2.5.10.2 Bilateral agreements should define the use and meaning of the truncation indicator. For example the truncation indicator may represent:

- the point at which the route in Field 15 rejoins the original flight planned route, or
- the end of the oceanic cleared route.

4.2.5.10.3 The truncation indicator should only follow a significant point in Field 15 and should not follow an ATS Route, or "DCT".

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

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

Examples of Field 15c

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 GEROS GEROS045100 ESKEL L521 AA	Place/bearing/distance
SY L521 GEROS/M085F370 L521 AA DCT BB	Speed/level change, DCT
SY L521 LUNBI T SY L521 GEROS 32S160E 3425S16300E T SY L521 LUNBI/M085F370 T	Truncation indicator
SY L521 GEROS/F370 L521 F370/LUNBI AA SY GEROS/2245L 32S160E ESKEL/M085F390 AA SY L521 M084F350/GEROS/1230A ESKEL/M083 L521 AA	Restrictions

4.2.6 Field 16 Requirements

- 4.2.6.1 Where Field 16 is required in an AIDC message, only Field 16a (Destination aerodrome), is required. Field 16b (Total estimated elapsed time) and Field 16c (Alternate aerodrome(s)) are not to be transmitted. The use of ZZZZ in Field 16 is supported.

4.2.7 Field 18 Requirements

- 4.2.7.1 Field 18 should contain other information from the current flight plan and is used to update the flight plan at the receiving ATSU.
- 4.2.7.2 When transmitting Field 18 in an AIDC message, all Field 18 indicators should be included, even if the change only affects data in an individual Field 18 indicator. However, ATS Units may agree by bilateral agreement to omit specific indicators (e.g. EET/) if required. If omitting indicators, ATS Units should have due regard to the potential effect to downstream ATS Units.
- 4.2.7.3 The contents of Field 18 in AIDC messages should be specified in bilateral agreements between ATS Units.

Note: Some legacy implementations allowed provision for the modification of individual sub fields by communicating only that specific subfield. This is not recommended practice.

- 4.2.7.4 In some AIDC messages, Field 18 may contain only a RMK/ indicator which is used to convey free text data information. This applies to the MAC, EMG, LRM and MIS messages.

4.3 AIDC message groups

- 4.3.1 From a technical and operational perspective it is advantageous to standardize AIDC implementation to the full extent possible. This document identifies a group of messages as a “core” message set in Table 4-3, which is recommended to be supported by all ATSUs. This will aid standardization of system and procedure development.
- 4.3.2 It is nevertheless acknowledged that even a limited message set implementation, such as only CPL and ACP, can bring significant benefits to ATS units. Some ATSUs may, due to technical, financial, or operational reasons, have a need to gradually implement the AIDC message set or may even determine that not all messages in the core message set are required.
- 4.3.3 Unless specified otherwise by the ATSU, the non-core messages shown in Table 4-3 should be supported by the manufacturer in ground systems and their availability be configured by the ATS Unit as required.
- 4.3.4 The specific AIDC messages to be used between ATSUs should be included in bilateral agreements.

Table 4-3. AIDC Messages

Core	Non-core	Message Class	Message
X		Notification	ABI (Advance Boundary Information)
X		Coordination	CPL (Current Flight Plan)
X		Coordination	EST (Coordination Estimate)
	X	Coordination	PAC (Preliminary Activate)
X		Coordination	MAC (Coordination Cancellation)
X		Coordination	CDN (Coordination Negotiation)
X		Coordination	ACP (Acceptance)
X		Coordination	REJ (Rejection)
	X	Coordination	PCM (Profile Confirmation Message)
	X	Coordination	PCA (Profile Confirmation Acceptance)
	X	Coordination	TRU (Track Update)
X		Transfer of Control	TOC (Transfer of Control)
X		Transfer of Control	AOC (Acceptance of Control)
X		General Information	EMG (Emergency)

Core	Non-core	Message Class	Message
X		General Information	MIS (Miscellaneous)
X		Application Management	LAM (Logical Acknowledgement Message)
X		Application Management	LRM (Logical Rejection Message)
	X	Application Management	ASM (Application Status Monitor)
	X	Application Management	FAN (FANS Application Message)
	X	Application Management	FCN (FANS Completion Notification)
	X	Surveillance Data Transfer	ADS (Surveillance ADS-C)

4.4 Notification messages

4.4.1 ABI (Advance Boundary Information).

4.4.1.1 Purpose.

4.4.1.2 An ABI message is transmitted to provide information on a flight to the receiving ATSU. The purpose of the ABI is to synchronize the flight plan information held between two ATS Units.

4.4.1.3 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.

4.4.1.4 Message format.

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

Field 22 should contain as a minimum the following fields:

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

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

8	Flight rules and type of flight
10	Equipment
18	Other information

Example

An ABI message containing the minimum contents of Field 22, with full route details to destination.

(ABI-IBE6175-LEMD-41N040W/0700F330-KMIA

-9/B744/H

-15/M084F350 41N030W 41N040W 41N050W 40N060W 38N065W DANER A699 NUCAR
DCT HEATT

An ABI message containing a supplementary crossing condition and Mach Number in Field 14, a truncated Field 15 containing a level restriction, and an agreed subset of Field 18:

(ABI-ICE615-BIKF-62N030W/0700F350F310A/GM080-KJFK

-8/IS

-9/B752/M

-10/SDIJ5RXW/SD1

-15/M080F350 62N030W 60N040W/M080F370 57N050W DCT OYSTR DCT STEAM T

-18/PBN/A1L1)

An ABI containing a weather deviation in Field 14, a speed/level change in Field 15 and the entire Field 18 from the original FPL:

(ABI-ANZ716/A1565-YSSY-ESKEL/0743F370/W20R-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)

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.

4.5.1.1.2 The transmission of the CPL message 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.

4.5.1.1.3 The ATSU receiving the CPL message should either agree to the proposed coordination by responding with an ACP message, or negotiate the proposed coordination by responding with a CDN message.

4.5.1.1.4 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, type of aircraft and wake turbulence category
10	Equipment
13	Departure aerodrome
14	Estimate data
15	Route
16	Destination aerodrome
18	Other information

Example

A CPL message containing a block level with a supplementary crossing condition in Field 14, and an agreed subset of Field 18:

(CPL-UAL815-IS

-B773/H-SDIJ5RXW/SD1

-LFPG-54N030W/1417F350F370F330A

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

-KIAD

-PBN/A1L1 REG/N456UA SEL/KLBF)

A CPL message containing a block level and a weather deviation in Field 14, and a time restriction in Field 15:

(CPL-ICE680/A1437-IS

-B752/M-SWXRGIDFHY/LB1

-KSEA-6852N06414W/0418F370F390/W30E

-M079F370 6852N06414W BOPUT/0430B 6900N06000W 6900N05000W 6800N04000W
 6600N03000W HEKLA
 -BIKF
 -PBN/A1B2B3B4B5D1L1S1 NAV/RNVD1A1 DOF/131124 REG/TFLLX SEL/DSHK
 RALT/CYEG BGSF)

4.5.2 EST (Coordination Estimate)

4.5.2.1 Purpose.

4.5.2.1.1 An EST message is used to initiate coordination for a flight.

4.5.2.1.2 The transmission of the EST message is used in conjunction with (and generally following) an ABI message and is triggered at an agreed time or position prior to the common boundary or ACI, or possibly by a change in flight state.

4.5.2.1.3 The only valid response to an EST message is an ACP message, 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/LM083-KSFO)

(EST-QFA811/A2277-WSSS-20N070E/1417F350F370/W20L-YAYT)

4.5.3 PAC (Preliminary Activate)

4.5.3.1 Purpose.

4.5.3.1.1 A PAC message is used to initiate coordination for a flight that has not yet departed to comply with the approval request procedure, specified in PANS-ATM Para 10.1.2.3. This would normally occur if the departure point is close to the FIR or ACI boundary and preflight coordination is required.

4.5.3.1.2 Because the departure point is close to the boundary, the transmission of a PAC message would normally be triggered by a change in flight state.

4.5.3.1.3 Where a PAC contains enough optional fields to capture any flight plan updates that may have occurred it is not normally preceded by an ABI message. However, this is considered a local implementation issue and should be determined by bi-lateral agreement.

4.5.3.1.4 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 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

Example

An example of an abbreviated PAC message:

(PAC-ANZ763-YSNF-TEKEP/0250F360F001A-YSSY)

An example of a PAC message containing all message fields:

(PAC-ATN460/A4440-FJDG-LATEP/1822F310F001A-WSAP

-8/IN

-9/B752/M

-10/ SDIRXW/S

-15/N0473F370 DCT NKW R348 LATEP/M080F350 R348 KADAP/N0489F290 P627

DABAP/N0467F370 N628 PKU R469 TAROS/M080F370 DCT PIMOK W401 KK DCT PU
DCT

-18/PBN/A1B2C2D2O2 NAV/RNVD1E2A1 DOF/131212 REG/N753CX EET/YMMM0027
SEL/GSQR OPR/ATN ORGN/KLITATNX RMK/TCAS EQUIPPED)

4.5.4 MAC (Cancellation of Notification and/or Coordination)

4.5.4.1 Purpose.

4.5.4.1.1A MAC message is transmitted to advise an ATSU that any notification and/or coordination previously received for a flight is no longer relevant to that ATSU.

4.5.4.1.2A MAC message should only be transmitted to an ATSU that has previously received notification and/or coordination for a flight. While a MAC message might be transmitted after a flight has been cancelled, the MAC message should not be considered as equivalent to a CNL message as its purpose is not to 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 field

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

14	Estimate Data
18	Other information (limited to RMK/)

Field 14 containing the estimate data previously transmitted may be included in the MAC message. It may be used if required, to correctly identify the flight concerned by the MAC, when appropriate. If a MAC message is 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-THA989-VTBD-YMML-18/RMK/DIVERTED TO YPDN)

(MAC-FJI910/A1452-YSSY-NFFN-14/UBLIN/2330F370)

4.5.5 CDN (Coordination Negotiation)

4.5.5.1 Purpose.

4.5.5.1.1A CDN message is used to propose amendments to previously agreed coordination conditions or coordination proposed in a CPL message or a CDN message.

4.5.5.1.2 An initial coordination dialogue following a CPL message is always terminated by an ACP message; otherwise an ATSU receiving a CDN message 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.

4.5.5.1.3 If sent in response to another AIDC message, The CDN message is linked to the original AIDC message using message identifier and reference identifier information described in section 3.2 Message Headers, Timers and ATSU Indicators.

4.5.5.2 Message Format.

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

Normally, Field 22 may contain any or all of the following fields:

14	Estimate data
15	Route
18	Other Information

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

10	Equipment
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

CDN messages proposing amendments to Field 14. This would normally be the most common field that is amended:

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

(CDN-ANZ135/A2462-NZAA-YBBN
-14/RIGMI/0220F360F380/W20L)

A CDN message proposing amendments to Field 10 (in this case RVSM capability has been removed) (subject to bilateral agreement):

(CDN-QFA43/A4422-YSSY-NZAA
-10/SDE2E3GHIRYZ/LB1)

A CDN message proposing amendments to Fields 14 and 15:

(CDN-BAW32N-KMIA-EGGL
-14/37N040W/0201F360
-15/M085F360 32N050W 37N040W 42N030W 45N020W OMOKO GUNSO GAPLI UL620
GIBSO)

A CDN message proposing amendments to field 18:

(CDN-BAW242-MMMX-EGLL
-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 messages proposing an amended destination (subject to bilateral agreement):

(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 message proposing a new route to an amended destination. The first of these examples shows a change in route and destination, with no change in Field 14 (i.e. the proposed re-route occurs after the boundary position). The second 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 that may have been included in the flight plan. Refer to Chapter 6, *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 agreed coordination conditions are updated in accordance with the proposed coordination.

4.5.6.1.2 An ACP message is linked to the original AIDC message using message identifier and reference identifier information described in section 3.2 Message Headers, Timers and ATSU Indicators.

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)

(ACP-UAL816/A3312-YSSY-KLAX)

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

4.5.7.1.3 An REJ message is linked to the original CDN message using message identifier and reference identifier information described in section 3.2 Message Headers, Timers and ATSU Indicators.

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-BAW32N/A2262-KMIA-EGGL)

4.5.8 **PCM (Profile Confirmation Message)**

4.5.8.1 Purpose.

4.5.8.1.1 The PCM is used as a final conformance check between the transferring ATSU and the receiving ATSU to enable detection of coordination errors and to ensure that the receiving ATSU has the most up to date information on the aircraft.

4.5.8.1.2 At the minimum, the PCM is used to confirm boundary estimate information, but may also be used to confirm other flight plan information as well.

4.5.8.1.3 The transmission of the PCM should be automatically triggered at an agreed time or position approaching the common boundary or ACI.

4.5.8.1.4 The only valid response to a PCM is a PCA message.

4.5.8.2 Message Format.

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

The PCM 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.

Example

A PCM containing mandatory Field 14 information only:

(PCM-QFA43/A2233-YSSY-ESKEL/1417F350-NZAA)

A PCM containing mandatory Field 14 information as well as Field 10:

(PCM-UAL815/A2211-YSSY-2801S16300E/2255F310-KLAX
-10/SDE3FGHIJ3J5M1M3RWXY/LB1D1)

A PCM containing all allowable fields:

(PCM-UAL840/A5124-YSSY-TEKEP/2231F330-KLAX
-8/IS

-9/B744/H

-10/SDE3FGHIJ3J5M1M3RWXY/LB1D1

-15/N0493F310 3345S15114E 3346S15125E LHI/N0489F330 B450 NF G224 NN B581

BAXIL/N0490F350 B581 WACOS/N0488F370 B581 WINTY/N0488F390 B581 FICKY

C1177 ROSIN/N0360F120

-18/PBN/A1B1C1D1L1O1S2 DOF/131212 REG/N199UA EET/YBBB0013 NZZO0118
SEL/ASEP CODE/A18B5D OPR/UAL PER/D RMK/TCAS)

4.5.9 PCA (Profile Confirmation Acceptance)

4.5.9.1 Purpose.

4.5.9.1.1 A PCA message is used to confirm that the data in a received PCM either corresponds with the data held by the receiving ATSU, or the data held by the receiving ATSU has been updated appropriately.

4.5.9.1.2 A PCA message is linked to the original PCM using message identifier and reference identifier information described in section 3.2 Message Headers, Timers and ATSU Indicators.

4.5.9.2 Message Format.

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

Example

(PCA-UAL815-YSSY-KLAX)

(PCA-QFA43/A2233-YSSY-NZAA)

4.5.10 TRU (Track Update)

4.5.10.1 Purpose.

4.5.10.1.1 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.

4.5.10.1.2 Unlike the CDN message, there is no operational response to the TRU message, and so use of this message must be in strict accordance with bilateral agreements.

4.5.10.2 Message Format.

ATS Field	Description
3	Message type

7	Aircraft Identification
13	Departure Aerodrome
16	Destination Aerodrome
Text	Track Data

4.5.10.2.1 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 separated by a “/” character.

4.5.10.2.2 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.

4.5.10.2.2.1 Requested Flight Level (RFL)

This element is preceded by the identifier ‘RFL’ and contains the aircraft’s most recent requested level. Block levels and cruise climbs are supported as defined in Chapter 2, *Purpose, Policy and Units of Measurement*.

Example

RFL/F390

RFL/A090

RFL/F310F330

RFL/F330F310C

4.5.10.2.2.2 Present Level (PRL)

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

Example

PRL/F390

PRL/A090

4.5.10.2.2.3 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 (inclusive).

Example

HDG/080

4.5.10.2.2.4 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 and cruise climbs in accordance with Chapter 2, *Purpose, Policy and Units of Measurement* are also supported.

Example

CFL/F330

CFL/F310F330

CFL/F310F330F210A

CFL/F330F310C

4.5.10.2.2.5 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.

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

4.5.10.2.2.6 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

4.5.10.2.2.7 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 2.3.9.1; 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 an AIDC message, the direction “E” (either side of track) should not be used

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

Example

OTD/W20R

OTD/O30L

OTD/0

Examples

TRU message notifying that an aircraft is requesting an amended level (which is not currently available):

(TRU-ICE456-BIKF-EGPF-RFL/F370)

TRU messages notifying of a weather deviation, subsequently followed by the cancellation of the weather deviation:

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

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

TRU messages notifying that an aircraft is initially on a heading of 115, assigned F270, and at reduced speed (250 knots), subsequently followed by notification that the aircraft has been re-cleared direct to GEROS, assigned F370, and the speed restriction has been removed:

(TRU-QFA43/A2244-YSSY-NZAA-HDG/115 CFL/F270 SPD/I0250)

(TRU-QFA43/A2244-YSSY-NZAA-CFL/370 SPD/0 DCT/GEROS)

4.6 Transfer of control messages**4.6.1 TOC (Transfer of Control)****4.6.1.1 Purpose.**

4.6.1.1.1 The TOC message is sent to propose executive control of a flight to the receiving ATSU.

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-QFA135/A2217-YMML-NZCH)

4.6.2 AOC (Acceptance of Control)

4.6.2.1 Purpose.

4.6.2.1.1 The AOC message is transmitted in response to a received TOC message 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-QFA135/A2217-YMML-NZCH)

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.

4.7.1.1.2 When the EMG does not refer to a specific flight, a functional address may be used (where this functionality is supported) to present the information to the appropriate ATS position. Where such an address is used it is preceded by an oblique stroke “/” to differentiate it from aircraft identification.

4.7.1.1.3 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 hijack 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 (limited to 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.

4.7.2.1.2 When the MIS does not refer to a specific flight, a functional address may be used (where this functionality is supported) to present the information 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 (or functional address)
18	Other information (limited to 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 The LAM is transmitted in response to each AIDC message (except for another LAM or LRM) that has been received, and found free of syntax and semantic errors.

4.8.1.1.2 A LAM is linked to the original AIDC message using message identifier and reference identifier information described in Chapter 3, *Communications and Support Mechanisms*.

4.8.1.1.3 Non-receipt of a LAM may require local action.

4.8.1.2 Message Format.

ATS Field	Description
3	Message type

Example

(LAM)

For examples of the way in which the LAM is linked to the original AIDC message refer to Chapter 6, *Implementation Guidance Material*.

4.8.2 LRM (Logical Rejection Message)**4.8.2.1 Purpose.**

4.8.2.1.1 The LRM is transmitted in response to each AIDC message not eligible for a LAM to be sent.

4.8.2.1.2 An LRM is linked to the original AIDC message using message identifier and reference identifier information described in Chapter 3, *Communications and Support Mechanisms*.

4.8.2.1.3 The LRM will identify the first message field found that contains invalid information if this field information is available.

4.8.2.1.4 Receipt of an LRM may require local corrective action.

4.8.2.2 Message Format.

ATS Field	Description
3	Message type
18	Other information (limited to RMK/)

4.8.2.2.1 Field 18 is used to convey technical information, and will only use the RMK/ sub-field. This text will comprise an error code, supporting text and the message 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 Codes*, 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. 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, 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 a non-numeric <field number> (e.g. “HEADER”), and will leave this sub-field blank. 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> 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, and may contain an oblique stroke “/”.

Note: Some ATSUs may not include the error text from Table 5-1, in the <invalid text> field of transmitted LRMs, and will leave this sub-field blank. Whilst this is acceptable in order to preserve backwards compatibility with existing systems, the preferred option is for 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 4.8.2.2.4)

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

OR

(LRM-RMK/17/16/)

(See Note following paragraph 4.8.2.2.5)

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

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

(The actual error “130S165E” may be optionally appended to the error text from Table 5-1, see Para 4.8.2.2.5).

For examples of the way in which the LRM is linked to the original AIDC message refer to Chapter 6, *Implementation Guidance Material*)

4.8.3 ASM (Application Status Monitor)

4.8.3.1 Purpose.

4.8.3.1.1 The ASM message is transmitted to an adjacent ATSU to confirm that end-to-end messaging is available with that ATSU.

4.8.3.1.2 The transmission of an ASM message normally occurs when no AIDC messages (including Application messages) have been received from the adjacent ATSU within a specified time as defined in bilateral agreement.

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 The FAN is transmitted by one ATSU (generally the transferring ATSU) to another ATSU (generally the receiving ATSU) to provide the required information necessary to establish CPDLC and/or ADS-C connections with FANS-1/A equipped aircraft. Use of the FAN message significantly reduces the number of data link messages normally required to achieve a data link transfer using the Address Forwarding process, as well as improving the reliability and performance associated with data link transfers.

4.8.4.2 Message Format.

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

4.8.4.2.1 Application data is a free text field used in the FAN message to permit the transfer of FANS-1/A logon 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. 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)

4.8.4.2.2 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 ATSU transmitting the FAN message has this information available, either from a logon or a FAN message). This is for the benefit of downstream ATSUs that may use the information within these optional elements. If the data is not available for an optional element, that element is not to be included in the FAN message.

4.8.4.2.3 Additional information concerning the elements described below is contained in Chapter 6, *Implementation Guidance Material*.

4.8.4.2.4 Standard message identifier (SMI)

4.8.4.2.4.1 This mandatory element is preceded by the identifier ‘SMI’, and contains information relating to the address to which 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.

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

Example

SMI/FMD

4.8.4.2.5 Aircraft identification

- 4.8.4.2.5.1 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

4.8.4.2.6 Aircraft registration

- 4.8.4.2.6.1 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. While a hyphen is not permitted in the registration in other AIDC messages, it is necessary in the FAN message in order to allow data link messages to be correctly addressed to the aircraft. Any “padding” in the registration contained in the AFN logon (e.g. preceding periods “.”) must **not** be included in the FAN message.

Example

Registration format in logon	Registration format in FAN message
.N12345	REG/N12345
.9V-ABC	REG/9V-ABC

Note the periods preceding the registration letters are not included in the FAN message

4.8.4.2.7 Aircraft Address (ICAO 24 bit code)

- 4.8.4.2.7.1 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

4.8.4.2.8 Aircraft position information

- 4.8.4.2.8.1 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. The position that may have been provided by the aircraft in a previous logon should not be included in the FAN message, because it is most likely no longer accurate

Example

FPO/23S150E

FPO/0823N11025E

4.8.4.2.9 ATS Application and Version Number

4.8.4.2.9.1 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, separated by a single <space>.

4.8.4.2.9.2 The value associated with the 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

4.8.4.2.10 The second example above illustrates a FAN message with the 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-ANZ123/A2213-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)

- 4.8.4.2.11 ATSU's 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 is being transmitted to permit the next ATS unit to establish a CPDLC connection, it 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 successful MAS (MAS/S) message has been received in response to the transmission of the NDA message.

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 message is transmitted by either the transferring or receiving ATSU to provide information concerning the CPDLC Connection status of the aircraft.

- 4.8.5.1.2 The FCN message is transmitted by the transferring ATSU when their CPDLC Connection with the aircraft is terminated, providing notification to the receiving ATSU that they are now the CPDLC "Current Data Authority". The FCN message may also be transmitted by the receiving ATSU to provide notification of their establishment of (or failure to establish) a CPDLC Connection.

- 4.8.5.1.3 An FCN message transmitted by the receiving ATSU may also (optionally) include contact/monitor frequency information to be issued to the aircraft by the transferring ATSU.

4.8.5.2 Message Format.

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

- 4.8.5.2.1 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.

4.8.5.2.2 CPDLC Connection Status identifier (CPD)

- 4.8.5.2.2.1 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 before a time parameter prior to the FIR boundary
	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

Example

CPD/0

4.8.5.2.3 Frequency identifier (FREQ)

- 4.8.5.2.3.1 This optional element is preceded by the identifier ‘FREQ’ and may be included in an FCN message transmitted by the receiving ATSU to advise of any changes to a previously notified (or a default) frequency. The FREQ/ identifier provides advice to the transferring ATSU of the voice frequency information to be transmitted to the aircraft in the CPDLC Contact/Monitor instruction. If no frequency information is available or required, this element should not be included in the FCN message.
- 4.8.5.2.3.2 When included 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

FREQ/117.975

Example of FCN message

FCN messages transmitted by the receiving ATSU:

The CPDLC Connection request for SIA221 was unsuccessful

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

The CPDLC Connection request for QFA44 was unsuccessful because the receiving ATSU was not the nominated next data authority

(FCN-QFA44/A1145-NZAA-YSSY-CPD/1)

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

(FCN-ANZ15/A4466-KLAX-NZAA-CPD/2 FREQ/13261)

FCN message transmitted by the transferring ATSU:

The CPDLC Connection with ICE615 has been terminated

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

4.9 Surveillance Data Transfer Service Messages

4.9.1 ADS (Surveillance ADS-C)

4.9.1.1 Purpose.

4.9.1.1.1 The ADS message is 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

- 4.9.1.2.1 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 an oblique stroke "/", followed by a text string containing specific text extracted from the encoded ACARS ADS-C report received from the aircraft.
- 4.9.1.2.2 Any hyphen in the registration of the aircraft in the ACARS ADS-C report is included in the ADS message. Unlike the FAN message, any "padding" in the registration contained in the ACARS ADS-C report (e.g. preceding periods ".") MUST be included in the ADS message.
- 4.9.1.2.3 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 an oblique stroke "/", followed by a "0" (zero). The trigger for this would be by bilateral agreement (e.g. when an ADS-C report has been received that places the aircraft outside the ACI and the ADS-C Predicted Route group indicates that the aircraft will not re-enter the ACI).
- 4.9.1.2.4 The specific text to be included in the AIDC ADS message is described in Chapter 6, *Implementation Guidance Material*.

Example

(ADS-ANZ90/A2233-RJAA-NZAA

-ADS/.ZK-OKC030007FF946B6F6DC8FC044B9D0DFC013B80DA88FC0A64F9E4438B4
AC8FC000E34D0EDC00010140F3E86)

(ADS-ANZ90/A2233-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	
CPL	M - -	MOO	MM	MM M	MM	M -	MMMOO	MMM	M - -	M										
EST	M - -	MOO				M -	MMMOO		M - -											
PAC	M - -	MOO				M -	MMMOO		M - -					OO	OOO	OO		OOO	O	
MAC	M - -	MOO				M -			M - -								OOOOO		O	
CDN	M - -	MOO				M -			M - -							OO	OOOOO	OOO	O	O
ACP	M - -	MOO				M -			M - -											
REJ	M - -	MOO				M -			M - -											
PCM	M - -	MOO				M -	MMMOO		M - -					OO	OOO	OO		OOO	O	
PCA	M - -	MOO				M -			M -											
TRU	M - -	MOO				M -			M - -											M

PAN ICD

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
TOC	M - -	MOO				M -			M - -											
AOC	M - -	MOO				M -			M - -											
EMG	M - -	MOO								M										
MIS	M - -	MOO								M										
LAM	M - -																			
LRM	M - -									M										
ASM	M - -																			
FAN	M - -	MOO				M -			M - -											M
FCN	M - -	MOO				M -			M - -											M
ADS	M - -	MOO				M -			M - -											M

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 inclusion in any Logical Rejection Message transmitted in response to the reception of an AIDC message containing an error.
- 5.1.2 It is recommended that when a specific error code is available, the receiving ATSU should use the specific error code instead of general error codes, such as Error Code 57.

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 EQUIPMENT DESIGNATOR
16	10	INVALID SSR EQUIPMENT DESIGNATOR
17	13, 16	INVALID AERODROME DESIGNATOR
18	13	INVALID DEPARTURE AERODROME
19	16	INVALID DESTINATION AERODROME
20		RESERVED
21		RESERVED
22	13, 16	TIME DESIGNATOR PRESENT WHEN NOT

		EXPECTED
23	14	INVALID TIME DESIGNATOR
24	14	MISSING TIME DESIGNATOR
25	14	INVALID BOUNDARY POINT DESIGNATOR
26	14, 15	INVALID ENROUTE POINT
27	14, 15	INVALID LAT/LONG 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
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		RESERVED
50	22	INVALID AMENDMENT FIELD DATA
51		MISSING FIELD nn (See Note 2)

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		TDM/NAT ERROR
57		INVALID MESSAGE
58		MISSING PARENTHESIS
59		MESSAGE NOT APPLICABLE TO zzzz OAC
60	3	INVALID MESSAGE MNEMONIC (i.e., 3 LETTER IDENTIFIER)
61	HEADER	INVALID CRC
62		UNDEFINED ERROR
63		RESERVED
64		RESERVED
65		RESERVED
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 IN 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

81	ADF (See Note 3)	INVALID IDENTIFIER IN FAN MESSAGE
82	CSF (See Note 4)	INVALID CPDLC CONNECTION STATUS
83	CSF (See Note 4)	INVALID FREQUENCY IN FREQ/ IDENTIFIER
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	TDF (See Note 6)	INVALID FLIGHT LEVEL IN RFL/ IDENTIFIER
93	TDF (See Note 6)	INVALID FLIGHT LEVEL IN PRL/ IDENTIFIER
94-256		RESERVED FOR FUTURE USE

Note 1. It is not intended that any amplifying text contained in parenthesis (i.e. “(e.g., 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 “xxxxxx”) 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 number refers to the ADS-C data field

Note 6. In the TRU message, the “TDF” field number 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, *AIDC Messages*, supports six ATS-related functions:
- a) Notification;
 - b) Coordination;
 - c) Transfer of Control;
 - d) General Information;
 - e) Application Management; and
 - f) Surveillance Data Transfer.
- 6.1.2 This chapter contains information of an explanatory nature, including how the AIDC 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;
- The coordination confirmation process should be automatic and independent of other processes;
- Exceptional conditions, such as loss of communications between two ATSUs are not addressed in this document and are subject to local procedures.

6.2.2 Message header

- 6.2.2.1 Every AIDC message transmitted should contain an AFTN header, as specified in section 3.2 Message Headers, Timers and ATSU Indicators. This header should contain the optional data fields described in Chapter 3.
- 6.2.2.2 The message identification numbers contained in Optional Data Field 2 (ODF2) should begin at 0, proceed sequentially to 999,999, and then reset to 0. It is acknowledged that following a system restart, the message identification number may reset to 0.

6.2.2.3 For each AIDC connection, the ATSU should maintain a separate 0 to 999,999 message identification number sequence.

6.2.3 Linking AIDC messages to flight plans

6.2.3.1 When using an AIDC message to update the flight plan held by the ATS Unit, the air traffic system must ensure that the correct flight plan is updated. This requires matching a number of items from the AIDC message and the flight plan:

- Field 7 (Aircraft identification);
- Field 13 (Departure aerodrome)
- Field 16 (Destination aerodrome)

6.2.3.2 In some environments where multiple-leg flight plans with the same Field 7, 13 and 16 may exist, an additional uniqueness check using the EOBT and DOF should be considered.

6.2.3.3 On receipt of an AIDC message, if no corresponding flight plan exists, an ATSU should automatically create a flight plan if the AIDC message contains sufficient information. If a flight plan cannot be created the ATSU should request a FPL by transmitting an RQP message.

6.2.4 Responses to AIDC messages

6.2.4.1 There are two types of possible responses to AIDC messages:

- Application response (LAM, LRM); and
- Operational response (ACP, REJ, CDN, PCA, AOC)

6.2.4.2 Application response

6.2.4.2.1 With the exception of a LAM or LRM, every AIDC message received by an ATSU should be responded to with a LAM or LRM as appropriate. 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), as well as a message reference number (ODF 3), which references the message it is in response to.

6.2.4.2.2 An ATSU receiving an AIDC message should transmit a LAM response when the received message is determined to be syntactically and semantically correct and the message is eligible for further processing or presentation. It is necessary to distinguish between “syntactic” and “semantic” error on one hand and logical errors (e.g. a misspelt position name, or not having a flight plan, etc.) on the other hand. Such logical errors should not prevent a LAM from being transmitted.

6.2.4.2.3 If a LAM response is not eligible to be sent because of errors in the AIDC message, an LRM response should be transmitted.

6.2.4.2.4 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.

6.2.4.2.5 The time out value T_{alarm} associated with an application response should typically be less than 180 seconds, measured from the transmission time of the original message and may be specified by bilateral agreement. T_{alarm} corresponds to the nominal value associated with the accountability timer described in Chapter 3, *Communications and Support Mechanisms*, Para 3.2.9.

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

6.2.4.2.7 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 also result in a warning message or alert being displayed to the controller. The level of alerting should be appropriate to the importance of the associated message.

6.2.4.2.8 The transmission of an application response should be triggered after the semantic and syntactic checks have been performed on the incoming message. This is because the purpose of an application response is to indicate that a received AIDC message has both been received and is semantically and syntactically correct.

6.2.4.2.9 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 corrective action may be automatic or manual.

6.2.4.3 Operational response

6.2.4.3.1 A number of AIDC messages require an operational response in addition to the application response. Table 6-1 shows the required operational responses for these messages. AIDC messages that are 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
PCM	PCA
TOC	AOC

Note *An REJ is not a valid response to a CDN message within an Initial Coordination Dialogue (refer 6.3.6.3)

6.2.4.3.2 T_{op} refers to the timeout value associated with non-receipt of an operational response to an AIDC message.

6.2.4.3.3 The value of T_{op} may vary depending on the operational environment, and whether manual processing is required to generate the operational response. Because some operational responses should be automated (e.g. PCA message), whilst some would normally be sent manually (e.g.

response to a CDN message), ground systems should have the ability to set different T_{op} values for different operational responses. As a general rule, the maximum value of T_{op} should be 600 seconds when a manual action is required to trigger the operational response.

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

6.2.4.3.5 Each operational response has a message identification number (ODF 2), as well as a message reference number (ODF 3). The message reference number consists of the ICAO location indicator of the immediately preceding message in the dialogue and the message identification number of the first message in the dialogue.

Note: This method reflects all currently known implementations of CDN-CDN dialogues in operational use in the NAT and Asia-PAC at the time this document was drafted.

6.2.4.3.6 For example, an ATSU may initiate an initial coordination dialogue by transmitting a CPL message to an adjacent ATSU. A sequence of CDN messages may then occur, terminated by an ACP message. The message reference numbers in the CDN and ACP messages would all reference the message identification number of the original CPL message. While the message identification number of the first message in the dialogue is retained as the reference number, the location indicator of the originator of the previous message in the dialogue shall always be used as the prefix. A number of examples are contained in Table below.

6.2.4.3.7 The message reference numbers of operational messages in a coordination dialogue always reference the message identification number of the first message in the dialogue. After completion of the initial coordination dialogue one ATSU may initiate a coordination negotiate dialogue by transmitting a CDN message. A sequence of CDN messages may then occur terminated by an ACP or REJ message. The message reference numbers of all operational messages in this new coordination negotiate dialogue would reference the message identification number of the first CDN message in the new dialogue. While the message identification number of the first message in the dialogue is retained as the reference number, the location indicator of the previous message shall always be used as a prefix.

6.2.4.3.8 The message reference numbers used in a LAM or LRM message always refer to the immediately preceding message that is being referenced.

Examples

Message	ATS Unit sending message	ATS Unit receiving message	MIN	MRN
Example 1: Exchange between NTTT and NZZO with ABI-CPL-ACP sequence				
FF NZZOZQZF 061755 NTTTZQZF 2.000069-4.140806175555-5.C4FD- (ABI-THT101/A2605 -NTAA-2149S15700W/1856F380 -NZAA-8/IS-9/A343/H- 10/SDE1E2E3FGHIJ3J5J6M1M2ZRWCY/LB1D1-15/N0465F380 TAF 1739S14945W 21S155W 2149S15700W 23S160W 26S165W/M080F400 30S170W	NTTT	NZZO	000069	

Message	ATS Unit sending message	ATS Unit receiving message	MIN	MRN
33S175W/N0466F400 DCT OLBEX EXOPI6B-18/PBN/A1B1D1L1 NAV/RNVD1A1 DAT/SV DOF/140806 REG/FOJTN EET/NZZO0114 SEL/MSAD CODE/3A266D PER/C RALT/NCRG NZAA TALT/NCRG)				
FF NTTTTZQZF 061756 NZZOZQZF 2.000672-3.NTTT000069-4.140806175559- 5.CF71- (LAM)	NZZO	NTTT	000672	NTTT 000069
FF NZZOZQZF 061821 NTTTTZQZF 2.000070-4.140806182159-5.79A9- (CPL-THT101/A2605-IS -A343/H-SDE1E2E3FGHIJ3J5J6M1M2ZRWCY/LB1D1 -NTAA-2149S15700W/1859F380 -N0465F380 21S155W 2149S15700W 23S160W 26S165W/M080F400 30S170W 33S175W/N0466F400 DCT OLBEX EXOPI6B -NZAA -PBN/A1B1D1L1 NAV/RNVD1A1 DAT/SV DOF/140806 REG/FOJTN EET/NZZO0114 SEL/MSAD CODE/3A266D PER/C RALT/NCRG NZAA TALT/NCRG)	NTTT	NZZO	000070	
FF NTTTTZQZF 061822 NZZOZQZF 2.000673-3.NTTT000070-4.140806182203- 5.CF71- (LAM)	NZZO	NTTT	000673	NTTT 000070
FF NTTTTZQZF 061822 NZZOZQZF 2.000674-3.NTTT000070-4.140806182203- 5.DFE4- (ACP-THT101/A2605-NTAA-NZAA)	NZZO	NTTT	000674	NTTT 000070
FF NZZOZQZF 061822 NTTTTZQZF 2.000071-3.NZZO000674-4.140806182204- 5.CF71- (LAM)	NTTT	NZZO	000071	NZZO 000674
Example 2: Exchange between YBBB and NZZO with EST-ACP-CDN-ACP sequence				
FF NZZOZQZFM 061455 YBBBZQZF 2.105712-4.140806145517-5.B76C- (EST-JST171/A1315-YMML-OMKIN/1535F330-NZCH)	YBBB	NZZO	105712	
FF YBBBZQZF 061455 NZZOZQZF 2.000356-3.YBBB105712-4.140806145518- 5.CF71- (LAM)	NZZO	YBBB	000356	YBBB 105712
FF YBBBZQZF 061455 NZZOZQZF 2.000357-3.YBBB105712-4.140806145518- 5.C0A9- (ACP-JST171/A1315-YMML-NZCH)	NZZO	YBBB	000357	YBBB 105712

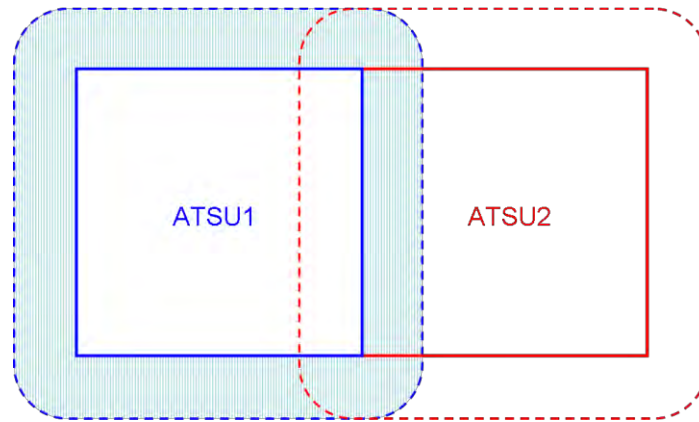
Message	ATS Unit sending message	ATS Unit receiving message	MIN	MRN
FF NZZOZQZF 061455 YBBBZQZF 2.105713-3.NZZO000357-4.140806145524-5.CF71- (LAM)	YBBB	NZZO	105713	NZZO 000357
FF NZZOZQZF 061507 YBBBZQZF 2.105734-4.140806150731-5.BD5D- (CDN-JST171/A1315-YMML-NZCH-14/OMKIN/1532F330-15/N0434F330 CORRS Y260 ECKHO/N0437F330 L508 OMKIN L508 CH DCT)	YBBB	NZZO	105734	
FF YBBBZQZF 061508 NZZOZQZF 2.000360-3.YBBB105734-4.140806150733-5.CF71- (LAM)	NZZO	YBBB	000360	YBBB 105734
FF YBBBZQZF 061508 NZZOZQZF 2.000361-3.YBBB105734-4.140806150743-5.C0A9- (ACP-JST171/A1315-YMML-NZCH)	NZZO	YBBB	000361	YBBB 105734
FF NZZOZQZF^M 061507 YBBBZQZF 2.105736-3.NZZO000361-4.140806150744-5.CF71- (LAM)	YBBB	NZZO	105736	NZZO 000361
Example 3: Exchange between KZCE and NZZO with CPL-CDN-ACP sequence				
FF KZCEZQZX 101131 NZZOZQZF 2.000709-4.140710113054-5.0E3A- (CPL-HAL466-IS -B763/H-SDE3FGHIJ7M3RWXYZ/LB1D1 -NSTU-ELLMS/1205F350F370 -M080F350 BUDRA G457 EBEBE DASNE 18N162W CHOKO OPACA4 -PHNL -PBN/A1B2C1D1L1 NAV/RNVD1E2A1 REG/N580HA EET/KZAK0119 EBEBE0219 DASNE0318 18N162W0415 PHZH0417 SEL/FPDH CODE/A77698 OPR/HAWAIIAN AIRLINES PER/D RALT/PHKO)	NZZO	KZCE	000709	
FF NZZOZQZF 101131 KZCEZQZX 2.000941-3.NZZO000709-4.140710113105-5.CF71- (LAM)	KZCE	NZZO	000941	NZZO 000709
FF NZZOZQZF 101133 KZCEZQZX 2.000952-3.NZZO000709-4.140710113230-5.7F4A- (CDN-HAL466-NSTU -PHNL -14/ELLMS/1206F360F370 -15/M080F360 BUDRA G457 EBEBE DCT DASNE DCT 18N162W DCT CHOKO OPACA4)	KZCE	NZZO	000952	NZZO 000709

Message	ATS Unit sending message	ATS Unit receiving message	MIN	MRN
FF KZCEZQZX 101131 NZZOZQZF 2.000710-3.KZCE000952-4.140710113105- 5.CF71- (LAM)	NZZO	KZCE	000710	KZCE 000952
FF KZCEZQZX 101133 NZZOZQZF 2.000712-3.KZCE000709-4.140710113252- 5.2315- (ACP-HAL466-NSTU-PHNL)	NZZO	KZCE	000712	KZCE 000709
FF NZZOZQZX 101133 KZCEZQZX 2.000954-3.NZZO000712-4.140710113305- 5.CF71- (LAM)	KZCE	NZZO	000954	NZZO 000712
Example 4: Exchange between KZCE and RJJJ with CPL-CDN-CDN-ACP sequence.				
FF KZCEZQZX 271302 RJJJZOZA 2.195920-4.130927130200-5.C4B0- (CPL-JAL786-IS-B763/H- SDFLOVE1E2E3GHIJ3J4J5J6M1M2RW/SD1-RJAA- 3536N165E/1335F330F350-0464F350 36N160E 3536N165E 35N170E 31N180E/M080F370 26N170W DCT CANON BOOKE8 -PHNL-PBN/A1L1B1C1D1 DOF/130927 REG/JA604J EET/KZAK0233 SEL/GMAL RALT/RJAA PMDY PHLI PHNL)	RJJJ	KZCE	195920	
FF RJJJZOZA 271302 KZCEZQZX 2.000819-3.RJJJ195920-4.130927130228-5.CF71- (LAM)	KZCE	RJJJ	000819	RJJJ 195920
FF RJJJZOZA 271303 KZCEZQZX 2.000820-3.RJJJ195920-4.130927130302-5.4FA1- (CDN-JAL786-RJAA-PHNL-14/3536N16500E/1335F330- 15/N0464F330 36N160E 3536N16500E 35N170E 31N180E 26N170W DCT CANON BOOKE8)	KZCE	RJJJ	000820	RJJJ 195920
FF KZCEZQZX 271303 RJJJZOZA 2.195921-3.KZCE000820-4.130927130310-5.CF71- (LAM)	RJJJ	KZCE	195921	KZCE 000820
FF KZCEZQZX 271303 RJJJZOZA 2.195922-3.KZCE195920-4.130927130321- 5.BAEE- (CDN-JAL786-RJAA-PHNL-14/3536N16500E/1335F350)	RJJJ	KZCE	195922	KZCE 195920
FF RJJJZOZA 271302 KZCEZQZX 2.000819-3.RJJJ195920-4.130927130328-5.CF71- (LAM)	KZCE	RJJJ	000821	RJJJ 195922
FF RJJJZOZA 271304 KZCEZQZX 2.000822-3.RJJJ195920-4.130927130350-5.6A3E- (ACP-JAL786-RJAA-PHNL)	KZCE	RJJJ	000822	RJJJ 195920
FF KZCEZQZX 271304 RJJJZOZA 2.195923-3.KZCE000822-4.130927130359-5.CF71- (LAM)	RJJJ	KZCE	195923	KZCE 000822

Message	ATS Unit sending message	ATS Unit receiving message	MIN	MRN
Example 5: YBBB exchange with NFFF for FJI910 with EST-ACP sequence and YBBB exchange with NZZO for QFA149 with CDN-CDN-ACP sequence.				
FF NFFFZQZF 170857 YBBBZQZF 2.023120-4.131217085702-5.017F- (EST-FJI910/A1442-YSSY-UBLIN/0937F370-NFFN)	YBBB	NFFF	023120	
FF YBBBZQZF 170857 NFFFZQZF 2.012363-3.YBBB023120-4.131217085703- 5.CF71- (LAM)	NFFF	YBBB	012363	YBBB 023120
FF NZZOZQZF 170857 YBBBZQZF 2.045770-4.131217085703-5.1E39- (CDN-QFA149/A1330-YSSY-NZAA-14/ESKEL/0937F350-NZAA)	YBBB	NZZO	045770	
FF YBBBZQZF 170857 NFFFZQZF 2. 012364-3.YBBB023120-4.131217085709- 5.686C- (ACP- FJI910/A1442-YSSY-NFFN)	NFFF	YBBB	012364	YBBB 023120
FF YBBBZQZF 170857 NZZOZQZF 2.035674-3.YBBB045770-4.131217085711- 5.CF71- (LAM)	NZZO	YBBB	035674	YBBB 045770
FF NFFFZQZF 170857 YBBBZQZF 2. 023121-3.NFFF012364-4.131217085712- 5.CF71- (LAM)	YBBB	NFFF	023121	NFFF0 12364
FF YBBBZQZF 170857 NZZOZQZF 2. 035675-3.YBBB045770-4.131217085720- 5.CD3A- (CDN-QFA149/A1330-YSSY-NZAA-14/ESKEL/0937F360-NZAA)	NZZO	YBBB	035675	YBBB 045770
FF NZZOZQZF 170857 YBBBZQZF 2. 045771-3.NZZO035675-4.131217085721- 5.CF71- (LAM)	YBBB	NZZO	045771	NZZO 035675
FF NZZOZQZF 170858 YBBBZQZF 2. 045772-3.NZZO045770-4.131217085740- 5.12A6- (ACP-QFA149/A1330-YSSY-NZAA)	YBBB	NZZO	045772	NZZO 045770
FF YBBBZQZF 170858 NZZOZQZF 2.035676-3. YBBB045772-4.131217085742- 5.CF71- (LAM)	NZZO	YBBB	035676	YBBB 045772

6.2.5 The Area of Common Interest.

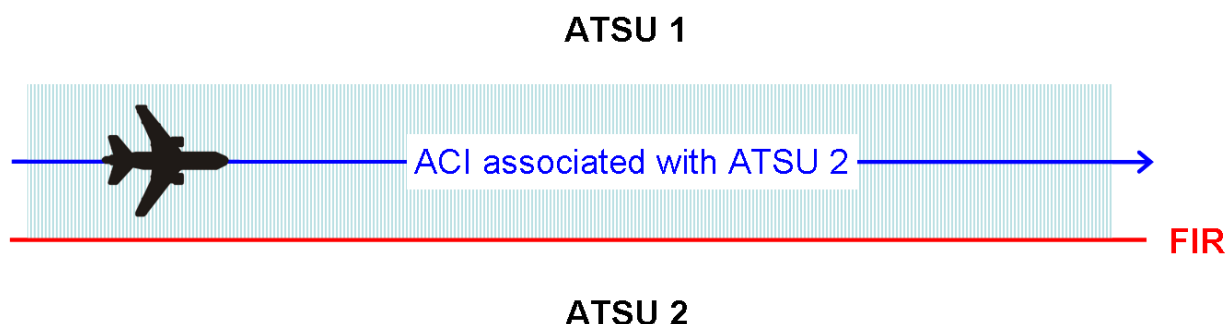
6.2.5.1 The Area of Common Interest (ACI) refers to a volume of airspace within which the operation of an aircraft may have an impact on an adjacent ATS Unit. The ACI is located outside the area of responsibility of an ATSU.



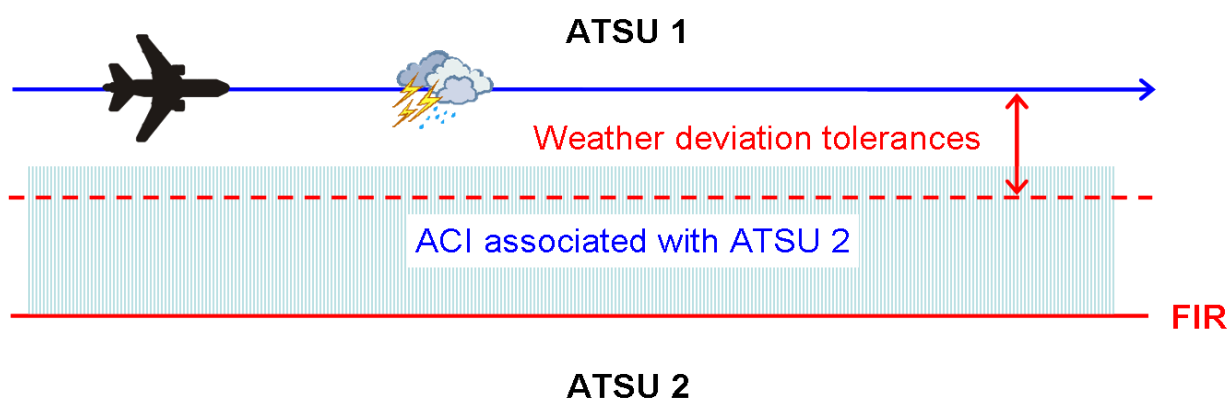
6.2.5.3 An ATSU may be required to provide notification and/or coordination on a flight if it enters the ACI of another ATSU, even if the flight does not enter that ATSU's airspace.

The diagram shows an aircraft flying from left to right. It starts in the area of **ATSU 1**. A vertical red line labeled **FIR** separates **ATSU 1** from the other two areas. The aircraft's path continues into a light blue shaded region that covers the area between the vertical **FIR** line and a horizontal red line. This shaded region is labeled **ACI associated with ATSU 3**. Below the horizontal red line is the area of **ATSU 3**. The horizontal red line is labeled **FIR** at its right end. The area above the horizontal red line and to the right of the vertical red line is labeled **ATSU 2**.

6.2.5.4 In Example 1, ATSU 1 may be required to provide notification and or 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 by ATSU 3 between this aircraft and other aircraft that may be operating in proximity to the ATSU 2/ATSU 3 FIR boundary.

Example 2

6.2.5.5 In Example 2, ATSU 1 may be required to provide notification and/or coordination to ATSU 2, even though this flight does not even cross the FIR boundary. This is to ensure that appropriate separation can still be provided by ATSU 2 between this aircraft and other aircraft that may be operating in proximity to the ATSU 1/ATSU 2 FIR boundary.

Example 3

6.2.5.6 In Example 3, the nominal route of the flight does not enter the airspace or the ACI associated with ATSU 2. However, ATSU 1 may be required to provide notification and/or coordination to ATSU 2 because the weather deviation clearance issued to the aircraft does infringe the ACI associated with ATSU 2. This is to ensure that appropriate separation can still be provided by ATSU 2 between this aircraft and other aircraft that may be operating in proximity to the ATSU 1/ATSU 2 FIR boundary.

6.3 AIDC message sequences and AIDC flight states

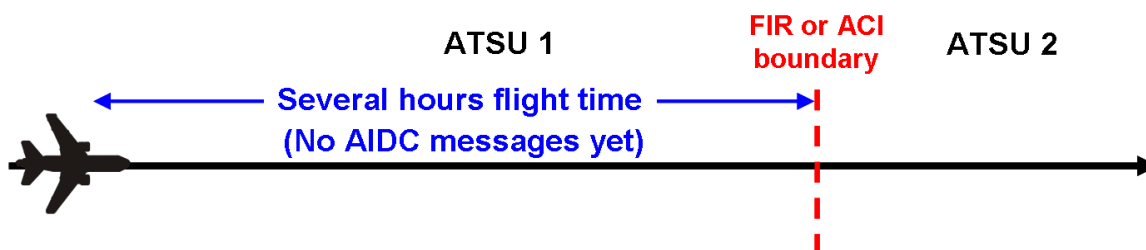
- 6.3.1 For each ATSU, a flight progresses through a number of different AIDC “flight states”. These flight states are listed in Table 6-2. For a number of reasons, a flight may not necessarily progress through every one of these flight states and not necessarily in the order shown.

Table 6-2. AIDC Flight States

Flight State
Pre-Notified
Notified
Negotiating
Coordinating
Coordinated
Re-Negotiating
Confirming
Transferring
Transferred
Backward Re-Negotiating

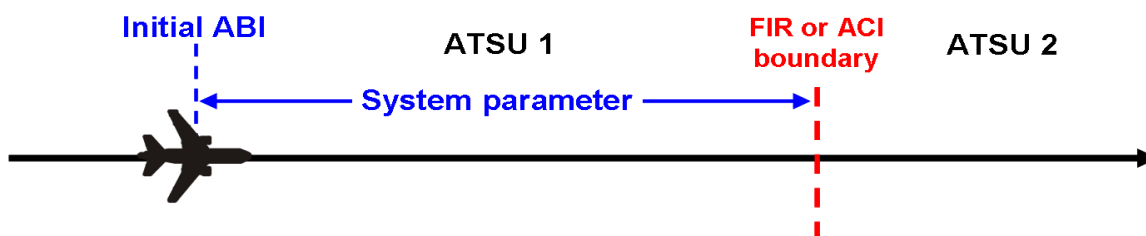
- 6.3.2 Different AIDC messages are associated with each flight state, and an AIDC message (or the response to it) is generally the trigger to transition from one flight state to another. Refer to Table 6-3 and Figure 6-1 for more information.
- 6.3.3 Bilateral agreements should specify the AIDC messages that will be exchanged between ATSUs, as well as the timing of these messages, and the use of any optional information (e.g. block levels, off track deviations, etc) that may be included in AIDC messages.
- 6.3.4 The following guidance material makes use of a flight thread involving an aircraft that is initially within airspace controlled by ATSU 1, and will eventually enter the FIR or ACI of ATSU 2.
- 6.3.5 **Flight states associated with Notification**
- 6.3.5.1 The aircraft is several hours flight time from the FIR or ACI boundary of ATSU 2. While ATSU 2 should previously have received a Filed Flight Plan (FPL) for the aircraft, and possibly

amendments to it (CHG), no AIDC messages have yet been transmitted from ATSU 1 to ATSU 2.



6.3.5.2 The flight is in the “Pre-Notified” flight state.

6.3.5.3 At a system parameter time or position prior to the FIR or ACI boundary, ATSU 1 transmits a Notification message (ABI) to ATSU 2 for the flight. The ABI provides current flight plan information (including Estimate data) to ATSU 2. On receipt of the ABI, ATSU 2 updates their flight plan details with the information contained in the ABI.

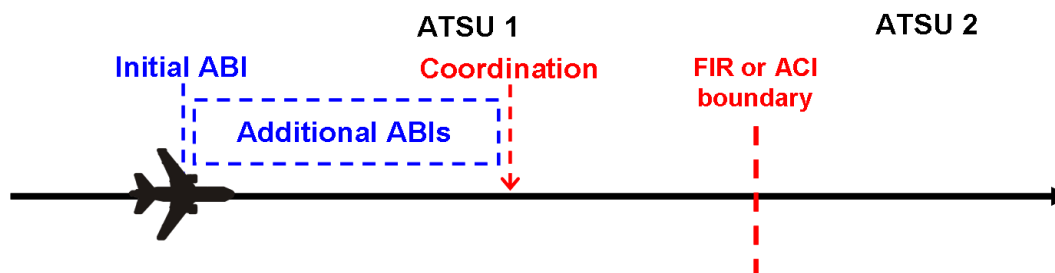


6.3.5.4 If no FPL is held for the flight, automation in ATSU 2 should automatically create a flight plan from information contained in the ABI (if sufficient information is available). If a flight plan cannot be created the ATSU should request a FPL by transmitting an RQP message,

6.3.5.5 The timing of the initial Notification message depends on the operational environment. Sufficient time should be allowed for manual processing of the ABI (if automation was unsuccessful) or requesting a FPL (if required).

6.3.5.6 On receipt of a successful application response (LAM) the flight is in the Notified flight state.

6.3.5.7 Prior to coordination occurring, any revision to flight plan information should result in ATSU 1 transmitting an updated Notification message to ATSU 2. These revisions would normally involve Estimate data, but could include amendments to the aircraft’s route, equipment, or other information in the flight plan.



6.3.5.8 To reduce the number of superfluous Notification messages being transmitted, revised estimates should not result in the transmission of a new Notification message unless the estimate has changed by more than a value specified in bilateral agreements.

6.3.5.9 Re-Route Notification.

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

6.3.5.10 Complete route to Destination.

6.3.5.10.1 An aircraft's route information is described in Field 15 (Route) of the FPL. As re-routes occur, ATSU 1 must update Field 15 accordingly, and transmit this information in a Notification message to ATSU 2. To ensure the integrity of the route information being transmitted in AIDC messages, ATSU 1's flight plan should contain details of the complete route to destination. If it is not possible to hold route details to destination (e.g. due to unknown or duplicate waypoints or a route discontinuity), the route field should be terminated after the last known significant point with the ICAO truncation indicator, which is the letter "T".

6.3.5.11 Re-route to new destination.

6.3.5.11.1 Notification messages contain current route information. As a consequence, when an aircraft has been re-routed to a new destination, the notification message will contain the new route in Field 15 as well as the new destination in Field 16.

6.3.5.11.2 When ATSU 2 receives the Notification message, it will not be possible to match the ABI to a flight plan since the destination airport in the ABI will be different from the one in the filed FPL. When this occurs, ATSU 2 should automatically create a flight plan from information contained in the ABI (if sufficient information is available). If a flight plan cannot be created the ATSU should request a FPL by transmitting an RQP message.

6.3.5.12 Notification and the ACI.

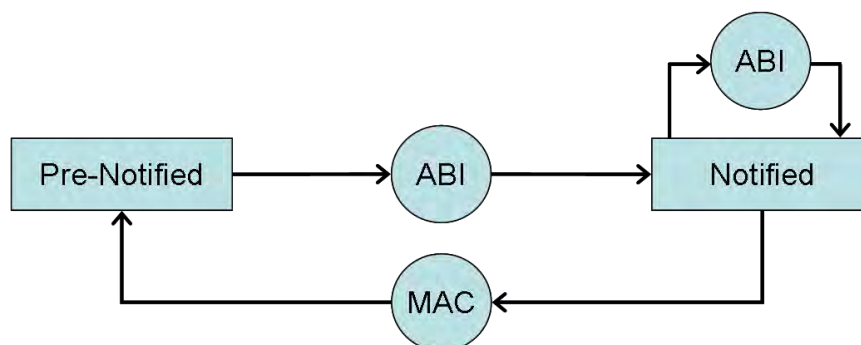
6.3.5.12.1 ATSU 1 may be required to transmit a Notification message to ATSU 2 for an aircraft if it enters the ACI of ATSU 2, but does not enter ATSU 2's airspace.

6.3.5.13 Notification Cancellation

6.3.5.13.1 If ATSU 1 has already transmitted a notification message to ATSU 2, and a revision (e.g. change in route) occurs such that the aircraft will no longer enter ATSU 2's airspace or its ACI, ATSU 1 transmits a MAC message to ATSU 2.

6.3.5.13.2 Receipt of a MAC message by ATSU 2 means that any Notification information previously received for the flight is no longer relevant. The original FPL information (including any CHG modifications) should continue to be held, in accordance with local procedures.

6.3.5.13.3 On receipt of a MAC message the flight is returned to the Pre-Notified flight state.



6.3.6 Flight states associated with Coordination

6.3.6.1 Coordination is required when a flight will enter the airspace or ACI of an adjacent ATS Unit. In AIDC, coordination is referred to as a “dialogue”, involving the proposed coordination and the response(s) to it. Coordination involves a proposal for a flight to enter an adjacent ATS Unit’s airspace or ACI under specified conditions (i.e. position, time and level, although other parameters are available).

6.3.6.2 There are two types of AIDC coordination dialogues available:

- Initial coordination dialogue, using a CPL message; or
- Abbreviated initial coordination dialogue, using an EST or PAC message;

6.3.6.3 Initial coordination dialogue

6.3.6.3.1 At a system parameter time or position prior to the FIR or ACI boundary, ATSU 1 transmits a CPL message to ATSU 2, opening an initial coordination dialogue. In some circumstances it may be necessary for the CPL message to be initiated manually by the controller.

6.3.6.3.2 The flight is now in the Negotiating flight state.

6.3.6.3.3 ATSU 2 can either:

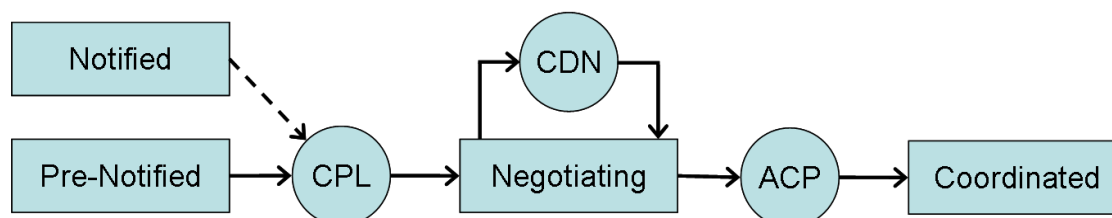
- Accept the proposed coordination conditions by responding with an ACP message to ATSU 1, or
- Propose modifications to the proposed coordination conditions by responding with a CDN message. The initial coordination dialogue remains open. A series of negotiations between the two ATSUs may then be conducted using additional CDN messages until mutually agreed coordination conditions are achieved. The acceptance of the coordination conditions is indicated by the transmission of an ACP message.

6.3.6.3.4 Once an ACP response has been transmitted, the initial coordination dialogue is closed, and the flight is in the Coordinated flight state.

6.3.6.3.5 ATSU 2 should update its flight plan with the finally agreed coordination (which may involve updates from both the CPL and the final CDN message). If no FPL is held for the flight, automation in ATSU 2 should allow the creation of a flight plan from information contained in the CPL (if sufficient information is available).

Note1. An initial coordination dialogue cannot be closed with an REJ response.

Note2. While the AIDC specifications technically support multiple CDN-CDN exchanges within a single negotiation, a procedural limit on the number of such exchanges (e.g. maximum of 2) should be described in bilateral agreements and the coordination in such cases completed manually.



6.3.6.4 Re-route to new destination.

- 6.3.6.4.1 CPL messages contain current route information. As a consequence, when an aircraft has been re-routed to a new destination, the CPL will contain the new route in Field 15 as well as the new destination in Field 16.
- 6.3.6.4.2 When ATSU 2 receives the CPL, it will not be possible to match it to a flight plan since the destination airport will be different from the one in the filed FPL. When this occurs, ATSU 2 should automatically create a flight plan from information contained in the CPL. If a flight plan cannot be created the ATSU should request a FPL by transmitting an RQP message.

6.3.6.5 Abbreviated Initial Coordination Dialogue.

6.3.6.5.1 An Abbreviated Initial Coordination dialogue may be used in place of an initial coordination dialogue when it is expected that a flight's coordination data will be mutually acceptable to both ATS Units, accurate route information is available at the receiving ATS Unit (i.e. from an ABI message), and both ATSUs have agreed to the use of abbreviated initial coordination dialogues in bilateral agreements.

6.3.6.5.2 An Abbreviated Initial Coordination Dialogue consists of:

- ATSU 1 transmitting an EST message to ATSU 2 at a system parameter time or position prior to the FIR or ACI boundary; or
- ATSU 1 transmitting a PAC message to ATSU 2 prior to the flight departing. This normally only occurs when the departure aerodrome is close to the FIR or ACI boundary. Depending on the departure aerodrome, the PAC might be sent when the aircraft receives its airways clearance, or when the aircraft taxis. Any estimate sent in a PAC message should include a reasonable allowance for taxi time etc.

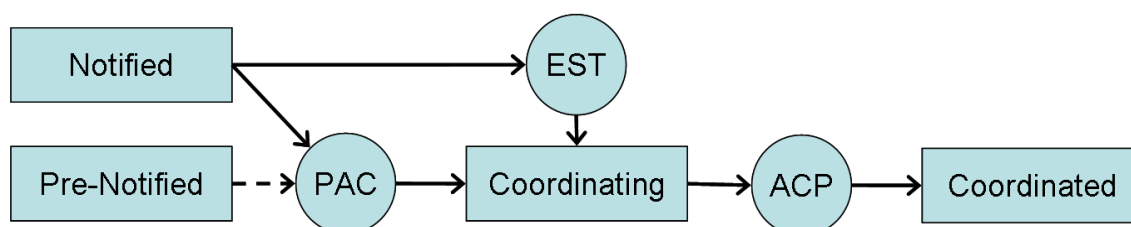
Note: Where a PAC contains enough optional fields to capture any flight plan updates that may have occurred it is not normally preceded by an ABI message. However, this is considered a local implementation issue and should be detailed in bilateral agreements.

6.3.6.5.3 After transmission of the EST or PAC message, the flight is in the Coordinating flight state.

6.3.6.5.4 In response ATSU 2 transmits an ACP message, which confirms that the message has been processed, and the proposed coordination conditions contained within the EST or PAC message have been accepted.

6.3.6.5.5 Once an ACP response has been transmitted the abbreviated initial coordination dialogue is closed, and the flight is now in the Coordinated flight state.

6.3.6.5.6 Negotiations via CDN messages are not permitted within the abbreviated initial coordination dialogue. Even If ATSU 2 cannot accept the proposed coordination conditions, an ACP response should still be sent, and an amendment subsequently proposed.



6.3.6.6 Coordination Cancellation.

6.3.6.6.1 If ATSU 1 has already completed coordination with ATSU 2, and a revision (e.g. change in route) occurs such that the aircraft will no longer enter ATSU 2's airspace or its ACI, ATSU 1 transmits a MAC message to ATSU 2.

6.3.6.6.2 Receipt of a MAC by ATSU 2 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.

6.3.6.6.3 On receipt of a MAC message the flight reverts to the Pre-Notified flight state.



6.3.6.7 Coordination and the ACI.

6.3.6.7.1 ATSU 1 may be required to initiate a coordination dialogue with ATSU 2 for an aircraft if it enters the ACI of ATSU 2, but does not enter ATSU 2's airspace.

6.3.6.8 Coordinating revisions to flight details

6.3.6.8.1 After coordination has been completed, revisions to previously agreed coordination must be negotiated between the affected ATS Units.

6.3.6.8.2 ATSU 1 might propose a revision, if an aircraft requests a change to its profile (e.g. level, route or off track deviation), or it is necessary to amend an estimate or a change to the aircraft's equipment or other information.

6.3.6.8.3 ATSU 2 might propose a revision if the originally agreed coordination conditions are no longer suitable (e.g. a change of level or route is required prior to the FIR or ACI boundary).

6.3.6.9 Re-Negotiation Dialogue.

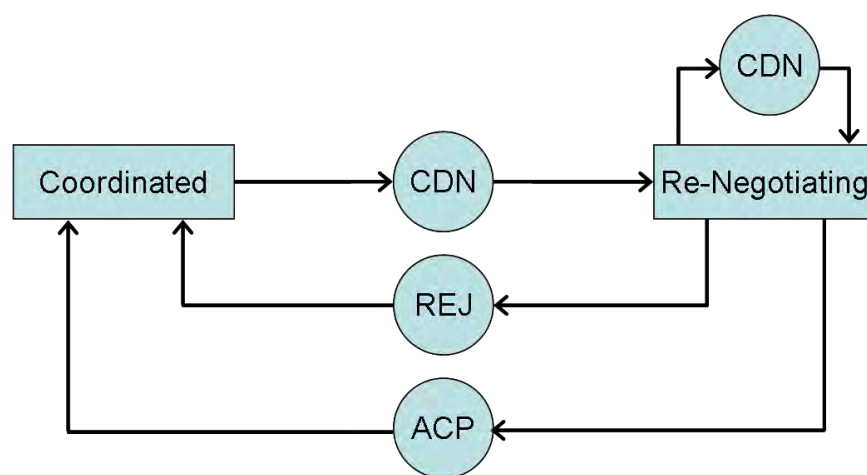
6.3.6.9.1 The re-negotiation dialogue may be used to propose an amendment to previously agreed coordination conditions. Either ATSU 1 or ATSU 2 may initiate a re-negotiation dialogue by transmitting a CDN message containing the proposed changes to the other ATSU.

6.3.6.9.2 On transmission of a CDN message, the flight is in the Re-negotiating flight state.

6.3.6.9.3 The ATSU receiving the CDN message can:

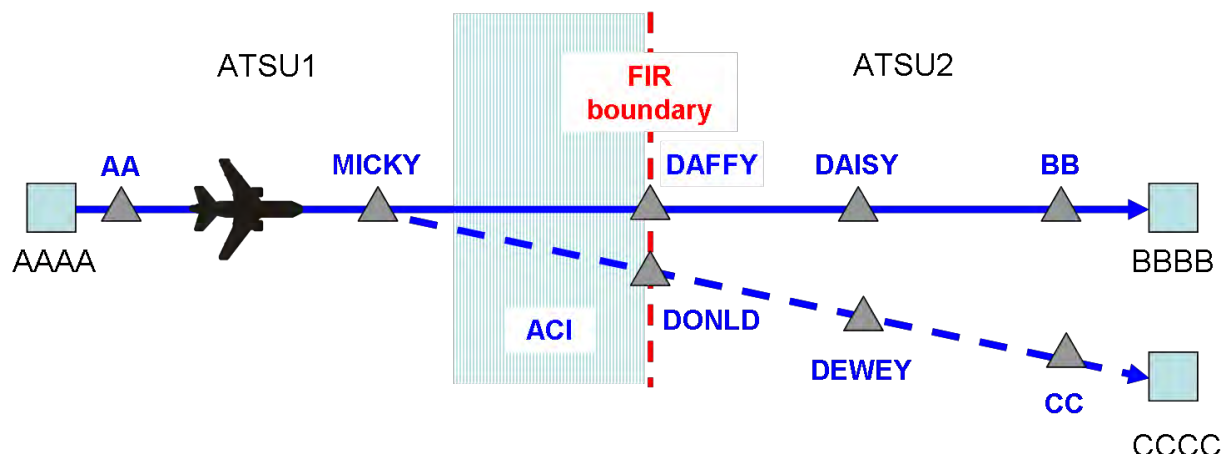
- Accept the proposed coordination by responding with an ACP message to the ATSU that transmitted the CDN message; or
- Reject the proposed coordination by responding with an REJ message to the ATSU that transmitted the CDN message; or
- Propose an amendment to the proposed coordination by responding with a CDN message to the ATSU that transmitted the original CDN message. The re-negotiation dialogue remains open. A series of negotiations between the two ATSUs may then be conducted using additional CDN messages until either an ACP message is transmitted indicating agreement with the most recent proposed coordination, or an REJ message is transmitted indicating the proposed coordination is rejected, and the previously agreed coordination is retained.

6.3.6.9.4 On transmission (or receipt) of an ACP or REJ response the re-negotiation dialogue is closed, and the flight is in the Coordinated flight state.



6.3.6.9.5 While the AIDC specifications technically support multiple CDN-CDN exchanges within a single negotiation, a procedural limit on the number of such exchanges (e.g. maximum of 2) should be described in bilateral agreements and the coordination in such cases completed manually.

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- 6.3.6.9.6 For a given flight, only one re-negotiation dialogue may be open between any pair of ATSUs. It is possible, however, for more than one re-negotiation dialogue to be open for a flight between different pairs of ATSUs (e.g. between ATSU 1/ATSU 2, and ATSU 1/ATSU 3).
- 6.3.6.9.7 In the rare case where two ATSUs simultaneously transmit a CDN message to each other, the ATSU controlling the flight should transmit a REJ to the other ATSU, to close the re-negotiation dialogue initiated by the non-controlling ATSU.
- 6.3.6.9.8 CDN messages are proposals; neither ATSU should make changes to the previously agreed coordination conditions until an ACP response has been transmitted and an application response received.
- 6.3.6.10 Use of a CDN message to propose an amended destination
- 6.3.6.10.1 The procedures described below are to ensure interoperability when using a CDN to propose a diversion to an alternative destination by ATSUs that support this functionality.
- 6.3.6.10.2 To permit the CDN to be associated with a flight plan, the mandatory Field 16 should contain the original (i.e., the “current”) destination aerodrome. The Amended Destination text field should contain the amended destination.
- 6.3.6.10.3 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.
- 6.3.6.10.4 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.
- 6.3.6.10.5 Due to the complexities involved with maintaining multiple profiles for “current destination” and “amended destination” ATSUs should consider prohibiting (via bilateral agreement) an operational response of CDN in any coordination renegotiation dialogues that contain an amended destination.
- 6.3.6.10.6 The following diagram shows a proposed reroute to a new destination (CCCC), via a new route, MICKY DONLD DEWEY CC.



Example

6.3.6.11 Because MICKY is located outside the ACI associated with ATSU2, Field 15 information transmitted by ATSU1 to ATSU2 should commence at (or before) MICKY. This permits ATSU2 to calculate the profile of the aircraft commencing at the ACI boundary

(CDN-ABC123-AAAA-BBBB-14/DONLD/2200F370
-15/M083F370 MICKY DONLD DEWEY CC-DEST/CCCC)

(ACP-ABC123-AAAA-BBBB)

Note. In the above CDN, Field 15 containing “M083F370 AA MICKY DONLD DEWEY CC” would also be valid.

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

Example

(CDN-ABC123-AAAA-CCCC-14/DONLD/2201F390)

6.3.6.12 Cleared Flight Profile Update.

6.3.6.12.1 The cleared flight profile (which is used for control purposes) should only be updated after successful completion of a coordination or negotiation 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.

6.3.6.13 Automatically updating agreed coordination

6.3.6.13.1 When included in bilateral agreements, amendments to previously agreed coordination conditions may be coordinated using a TRU message. The purpose of this message is to allow amendments

to certain elements of an aircraft's clearance, as well as other information, to be coordinated to an adjacent ATSU.

6.3.6.13.2 Unlike the CDN, there is no operational response to a TRU message – this message may only be used when there is agreement to what types of amendments can be made to an aircraft's clearance by the controlling ATSU after initial coordination has occurred.

6.3.6.13.3 The TRU message makes use of the Track data text field to allow ATSU 1 to provide updated clearance and other information to ATSU 2. The Track data field may be used to update assigned heading, assigned level, off track clearance, assigned speed, or 'direct to' information, as well as to notify the last reported or requested level of the aircraft.

6.3.6.13.4 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.).

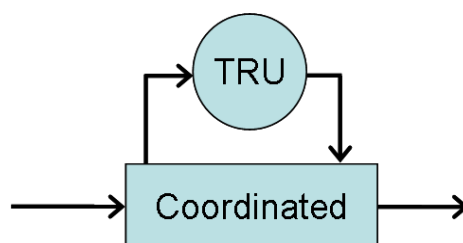
6.3.6.13.5 When using the DCT/[position] element in the TRU message, [position] would normally be located on the flight planned route of the aircraft. Local procedures should specify the actions to be taken in the event that [position] is not on the flight planned route.

6.3.6.13.6 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.

6.3.6.13.7 The amended coordination can be considered as being completed upon receipt of a successful application message response (LAM).

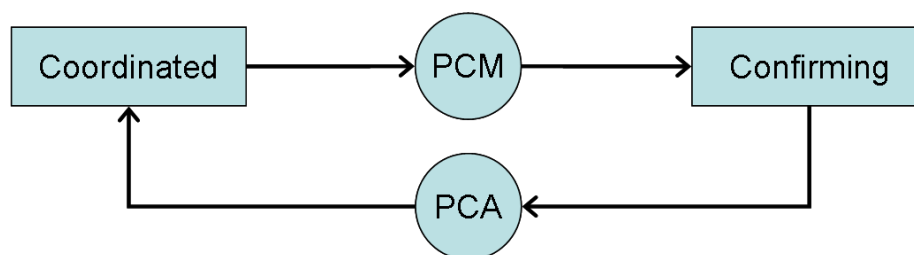
6.3.6.13.8 The transmission of a TRU message does not change the flight state.



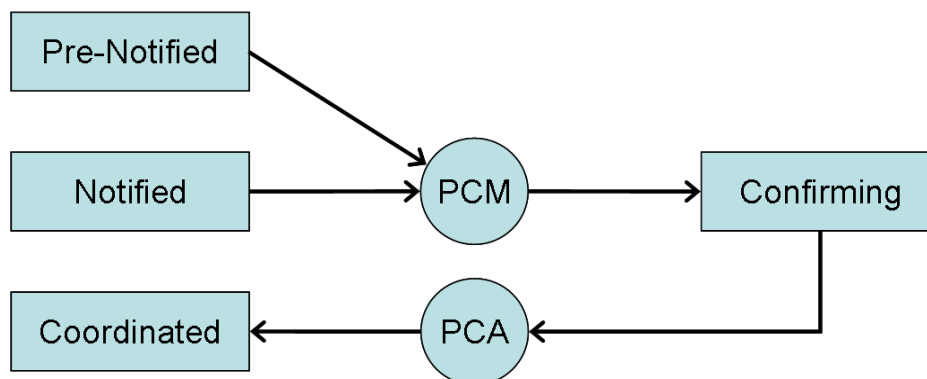
6.3.6.14 Confirmation of coordination

6.3.6.14.1 Most automated air traffic control systems include functionality for the controller to indicate that coordination, or revisions to it, has been completed manually. Such functionality introduces the possibility of human error, resulting in a coordination error.

- 6.3.6.14.2 The PCM is intended to detect and allow recovery from such coordination errors. The use of the PCM is optional and should be implemented when it is determined that the use of this message can improve the safety and reliability of ATC coordination.
- 6.3.6.14.3 While Field 14 (Estimate data) of the PCM is mandatory, there are also a number of optional fields. When implementing the PCM, ATSUs should determine what information is required to be cross-checked, and ensure that this information is included in the PCM.
- 6.3.6.14.4 At a system parameter time or position prior to the FIR or ACI boundary, but prior to the transfer of control occurring, ATSU 1 automatically transmits a PCM to ATSU 2. If a coordination or re-negotiation dialogue is open, the transmission of the PCM should be delayed until the dialogue is closed. To maximize its effectiveness, the PCM should be transmitted as close as reasonable (e.g. 1 to 2 minutes) prior to the transfer of control occurring.
- 6.3.6.14.5 After transmitting the PCM, the flight is in the Confirming flight state.
- 6.3.6.14.6 On receipt of the PCM, ATSU 2 should automatically compare the contents of the PCM with the flight plan held by ATSU 2
- 6.3.6.14.7 If no discrepancy exists, ATSU 2 should automatically transmit a PCA message in response to ATSU 1 to close the confirmation dialogue.
- 6.3.6.14.8 If a discrepancy is detected, or no coordination has previously been received, ATSU 2 should:
- Update the ATS flight plan with the information in the PCM; and
 - Alert the controller about the data discrepancy (which indicates a coordination error has occurred). Consideration should be given to suppressing this alert if it involves a minor discrepancy such as a 1-2 minute estimate revision;
 - Transmit a PCA message in response to ATSU 1 to close the confirmation dialogue.
- Note. If the PCM cannot be matched with a flight plan, ATSU 2 must create one from information received in the PCM. If it is not possible to create a flight plan, the controller must be alerted immediately as this is a critical situation.
- 6.3.6.14.9 ATSU 1 should generate a warning if a PCA response is not received within a defined time period.
- 6.3.6.14.10 On receipt of the PCA, the flight is in the Coordinated flight state.



- 6.3.6.14.11 The diagram above depicts the flight state transitions associated with a PCM/PCA exchange following routine coordination. However, in the event of an error having occurred that has resulted in coordination not being completed, other transitions may be possible.



6.3.6.14.12 While the transitions shown above are valid, this should not be interpreted as an acceptable alternative means to complete coordination.

6.3.6.14.13 The confirmation of coordination messages are intended as a final coordination safety net. They should be used in conjunction with, rather than instead of, other safeguards to ensure that coordination is accurately and reliably completed.

6.3.7 Flight states associated with Transfer of Control

6.3.7.1 As the aircraft approaches the FIR boundary, ATSU 1 transmits a TOC message to ATSU 2 to propose the transfer of control of the flight. If a coordination, re-negotiation or confirmation dialogue is open, the transmission of the TOC should be delayed until the dialogue is closed.

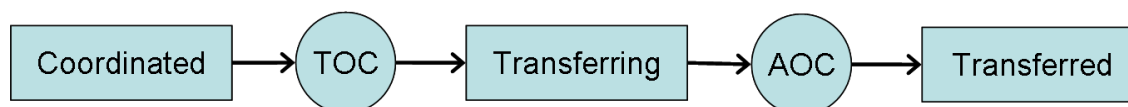
6.3.7.2 The timing of the TOC message depends on the operational environment. In a non-ATS surveillance environment, typical values are 2 – 5 minutes, but much less in an ATS surveillance environment.

6.3.7.3 The flight is now in the Transferring flight state.

6.3.7.4 On receipt of the TOC, ATSU 2 responds with an AOC message to accept the transfer of control of the flight.

6.3.7.5 Once a successful application response (LAM) for the AOC has been received, ATSU 2 becomes the controlling ATSU, and the transfer of control dialogue is closed.

6.3.7.6 The flight is now in the Transferred flight state.



6.3.7.7 Transfer of Control and the ACI.

6.3.7.7.1 If a flight enters ATSU 2's ACI but does not enter ATSU 2's airspace, under normal circumstances, no Transfer of Control to ATSU 2 will occur.

6.3.7.8 Amendments after the ACI or FIR boundary

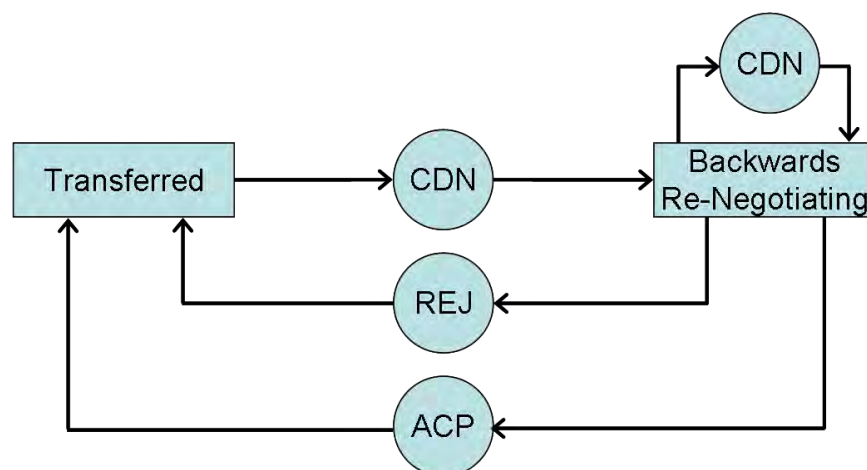
6.3.7.8.1 No changes to the flight profile may be made while the aircraft is in ATSU 2's ACI without mutual agreement by ATSU 1 and ATSU 2.

6.3.7.8.2 No changes to the flight profile may be made while the aircraft is in ATSU 2's FIR (but still within ATSU 1's ACI) without mutual agreement by ATSU 1 and ATSU 2.

6.3.7.9 A Re-Negotiating dialogue may be used to coordinate profile amendments after entering the ACI of an adjacent ATSU, or after the transfer of control has been completed. The re-negotiating dialogue is initiated by the transmission of a CDN message, as described below.

6.3.7.10 After the transmission of a CDN message, the flight is in a Backward Re-Negotiating State.

6.3.7.11 After the transmission of an ACP or REJ response, the re-negotiation dialogue is closed and the flight is in the Transferred state.



6.3.8 Flight state transitions

6.3.8.1 The following table shows the various permissible flight state transitions, as well as the AIDC message that triggers the flight state transition.

Table 6-3. Flight State Transition table

Flight State Transition		Message Trigger	Description
Before	After		
Pre-Notified	Notified	ABI	An ABI triggers the Notified state.
Pre-Notified	Negotiating	CPL	A CPL triggers the Negotiating state.

Flight State Transition		Message Trigger	Description
Before	After		
Pre-Notified	Coordinating	PAC	A PAC is used to initiate an abbreviated coordination dialogue for an aircraft that has not yet departed without being preceded by an ABI if the PAC contains all optional fields necessary to update the flight plan of the adjacent ATSU
Pre-Notified	Confirming	PCM	A PCM triggers the Confirming state. This state transition only occurs if an error has occurred and neither notification nor coordination has taken place.
Notified	Notified	ABI	Following any changes made to a flight, a subsequent ABI is transmitted to update the information held by an adjacent ATSU.
Notified	Pre-Notified	MAC	A flight that was expected to cross the FIR or ACI boundary of an adjacent ATSU will no longer do so.
Notified	Confirming	PCM	A PCM triggers the Confirming state. This state transition only occurs if an error has occurred and coordination has not taken place.
Notified	Negotiating	CPL	A CPL is used to initiate a coordination dialogue for an aircraft that will enter the airspace or ACI of an adjacent ATSU.
Notified	Coordinating	EST	An EST is used to initiate an abbreviated coordination dialogue for an aircraft that will enter the airspace or ACI of an adjacent ATSU.
Notified	Coordinating	PAC	A PAC is used to initiate an abbreviated coordination dialogue for an aircraft that has not yet departed that will enter the airspace or ACI of an adjacent ATSU.
Negotiating	Negotiating	CDN	If an adjacent ATSU cannot accept the coordination proposed in a CPL message, the coordination can be negotiated using CDN messages.
Negotiating	Coordinated	ACP	The coordination dialogue is closed when one ATSU accepts the proposed coordination by

Flight State Transition		Message Trigger	Description
Before	After		
			responding with an ACP.
Coordinating	Coordinated	ACP	The abbreviated coordination dialogue is closed when the adjacent ATSU transmits an ACP response
Coordinated	Re-Negotiating	CDN	A coordination negotiation dialogue can be initiated at any time after the initial coordination and before the initiation of the transfer of control procedure.
Re-Negotiating	Re-Negotiating	CDN	A CDN may be used as a counter-proposal to a previously received CDN.
Re-Negotiating	Coordinated	ACP	An ACP closes a re-negotiation dialogue with new mutually agreed coordination conditions.
		REJ	An REJ closes a re-negotiation 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	Confirming	PCM	A PCM may be transmitted to confirm that coordination has been completed and is up to date
Confirming	Coordinated	PCA	A PCA message closes the confirmation dialogue, and confirms that the adjacent ATSU has updated coordination information.
Coordinated	Pre-Notified	MAC	A flight that was expected to enter an adjacent ATSU's airspace or ACI will no longer do so.
Coordinated	Transferring	TOC	The TOC message proposes a transfer of control to an adjacent ATSU.
Transferring	Transferred	AOC	An adjacent ATSU has accepted control of a flight in response to a TOC message
Transferred	Backward-Re-Negotiating	CDN	A Re-negotiation dialogue can be opened at any time after the transfer of control has occurred while the aircraft is still within the ACI of the

Flight State Transition		Message Trigger	Description
Before	After		
			previous ATSU.
Backward-Re-Negotiating	Backward-Re-Negotiating	CDN	A CDN counter-proposal to a previous CDN.
Backward-Re-Negotiating	Transferred	ACP	An ACP closes the re-negotiation dialogue with new mutually agreed coordination conditions.
		REJ	An REJ closes the re-negotiation dialogue with the coordination conditions remaining as previously agreed

6.3.8.2 A complete flight state transition diagram is shown in Figure 6-1. 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 for the transition from one flight state to another.

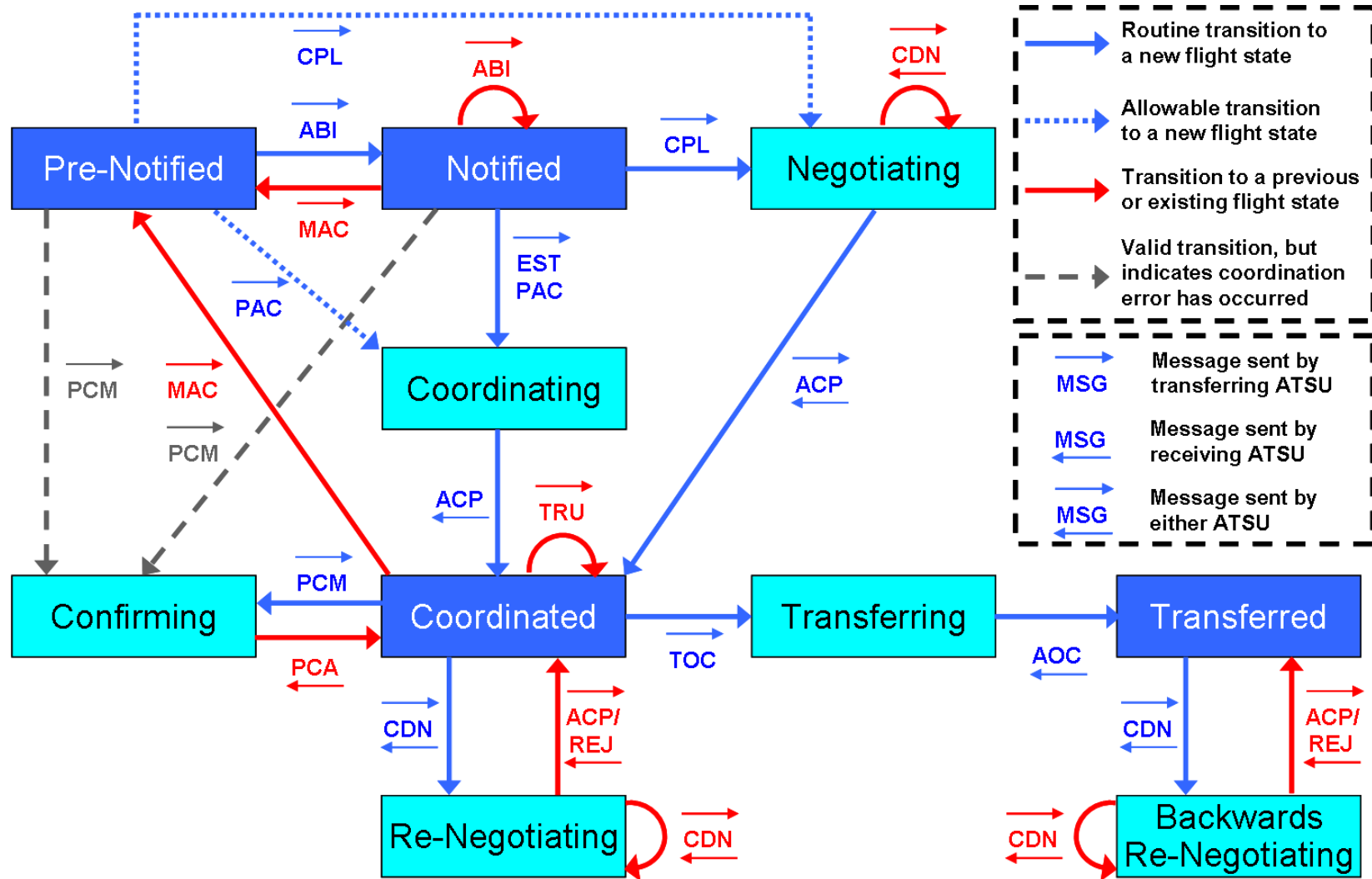


Figure 6-1 Flight State Transition Diagram

6.4 Message Sequencing

- 6.4.1 The Table 6-4 below shows sequences of commonly used AIDC messages including the next possible AIDC message. Application responses (LAM and LRM) have not been included. The receipt of an LRM may affect the sequence as shown in the Table 6-4. In the event that the transaction cannot be completed by AIDC then verbal communication should be used to complete the coordination.

Table 6-4. AIDC Message Sequence of commonly used AIDC messages

AIDC message initiated by ATSU1	Next possible AIDC message initiated by ATSU2	Next possible AIDC message by ATSU1	Next possible AIDC message by ATSU2
ATSU1 → ATSU2	ATSU2 → ATSU1	ATSU1 → ATSU2	ATSU2 → ATSU1
Notification and Negotiation Sequences			
ABI	-	ABI	-
	-	MAC	-
	-	CPL	CDN
	-		ACP
	-	EST	ACP
	-	PAC	ACP
		PCM	PCA
Coordination Sequences			
CPL	ACP	TRU	-
		TOC	AOC
		CDN	CDN
			ACP
			REJ
		PCM	PCA
		MAC	-

PAN ICD

	CDN	ACP	-
		CDN	CDN
			ACP
EST or PAC	ACP	TRU	-
		TOC	AOC
		CDN	CDN
			ACP
			REJ
		PCM	PCA
		MAC	-
CDN [After initial Coordination has been successful)	CDN	CDN	CDN
			ACP or REJ
		ACP	-
		REJ	-
	ACP or REJ	TRU	-
		TOC	AOC
		CDN	CDN
			ACP
			REJ
		PCM	PCA
		MAC	-
TRU [After initial	-	TRU	-
		TOC	AOC

Coordination has been successful)		CDN	CDN
			ACP
			REJ
		PCM	PCA
		MAC	-
PCM	PCA	TRU	-
		TOC	AOC
		CDN	CDN
			ACP
			REJ
		PCM	PCA
		MAC	-
Transfer of Control Sequence			
TOC	AOC	CDN	CDN
			ACP
			REJ
	AOC	-	CDN

6.4.2 Table 6-5 lists the AIDC messages which are valid for each flight state. The ATSU which can transmit the message is also identified.

Table 6-5. Valid Messages by ATSU and flight states

Flight State	Message	Sent by
Pre-Notified	ABI	ATSU 1
Pre-Notified	PAC	ATSU 1
Pre-Notified	CPL	ATSU 1

Flight State	Message	Sent by
Pre-Notified	PCM	ATSU 1
Notified	ABI	ATSU 1
Notified	MAC	ATSU 1
Notified	CPL	ATSU 1
Notified	EST	ATSU 1
Notified	PAC	ATSU 1
Notified	PCM	ATSU 1
Negotiating	CDN	Either ATSU
Negotiating	ACP	Either ATSU
Coordinating	ACP	ATSU 2
Coordinated	CDN	Either ATSU
Coordinated	TRU	ATSU 1
Coordinated	PCM	ATSU 1
Coordinated	TOC	ATSU 1
Coordinated	MAC	ATSU 1
Confirming	PCA	ATSU 2
Re-Negotiating	CDN	Either ATSU
Re-Negotiating	ACP	Either ATSU
Re-Negotiating	REJ	Either ATSU
Transferring	AOC	ATSU 2
Transferred	CDN	Either ATSU
Backward- Re-Negotiating	CDN	Either ATSU
Backward-	ACP	Either ATSU

Flight State	Message	Sent by
Re-Negotiating		
Backward- Re-Negotiating	REJ	Either ATSU

6.5 Other AIDC messages

6.5.1 The previous sections have discussed the use of Notification, Coordination Confirmation and Transfer of Control messages. There are three additional AIDC message groups:

- General Information messages;
- Application management messages; and
- Surveillance Data Transfer messages.

6.5.2 All AIDC messages within these three message groups require only an application response; no operational response is defined. No change to flight state occurs as a result of transmitting or receiving these AIDC messages.

6.5.3 General information messages.

6.5.3.1 EMG and MIS Messages.

6.5.3.2 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).

6.5.4 Application Management messages.

6.5.4.1 Application management messages refer to Application responses (LAM and LRM) status monitoring (ASM), and FANS data link connection transfer (FAN and FCN) capabilities.

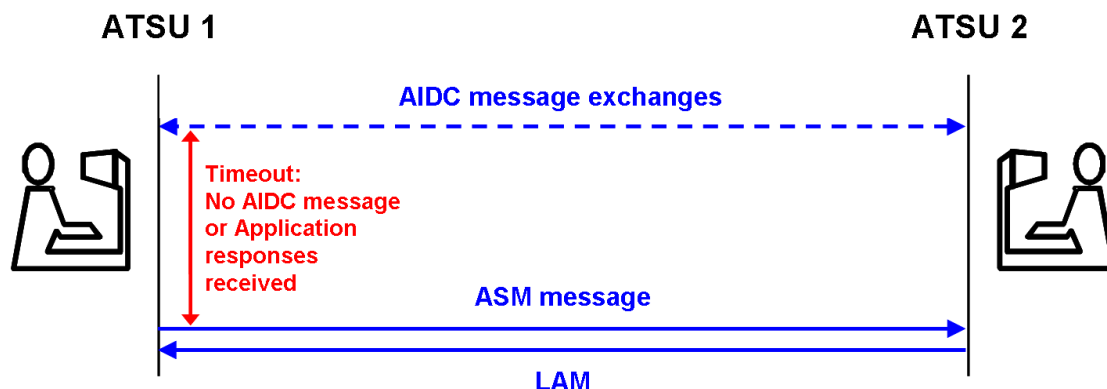
6.5.4.2 Because of their important role in the AIDC process, the LAM and LRM were described separately, earlier in this document (refer to Para 4.8).

6.5.4.3 Application Status Monitor (ASM)

6.5.4.3.1 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 (including Application response messages - LAM or LRM) have been received from the other ATSU. An ATSU receiving an ASM message should respond with an appropriate application response.

6.5.4.3.2 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, a warning message should be displayed at an appropriate position so that local contingency procedures can be executed.

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



6.5.4.4 FANS Application Message (FAN)

6.5.4.4.1 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.

6.5.4.4.2 In the event that only an ADS-C connection will be required, the ATSU transmitting the FAN message should only include ADS-C information in the Application field. If a FAN message is transmitted containing ADS-C information only, there should be no expectation of subsequently receiving an FCN. If a FAN message is received containing ADS-C application information only, there should be no attempt to establish a CPDLC connection.

6.5.4.4.3 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 that ATSU 2 is not the Next Data Authority ATSU 1 should send another NDA message to the aircraft and another FAN message to ATSU 2 to indicate that the NDA has been sent (refer to Figure 6-5). While the second FAN may not be required for address forwarding purposes it does provide ATSU 2 with a positive indication that another NDA has been sent to the aircraft.

6.5.4.4.4 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.

6.5.4.4.5 Similarly to Address Forwarding, the FAN message should be sent by ATSU 1 at a time parameter prior to the boundary or ACI with ATSU 2. 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.

6.5.4.4.6 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.

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

6.5.4.4.7 When extracting the aircraft identification 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

6.5.4.4.8 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.

6.5.4.4.9 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 will not be delivered to the aircraft.

6.5.4.4.10 Any “padding” in the registration contained in the AFN logon (e.g. preceding periods “.”) 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”.

6.5.4.4.11 Some ATSUs may utilize 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, the calculated position of the aircraft at the time of FAN transmission should be used. The aircraft position from the original logon should not be used for this purpose because this information will be out of date when the FAN message is transmitted.

6.5.4.5 FANS Completion Notification (FCN)

6.5.4.5.1 The FCN message, where used, provides advice to ATSU 1 concerning the CPDLC connection status of ATSU 2. The transmission of an FCN message is triggered by an event such as the termination of a CPDLC Connection by ATSU 1, or the establishment of (or failure to establish) an inactive CPDLC Connection by ATSU 2. 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, or where a FAN message has been transmitted solely to permit an adjacent ATS Unit to establish ADS contracts with an aircraft.

6.5.4.6 Multiple FCN messages.

6.5.4.6.1 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 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 ATSU 2 not being the nominated next data authority – see Table 6-6 below).

Table 6-6. FCN Transmission

ATSU transmitting FCN	When an FCN should be sent
ATSU 1	On receipt of a Disconnect Request terminating the CPDLC Connection (CPD=0)
ATSU 2	On receipt of a Connection Confirm, establishing a CPDLC Connection (CPD=2)
ATSU 2	On receipt of CPDLC downlink DM64 [ICAO facility designation] (CPD=1), Note. This provides advice to ATSU 1 to uplink an appropriate Next Data Authority message to the aircraft. And subsequently: On establishment of a CPDLC Connection (CPD=2)
ATSU 2	At a time parameter prior to the FIR boundary, if no CPDLC Connection could be established (CPD=0)

6.5.4.6.2 Procedures following a change to CPDLC Connectivity, e.g., loss of the inactive CPDLC connection, 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.

6.5.4.6.3 Non-receipt of an FCN (CPD = 0) by ATSU 2 should prompt ATSU 2 to ensure that they are the CPDLC current data authority for the aircraft.

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

6.5.4.7 Sample flight threads involving FAN and FCN messages

6.5.4.7.1 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.

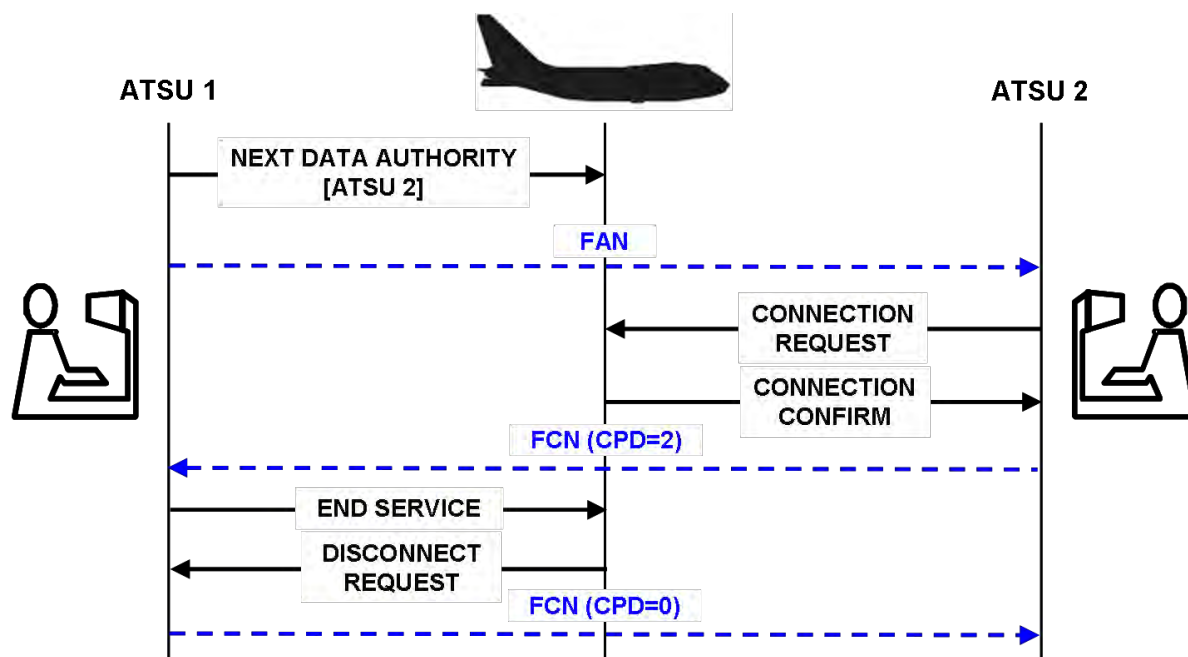


Figure 6-2. Routine Data Link Transfer Using FAN and FCN Messaging

6.5.4.7.2 Figure 6-2 shows a routine CPDLC transfer from one ATSU to the next. The first step in the transfer process is the uplink 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. ATSU 2 then successfully establishes a CPDLC connection with the aircraft and transmits a 'successful' FCN (CPD = 2) to ATSU 1. On termination of the CPDLC connection, ATSU 1 transmits an FCN (CPD = 0) to ATSU 2 indicating that it has become the CPDLC current data authority.

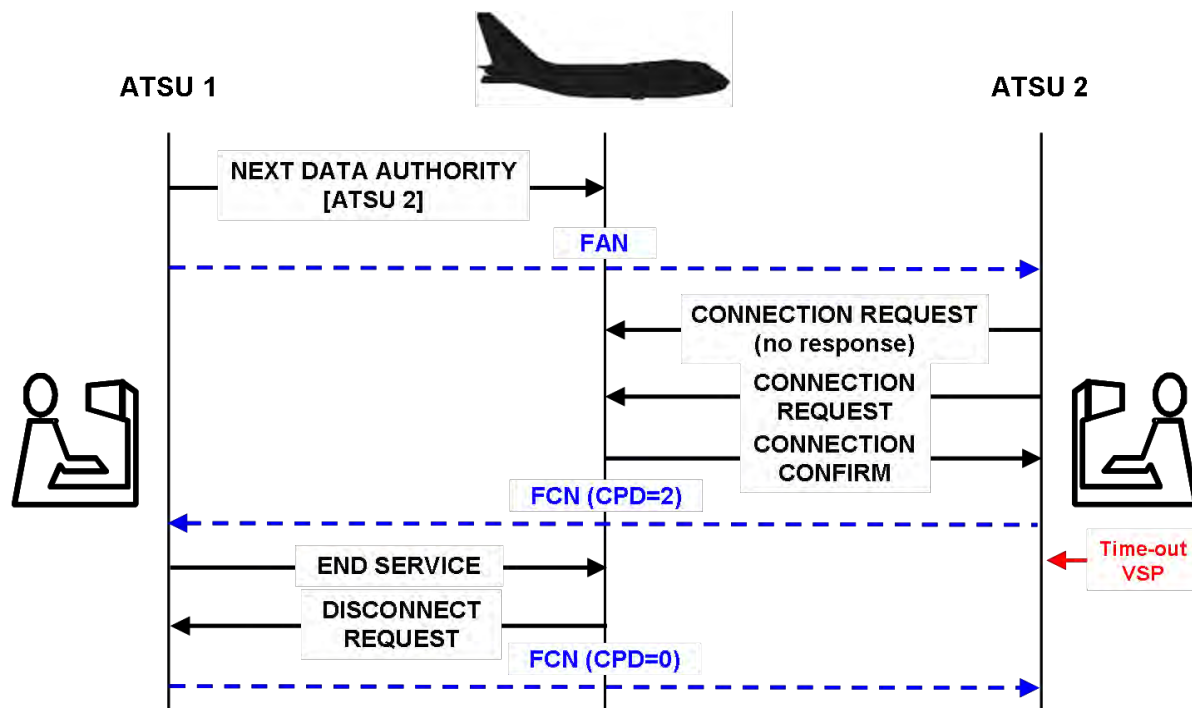


Figure 6-3 CPDLC Transfer Using FAN and FCN Messaging – Initial Connection Request Failed

6.5.4.7.3 Figure 6-3 shows a CPDLC transfer where there is no response by the avionics to the initial Connection Request uplinked by ATSU 2. A subsequent Connection Request is uplinked to the aircraft which is successful. Because the CPDLC connection is finally established before the 'time out' VSP prior to the FIR boundary, a successful FCN (CPD=2) is transmitted to ATSU 1. On termination of the CPDLC connection, ATSU 1 transmits an FCN (CPD=0) to ATSU 2.

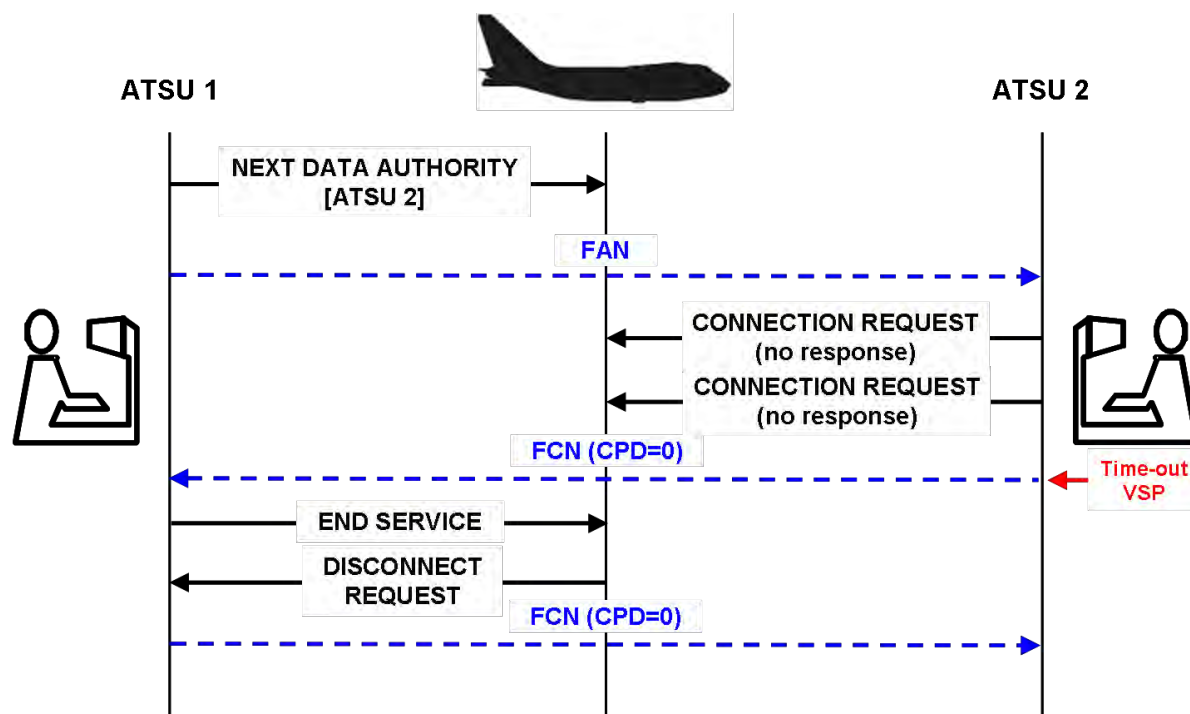


Figure 6-4 CPDLC Transfer Using FAN and FCN Messaging – Unable to Establish CPDLC Connection

6.5.4.7.4 Figure 6-4 shows an attempted CPDLC transfer where there is no response by the avionics to multiple CPDLC connection requests uplinked by ATSU 2 before the ‘time out’ VSP prior to the FIR boundary. An unsuccessful FCN (CPD=0) is transmitted to ATSU 1. Letters of Agreement should describe the procedures to be followed in the event that ATSU 2 establishes a CPDLC connection after this FCN has been transmitted. Even though ATSU 2 has advised of their inability to establish a CPDLC connection, ATSU 1 still transmits an FCN (CPD=0) when their CPDLC connection with the aircraft is terminated.

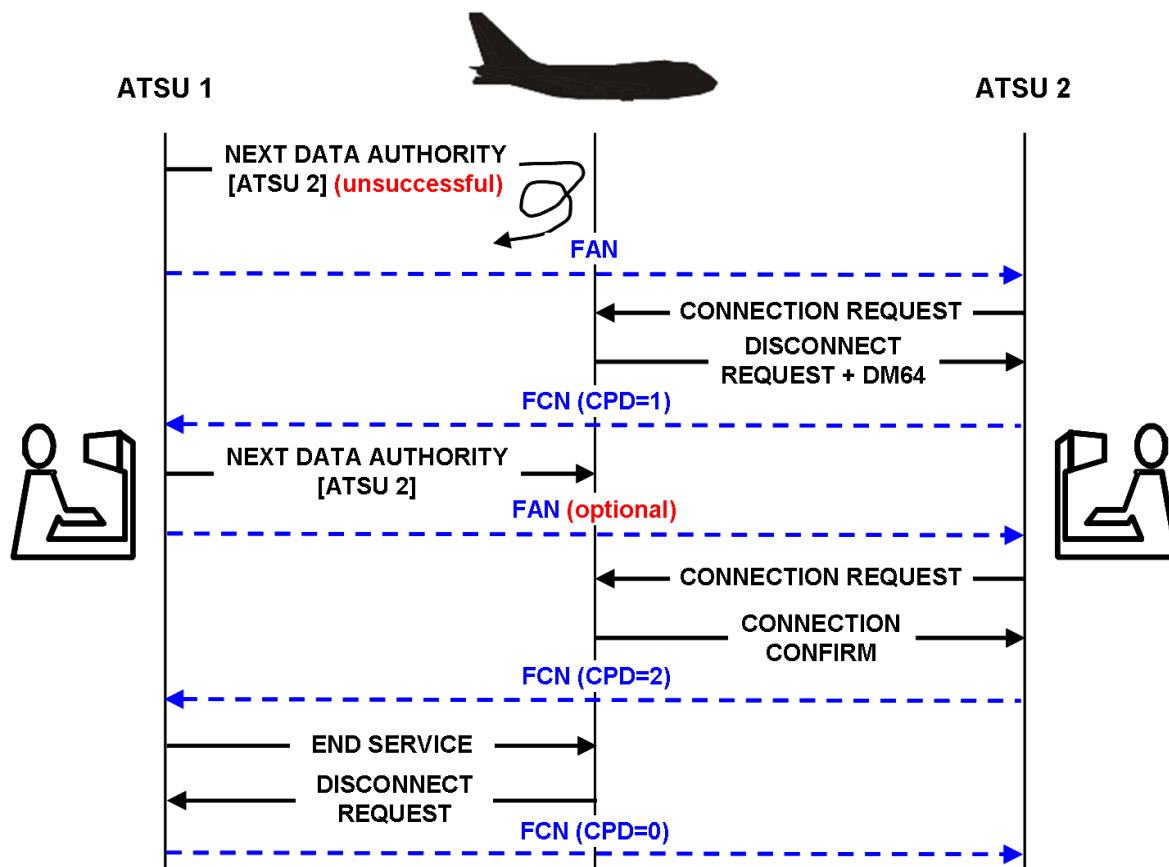


Figure 6-5 CPDLC Transfer Using FAN and FCN Messaging – Initial NDA not Delivered

6.5.4.7.5 Figure 6-5 shows a CPDLC transfer in which the original Next Data Authority message uplinked by ATSU 1 is not delivered to the aircraft. An FCN (CPD=1) is transmitted by ATSU 2 advising of the failure of their CPDLC Connection request. Another Next Data Authority message is uplinked to the aircraft. ATSU 1 may send another FAN message after which ATSU 2 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 ATSU 1. On termination of the CPDLC connection, ATSU 1 transmits an FCN (CPD=0) to ATSU 2.

6.5.5 Surveillance data transfer messages.

- 6.5.5.1 The ADS message is used to transfer data contained within an ADS-C report including optional ADS-C groups to an adjacent ATSU.
- 6.5.5.2 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.

- 6.5.5.3 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.

ACARS ADS-C report	QU BNECAYA .QXSXMXS 011505 PAR FI NZ0090/AN ZK-OKC DT QXT POR1 011505 F59A - ADS.ZK-OKC030007FF946B6F6DC8FC044B9D0DFC013B80DA88FC0A64F9E4438B4AC8FC000E34D0EDC00010140F3E8660F3
ADS-C data field	ADS/.ZK-OKC030007FF946B6F6DC8FC044B9D0DFC013B80DA88FC0A64F9E4438B4AC8FC000E34D0EDC00010140F3E86

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

- 6.5.5.4 The types of ADS-C reports (i.e. periodic or event) transmitted in 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.
- 6.5.5.5 The AIDC ADS message is used to transfer ADS-C information only. Other messaging protocols exist for the transfer of ADS-B and other types of surveillance information.
- 6.5.5.6 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.

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-OKC0300FF946B6F6DC8FC044B9D0DFC013B80DA88FC0A64F9E4438B4AC8F
C000E34D0EDC00010140F3EE8660F3

```

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

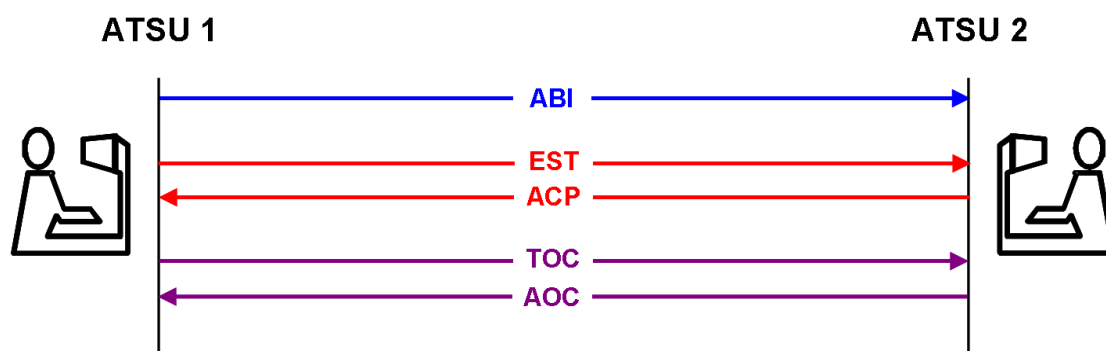
- ADS.ZK-OKC0300FF946B6F6DC8FC044B9D0DFC013B80DA88FC0A64F9E4438B4AC8F
C000E34D0EDC00010140F3EE8660F3

6.6 Examples

- 6.6.1 The following section contains a number of examples illustrating how the AIDC message set may be used operationally. These examples are illustrative only – they do not necessarily reflect the AIDC messages that might actually be used in the circumstances, nor the actual airspace coordination requirements.
- 6.6.2 The specific AIDC messages to be used and the timing of the transmission of these messages are defined in bilateral agreements between the relevant ATS Units.
- 6.6.3 In the following examples, unless otherwise stated, the AIDC messages are transmitted at a specified time or position prior to the FIR or ACI boundary. Depending on the AIDC message received, Operational responses might be transmitted either automatically or manually.
- 6.6.4 Each of the following examples consists of:
- A text description;
 - A flight thread that graphically illustrates the sequence of messages. For ease of reference, these flight threads are color coded, with message dialogues displayed in the same color. AIDC messages not related to Notification, Coordination or Transfer of Control, are shown as a dashed line;
 - A table containing the associated AIDC messages.
- For simplification, the examples do not include Application Management (LAM/LRM) messages.

6.6.4.1 **Example 1 – Coordination using abbreviated initial coordination dialogue**

- 6.6.4.1.1 ATSU 1 transmits a notification message (ABI) to ATSU 2. The ABI contains Estimate data of RUNOD at 1209, operating in a block clearance between FL350 and FL370. By agreement, ATSU 1 includes flight planned speed/level changes in Field 15 of AIDC messages. Subsequently the estimate for RUNOD changes to 1213, but ATSU 1 has an agreement with ATSU 2 not to send revised Notification messages for revisions of less than 5 minutes.
- 6.6.4.1.2 ATSU 1 transmits an abbreviated coordination message (EST) to ATSU 2. The proposed coordination contains Estimate data of RUNOD at 1213 operating in a block clearance between FL350 and FL370. ATSU 2 accepts the proposed coordination conditions by responding with an ACP.
- 6.6.4.1.3 ATSU 1 proposes a transfer of control responsibility by transmitting a TOC to ATSU 2. ATSU 2 accepts control responsibility by responding with an AOC.



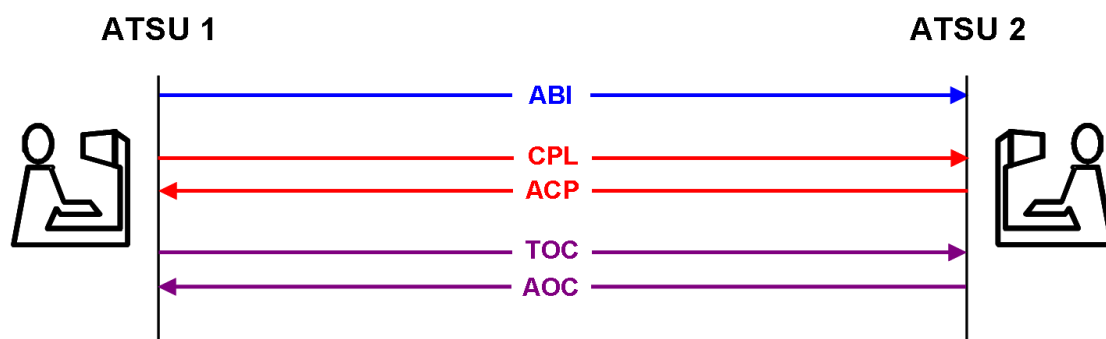
ATSU 1	(ABI-ANZ804/A1207-YBBN-RUNOD/1209F350F370-NZCH-8/IS-9/A320/M-10/SDE1E3FGHIM2RW/LB1-15/N0448F370 2719S15313E SCOTT Y76 SIFRA/M078F390 L503 CH DCT-18/PBN/A1C1D1O1S2T1 REG/ZKOJK EET/NZZO0132 SEL/HJRS CODE/C81845 OPR/ANZ RALT/NZAA YBCG YSSY RMK/TCAS EQUIPPED)
ATSU 1	(EST-ANZ804/A1207-YBBN-RUNOD/1213F350F370-NZCH)
ATSU 2	(ACP-ANZ804/A1207-YBBN-NZCH)
ATSU 1	(TOC-ANZ804/A1207-YBBN-NZCH)
ATSU 2	(AOC-ANZ804/A1207-YBBN-NZCH)

6.6.4.2 Example 2 – Coordination using initial coordination dialogue

6.6.4.2.1 ATSU 1 transmits a notification message (ABI) to ATSU 2. The ABI contains Estimate data of 6852N06414W at 1503 climbing from F350 to F370, and with a weather deviation clearance up to 20NM to the right of route.

6.6.4.2.2 ATSU 1 transmits a coordination message (CPL) to ATSU 2. The proposed coordination contains Estimate data of 6852N06414W at 1505 climbing from F350 to F370, and with a weather deviation clearance up to 20NM to the right of route. ATSU 2 accepts the proposed coordination without modification by responding with an ACP.

6.6.4.2.3 ATSU 1 proposes a transfer of control responsibility by transmitting a TOC to ATSU 2. ATSU 2 accepts control responsibility by responding with an AOC



ATSU 1	(ABI-ICE680-KSEA-6852N06414W/1503F370F350A/W20R-BIKF-8/IS-9/B752/M-10/SWXRGIDFHY/LB1-15/M079F370 6852N06414W BOPUT 6900N06000W 6900N05000W 6800N04000W 6600N03000W HEKLA-18/PBN/A1B2B3B4B5D1L1S1 NAV/RNVD1A1 DOF/131124 REG/TFLLX EET/CZVR0019 CZEG0049 BGGL0450 BIRD0621 SEL/DSHK OPR/ICE RALT/CYEG BGSF RMK/ADSB)
ATSU 1	(CPL-ICE680-IS-B752/M-SWXRGIDFHY/LB1-KSEA-6852N06414W/1505F370F350A/W20R-M079F370 6852N06414W BOPUT 6900N06000W 6900N05000W 6800N04000W 6600N03000W HEKLA-BIKF-PBN/A1B2B3B4B5D1L1S1 NAV/RNVD1A1 DOF/131124 REG/TFLLX EET/CZVR0019 CZEG0049 BGGL0450 BIRD0621 SEL/DSHK OPR/ICE RALT/CYEG BGSF RMK/ADSB)
ATSU 2	(ACP-ICE680-KSEA-BIKF)
ATSU 1	(TOC-ICE680-KSEA-BIKF)
ATSU 2	(AOC-ICE680-KSEA-BIKF)

6.6.4.3 Example 3 – Negotiation of proposed coordination, and CPDLC transfer

6.6.4.3.1 ATSU 1 transmits a notification message (ABI) to ATSU 2. The ABI contains Estimate data of 3010S16300E at 2325 at F370.

6.6.4.3.2 ATSU 1 transmits a coordination message (CPL) to ATSU 2. The proposed coordination contains Estimate data of 3010S16300E at 2324 at F370

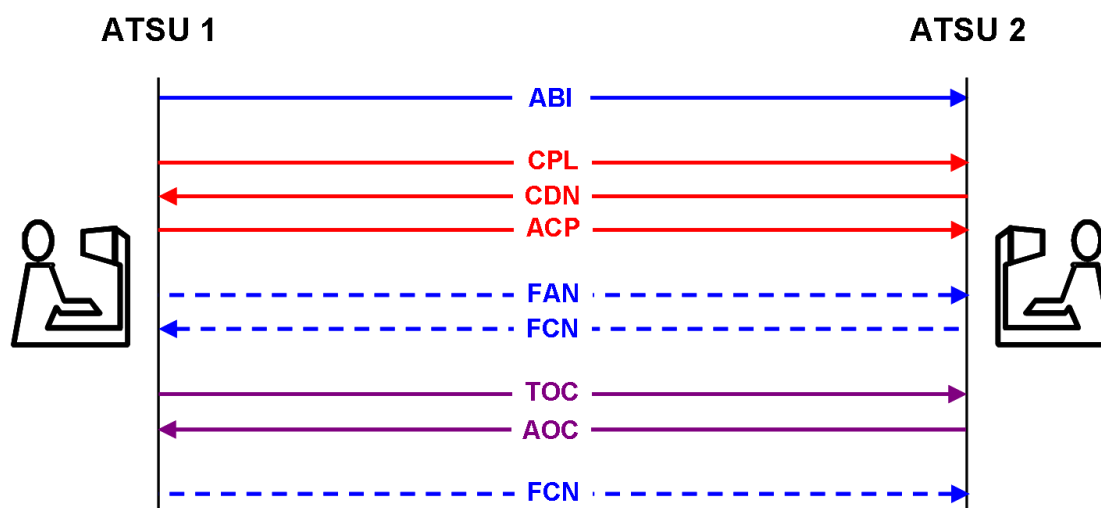
6.6.4.3.3 ATSU 2 responds by transmitting a negotiation message (CDN) to ATSU 1 proposing (or requesting) an amendment to the proposed coordination to F390. ATSU 2 accepts the revised coordination by responding with ACP. The agreed coordination is now 3010S16300E at 2324 at F390.

6.6.4.3.4 ATSU 1 transmits a FAN message to ATSU 2 providing the logon information that ATSU 2 requires to establish a CPDLC connection as well as ADS contracts.

6.6.4.3.5 When an inactive CPDLC connection is established, ATSU 2 transmits an FCN to ATSU 1, including the appropriate HF frequency for the aircraft to monitor.

6.6.4.3.6 ATSU 1 proposes a transfer of control responsibility by transmitting a TOC to ATSU 2. ATSU 2 accepts control responsibility by responding with an AOC.

6.6.4.3.7 ATSU 1 terminates the CPDLC connection and transmits an FCN to ATSU 2 notifying them that the CPDLC connection has been terminated.



ATSU 1	(ABI-ANZ764-YSSY-3010S16300E/2325F370-YSNF-8/IS-9/A320/M-10/SDE1E3FGHIJ3J5M2RW/LB1D1-15/M078F370 SY B450 LHI 3010S16300E NF DCT-18/PBN/A1C1D1O1S2T1 REG/ZKOJK EET/NZZO0131 SEL/HJRS CODE/C81845 OPR/ANZ RMK/TCAS EQUIPPED)
ATSU 1	(CPL-ANZ764-IS-A320/M-SDE1E3FGHIJ3J5M2RW/LB1D1-YSSY-3010S16300E/2324F370-M078F370 SY B450 LHI 3010S16300E NF DCT-YSNF-PBN/A1C1D1O1S2T1 REG/ZKOJK EET/NZZO0131 SEL/HJRS CODE/C81845 OPR/ANZ RMK/TCAS EQUIPPED)
ATSU 2	(CDN-ANZ764-YSSY-YSNF-14/3010S16300E/2324F390)
ATSU 1	(ACP-ANZ764-YSSY-YSNF)
ATSU 1	(FAN-ANZ764-YSSY-YSNF-SMI/AFD FMH/ANZ764 REG/ZK-OJK FPO/3108S16013E FCO/ATC01 FCO/ADS01)
ATSU 2	(FCN-ANZ764-YSSY-YSNF-CPD/2 FREQ/13261)
ATSU 1	(TOC-ANZ764-YSSY-YSNF)
ATSU 2	(AOC-ANZ764-YSSY-YSNF)
ATSU 1	(FCN-ANZ764-YSSY-YSNF-CPD/0)

6.6.4.4 Example 4 – Multiple notifications, automatic coordination updates and coordination confirmation

6.6.4.4.1 ATSU 1 transmits a notification message (ABI) to ATSU 2. The ABI contains Estimate data of 65N040W at 0405 at F350. The route in the ABI (and subsequent AIDC messages) is truncated (“T”) due to a duplicated waypoint in the flight planned route.

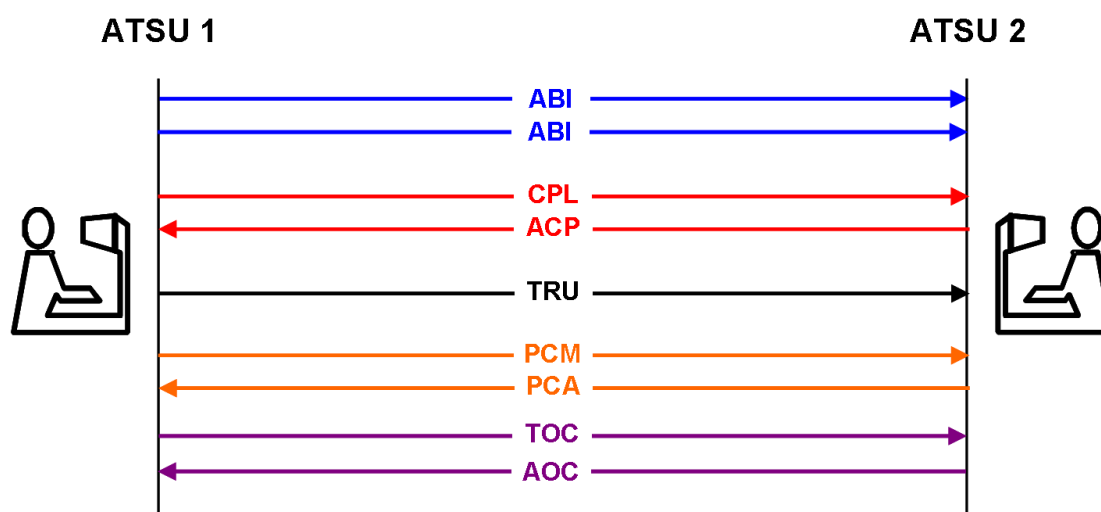
6.6.4.4.2 Following the issuing of a cruise climb and weather deviation clearance, ATSU 1 transmits an additional notification message (ABI) to ATSU 2. The ABI now contains Estimate data of 65N040W at 0406 cruise climbing from F350 to F370, and with a weather deviation clearance up to 30NM either side of route.

6.6.4.4.3 ATSU 1 transmits a coordination message (CPL) to ATSU 2. The proposed coordination contains Estimate data of 65N040W at 0407 at F370F350C, and with a weather deviation clearance up to 30NM either side of route. ATSU 2 accepts the proposed coordination without modification by responding with an ACP.

6.6.4.4.4 ATSU 1 transmits a TRU message to ATSU 2, providing a coordination update that the aircraft is now cleared in a weather deviation up to 40NM either side of route.

6.6.4.4.5 ATSU 1 transmits a PCM to ATSU 2 to confirm that the coordination held by ATSU 2 is correct. ATSU 2 confirms that their coordination is up to date by responding with a PCA.

6.6.4.4.6 ATSU 1 proposes a transfer of control responsibility by transmitting a TOC to ATSU 2. ATSU 2 accepts control responsibility by responding with an AOC



ATSU 1	(ABI-MSR995/A3057-HECA-65N040W/0405F350-CYYZ-8/IS-9/B77W/H-10/SDE1E2E3FGHIJ2J3J4J5M1RWXYZ/LB1D1-15/M084F350 65N040W 63N050W 60N060W LAKES T-18/PBN/A1B1C1D1 NAV/RNVD1E2A1 RNP5 DAT/SVH DOF/131124 REG/SUGDM EET/LCCC0029 LTAA0051 LTBB0115 SEL/FSDP OPR/EGYPTAIR RALT/EGPK CYYR RMK/TCAS)
ATSU 1	(ABI-MSR995/A3057-HECA-65N040W/0406F370F350C/W30E-CYYZ-8/IS-9/B77W/H-10/SDE1E2E3FGHIJ2J3J4J5M1RWXYZ/LB1D1-15/M084F350 65N040W

	63N050W 60N060W LAKES T-18/PBN/A1B1C1D1 NAV/RNVD1E2A1 RNP5 DAT/SVH DOF/131124 REG/SUGDM EET/LCCC0029 LTAA0051 LTBB0115 SEL/FSDP OPR/EGYPTAIR RALT/EGPK CYYR RMK/TCAS)
ATSU 1	(CPL-MSR995/A3057-IS-B77W/H-SDE1E2E3FGHIJ2J3J4J5M1RWXYZ/LB1D1-HECA-65N040W/0407F370F350C/W30E-M084F370 65N040W 63N050W 60N060W LAKES T-CYYZ-PBN/A1B1C1D1 NAV/RNVD1E2A1 RNP5 DAT/SVH DOF/131124 REG/SUGDM EET/LCCC0029 LTAA0051 LTBB0115 SEL/FSDP OPR/EGYPTAIR RALT/EGPK CYYR RMK/TCAS)
ATSU 2	(ACP-MSR995/A3057-HECA-CYYZ)
ATSU 1	(TRU-MSR995/A3057-HECA-CYYZ-OTD/W40E)
ATSU 1	(PCM-MSR995/A3057-HECA-65N040W/0407F370F350C/W40E-CYYZ-8/IS-9/B77W/H-10/SDE1E2E3FGHIJ2J3J4J5M1RWXYZ/LB1D1-15/M084F370 65N040W 63N050W 60N060W LAKES T-18/PBN/A1B1C1D1 NAV/RNVD1E2A1 RNP5 DAT/SVH DOF/131124 REG/SUGDM EET/LCCC0029 LTAA0051 LTBB0115 SEL/FSDP OPR/EGYPTAIR RALT/EGPK CYYR RMK/TCAS)
ATSU 2	(PCA-MSR995/A3057-HECA-CYYZ)
ATSU 1	(TOC-MSR995/A3057-HECA-CYYZ)
ATSU 2	(AOC-MSR995/A3057-HECA-CYYZ)

6.6.4.5 Example 5 – Coordination re-negotiation and automatic coordination updates

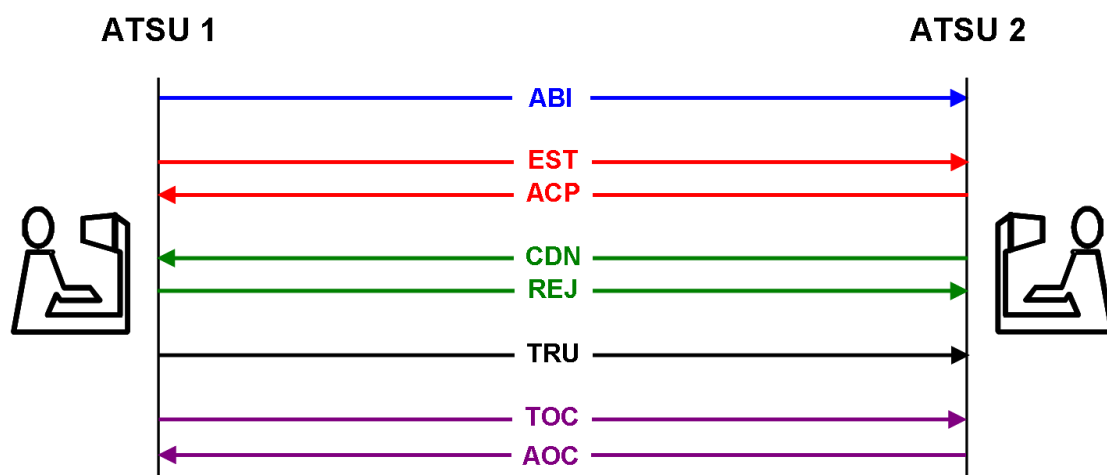
6.6.4.5.1 ATSU 1 transmits a notification message (ABI) to ATSU 2. The ABI contains Estimate data of ESKEL at 0245 at F350.

6.6.4.5.2 ATSU 1 transmits an abbreviated coordination message (EST) to ATSU 2. The proposed coordination contains Estimate data of ESKEL at 0245 at F350. ATSU 2 accepts the proposed coordination conditions by responding with an ACP.

6.6.4.5.3 After coordination has been completed, but prior to the transfer of control ATSU 2 proposes (or requests) an amendment to the proposed coordination to F390 by transmitting a negotiation message (CDN) to ATSU 1. The proposed amendment is not acceptable to ATSU 1, and the proposal is rejected by the transmitting of an REJ response to ATSU 2.

6.6.4.5.4 ATSU 1 transmits a TRU message to ATSU 2, providing a coordination update that the aircraft has been cleared to deviate up to 20NM left of route. The TRU also provides advice that the aircraft is requesting F370. The requested level was not proposed by a negotiation message (CDN), because the requested level was not available in ATSU 1's airspace.

6.6.4.5.5 ATSU 1 proposes a transfer of control responsibility by transmitting a TOC to ATSU 2. ATSU 2 accepts control responsibility by responding with an AOC.



ATSU 1	(ABI-QFA143/A1540-YSSY-ESKEL/0245F350-NZAA-8/IS-9/B738/M-10/SDE2E3FGHIRWYZ/LB1-15/N0448F350 EVONN L521 AA DCT-18/PBN/A1S1T1 NAV/GPSRNAV DOF/140117 REG/ZKZQC EET/YBBB0008 NZZO0121 SEL/ESAP CODE/C81CF8 PER/C)
ATSU 1	(EST-QFA143/A1540-YSSY-ESKEL/0245F350-NZAA)
ATSU 2	(ACP-QFA143/A1540-YSSY-NZAA)
ATSU 2	(CDN-QFA143/A1540-YSSY-NZAA-14/ESKEL/0245F390)
ATSU 1	(REJ-QFA143/A1540-YSSY-NZAA)
ATSU 1	(TRU-QFA143/A1540-YSSY-NZAA-RFL/F370 OTD/W20L)
ATSU 1	(TOC-QFA143/A1540-YSSY-NZAA)
ATSU 2	(AOC-QFA143/A1540-YSSY-NZAA)

6.6.4.6 Example 6 – Coordination re-negotiation, automatic coordination updates and coordination confirmation

6.6.4.6.1 ATSU 1 transmits a notification message (ABI) to ATSU 2. The ABI contains Estimate data of 65N040W at 1145, operating in a block clearance F350 to F370. The route in the ABI (and subsequent AIDC messages) is truncated (“T”) due to a duplicated waypoint in the flight planned route.

6.6.4.6.2 ATSU 1 transmits a coordination message (CPL) to ATSU 2. The proposed coordination contains Estimate data of 65N040W at 1146, operating in a block clearance F350 to F370. ATSU 2 accepts the proposed coordination without modification by responding with an ACP.

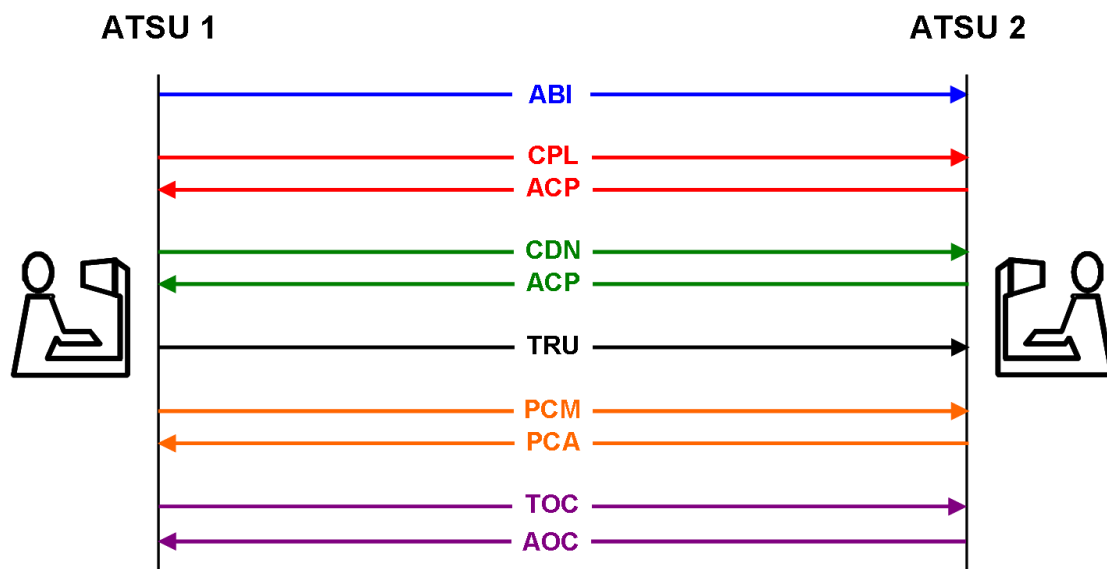
6.6.4.6.3 After coordination has been completed, but prior to the transfer of control, ATSU 1 proposes an amendment to the proposed coordination to block clearance F370 to F390 (climbing from

FL360), as well as a weather deviation of up to 40NM either side of route by transmitting a negotiation message (CDN) to ATSU 2. The proposed amendment is acceptable to ATSU 2, and the proposal is accepted by the transmitting of an ACP response to ATSU 1.

6.6.4.6.4 ATSU 1 transmits a TRU message to ATSU 2, providing a coordination update that the aircraft's cleared level is FL390 (i.e. the block clearance is cancelled), the aircraft is maintaining FL390 and is back on route.

6.6.4.6.5 ATSU 1 transmits a PCM to ATSU 2 to confirm that the coordination held by ATSU 2 is correct. At the time of transmitting the PCM, the estimate has changed by one minute (1147 at 65N040W), which is included in the PCM. On receipt of the PCM, ATSU 2 updates their flight plan, and confirms that their coordination is up to date by responding with a PCA.

6.6.4.6.6 ATSU 1 proposes a transfer of control responsibility by transmitting a TOC to ATSU 2. ATSU 2 accepts control responsibility by responding with an AOC



ATSU 1	(ABI-UAE231/A3105-OMBD-65N040W/1145F350F370-KIAD-8/IS-9/B77W/H-10/SDE2E3GHIJ3J5M1RWXYZ/LB2D1-15/M083F360 65N040W 63N050W 59N060W LOMTA T-18/PBN/A1B1C1D1L1O1S2T1 NAV/RNVD1E2A1 DOF/131124 REG/A6EGH EET/OMAE0008 SEL/ACDF RALT/EIDW CYQX RMK/NRP HAR TCAS ADSB)
ATSU 1	(CPL-UAE231/A3105-IS-B77W/H-SDE2E3GHIJ3J5M1RWXYZ/LB2D1-OMDB-65N040W/1146F350F370-M083F360 65N040W 63N050W 59N060W LOMTA T-KIAD-PBN/A1B1C1D1L1O1S2T1 NAV/RNVD1E2A1 DOF/131124 REG/A6EGH EET/OMAE0008 SEL/ACDF RALT/EIDW CYQX RMK/NRP HAR TCAS ADSB)
ATSU 2	(ACP-UAE231/A3105-OMDB-KIAD)
ATSU 1	(CDN-UAE231/A3105-OMDB-KIAD-14/65N040W/1146F370F390F360A/W40E)

ATSU 2	(ACP-UAE231/A3105-OMDB-KIAD)
ATSU 1	(TRU-UAE231/A3105-OMDB-KIAD-PRL/F390 CFL/F390 OTD/0)
ATSU 1	(PCM-UAE231/A3105-OMBD-65N040W/1147F390-KIAD-8/IS-9/B77W/H-10/SDE2E3GHIJ3J5M1RWXYZ/LB2D1-15/M083F390 65N040W 63N050W 59N060W LOMTA T-18/PBN/A1B1C1D1L1O1S2T1 NAV/RNVD1E2A1 DOF/131124 REG/A6EGH EET/OMAE0008 SEL/ACDF RALT/EIDW CYQX RMK/NRP HAR TCAS ADSB)
ATSU 2	(PCA-UAE231/A3105-OMDB-KIAD)
ATSU 1	(TOC-UAE231/A3105-OMDB-KIAD)
ATSU 2	(AOC-UAE231/A3105-OMDB-KIAD)

6.6.4.7 Example 7 – Coordination from nearby aerodrome using abbreviated initial coordination dialogue, coordination re-negotiation and coordination confirmation

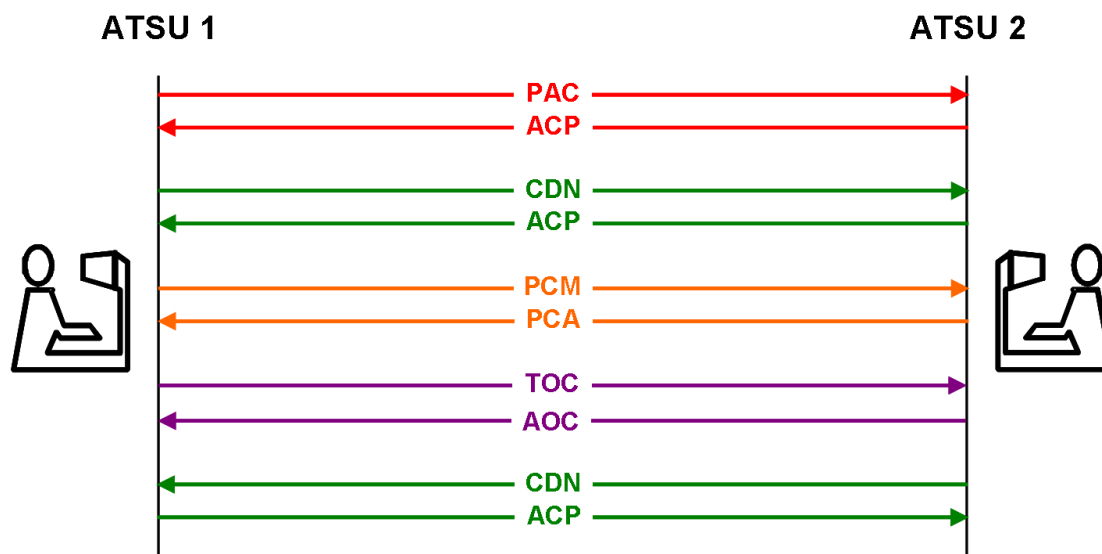
6.6.4.7.1 Several minutes before departure time (e.g. at taxi time), ATSU 1 transmits an abbreviated coordination message (PAC) to ATSU 2. The proposed coordination contains Estimate data of EGATU at 1213 at FL290. ATSU 2 accepts the proposed coordination conditions by responding with an ACP. The coordination prior to departure is required due to the proximity of the departure aerodrome to the FIR or ACI boundary.

6.6.4.7.2 On departure, the aircraft's actual estimate differs from that previously coordinated by more than the value specified in bilateral agreements. ATSU 1 proposes an amendment to the estimate to 1219 by transmitting a negotiation message (CDN) to ATSU 2. The proposed amendment is acceptable to ATSU 2, and the proposal is accepted by the transmitting of an ACP response to ATSU 1.

6.6.4.7.3 ATSU 1 transmits a PCM to ATSU 2 to confirm that the coordination held by ATSU 2 is correct. ATSU 2 confirms that their coordination is up to date by responding with a PCA.

6.6.4.7.4 ATSU 1 proposes a transfer of control responsibility by transmitting a TOC to ATSU 2. ATSU 2 accepts control responsibility by responding with an AOC.

6.6.4.7.5 After the transfer of control has occurred, but while the aircraft is still within the ACI associated with ATSU 1, the aircraft requests FL330. ATSU 2 proposes an amendment to the coordination held by ATSU 1 to F330 (climbing from FL290) by transmitting a negotiation message (CDN) to ATSU 1. The Estimate data in the CDN reflects the time that the aircraft actually crossed EGATO (1220). The proposed amendment is acceptable to ATSU 1, and the proposal is accepted by the transmitting of an ACP response to ATSU 2.



ATSU 1	(PAC-GIA726/A1351-WADD-EGATU/1213F290-YPPH-8/IS-9/B738/M-10/SDE2E3FGHIJ2ZRWY/LB1-15/N0464F290 MURAI2B DCT LIPRA/M078F330 G578 EGATU/N0466F330 L514 MUNNI/N0463F320 L514 REVOP Q67 JULIM DCT-18/PBN/A1D1 NAV/AUSEP DOF/140117 REG/PKGFU EET/YBBB0039 YMMM0104 SEL/AKMQ OPR/GARUDA PER/C RMK/TCAS EQUIPPED)
ATSU 2	(ACP-GIA726/A1351-WADD-YPPH)
ATSU 1	(CDN-GIA726/A1351-WADD-YPPH-14/EGATU/1219F290)
ATSU 2	(ACP-GIA726/A1351-WADD-YPPH)
ATSU 1	(PCM-GIA726/A1351-WADD-EGATU/1219F290-YPPH-8/IS-9/B738/M-10/SDE2E3FGHIJ2ZRWY/LB1-15/N0464F310 MURAI2B DCT LIPRA/M078F330 G578 EGATU/N0466F330 L514 MUNNI/N0463F320 L514 REVOP Q67 JULIM DCT-18/PBN/A1D1 NAV/AUSEP DOF/140117 REG/PKGFU EET/YBBB0039 YMMM0104 SEL/AKMQ OPR/GARUDA PER/C RMK/TCAS EQUIPPED)
ATSU 2	(PCA-GIA726/A1351-WADD-YPPH)
ATSU 1	(TOC-GIA726/A1351-WADD-YPPH)
ATSU 2	(AOC-GIA726/A1351-WADD-YPPH)
ATSU 2	(CDN-GIA726/A1351-WADD-YPPH-14/EGATU/1220F330F290A)
ATSU 1	(ACP-GIA726/A1351-WADD-YPPH)

6.6.4.8 Example 8 – Multiple notification, coordination cancellation, and use of the ASM

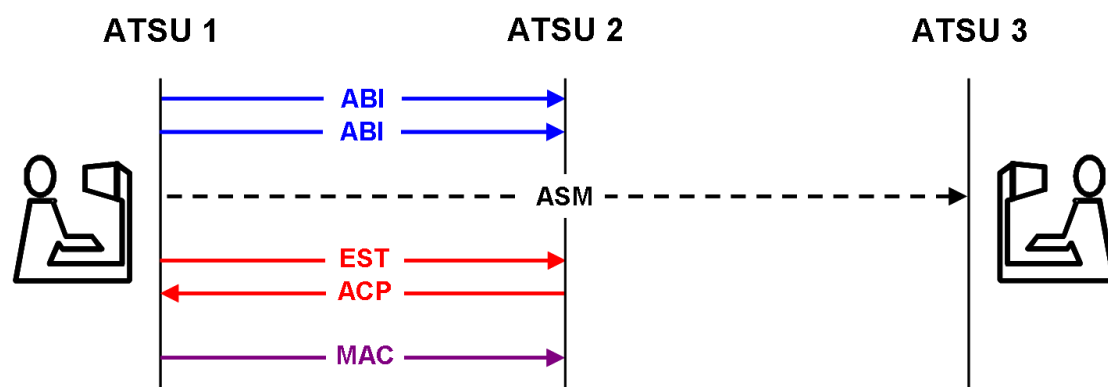
6.6.4.8.1 ATSU 1 transmits a notification message (ABI) to ATSU 2. The ABI contains Estimate data of 29S163E at 1105 at FL290

6.6.4.8.2 Prior to coordination, a modification to the cleared flight level is made resulting in the transmission of another notification message to ATSU 2. The ABI contains Estimate data of 29S163E at 1107 at FL310.

6.6.4.8.3 ATSU 1 has not received any AIDC or application management messages from ATSU 3 for a system parameter, and so an ASM is transmitted to ATSU 3.

6.6.4.8.4 ATSU 1 transmits an abbreviated coordination message (EST) to ATSU 2. The proposed coordination contains Estimate data of 29S163E at 1108 at FL310. ATSU 2 accepts the proposed coordination conditions by responding with an ACP.

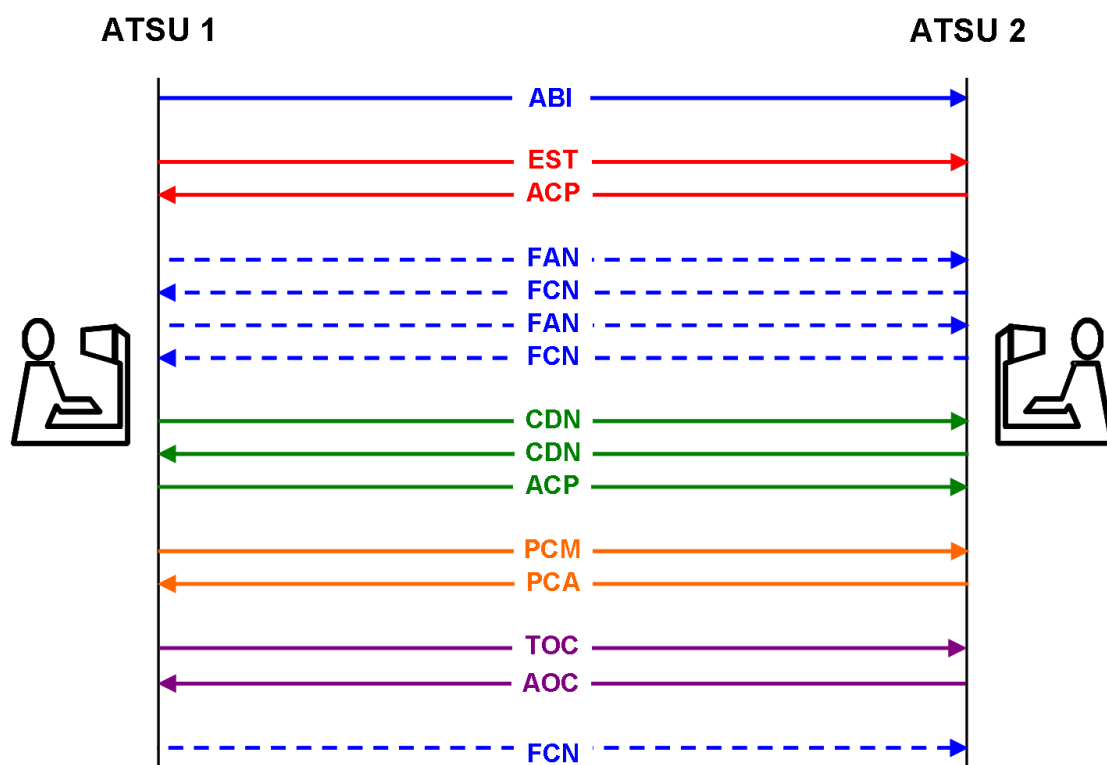
6.6.4.8.5 Due to weather the aircraft requests and is issued an amended route clearance that will now no longer affect ATSU 2. To cancel any notification and/or coordination, ATSU 1 transmits a MAC message to ATSU 2.



ATSU 1	(ABI-QFA11-YSSY-29S163E/1105F290-NFFN-8/IS-9/B744/H-10/SADE2E3FGHIJ2J4J5M1RWYZ/LB1D1-15/M081F290 DCT NOBAR B450 ABARB 29S163E 26S170E NILAX VIPOB MI-18/PBN/A1B1C1D1L1O1S2 NAV/GPSRNAV RNVD1A1 DOF/140117 REG/VHOQF EET/YBBB0009 NFFF0123 SEL/DLHS CODE/7C4925)
ATSU 1	(ABI-QFA11-YSSY-29S163E/1107F310-NFFN-8/IS-9/B744/H-10/SADE2E3FGHIJ2J4J5M1RWYZ/LB1D1-15/M081F350 DCT NOBAR B450 ABARB 29S163E 26S170E NILAX VIPOB MI-18/PBN/A1B1C1D1L1O1S2 NAV/GPSRNAV RNVD1A1 DOF/140117 REG/VHOQF EET/YBBB0009 NFFF0123 SEL/DLHS CODE/7C4925)
ATSU 1	(ASM)
ATSU 1	(EST-QFA11-YSSY-29S163E/1108F310-NFFN)
ATSU 2	(ACP-QFA11-YSSY-NFFN)
ATSU 1	(MAC-QFA11-YSSY-NFFN)

6.6.4.9 Example 9 – CPDLC connection failure, multiple coordination re-negotiation, coordination confirmation

- 6.6.4.9.1 ATSU 1 transmits a notification message (ABI) to ATSU 2. The ABI contains Estimate data of OMKIN at 1209 at FL350, assigned M081 or greater.
- 6.6.4.9.2 ATSU 1 transmits an abbreviated coordination message (EST) to ATSU 2. The proposed coordination contains Estimate data of OMKIN at 1211 at FL350, assigned M081 or greater. ATSU 2 accepts the proposed coordination conditions by responding with an ACP.
- 6.6.4.9.3 ATSU 1 transmits a FAN message to ATSU 2 providing the logon information that ATSU 2 requires to establish a CPDLC connection as well as ADS contracts.
- 6.6.4.9.4 ATSU 2 is unable to establish an inactive CPDLC connection because they are not the nominated CPDLC “next data authority” and transmits an FCN message to ATSU 2 notifying them of this. Note. The non-receipt of an NDA message by the avionics could be because either the NDA message was not sent, or it was not delivered successfully to the aircraft.
- 6.6.4.9.5 ATSU 1 transmits an appropriate CPDLC Next data Authority message to the aircraft. ATSU 1 then transmits another FAN message to ATSU 2 providing the logon information that ATSU 2 requires to establish a CPDLC connection as well as ADS contracts. While this FAN message is technically not required, it provides information to ATSU 2 that an NDA message has been sent to the aircraft.
- 6.6.4.9.6 When an inactive CPDLC connection is established, ATSU 2 transmits an FCN to ATSU 1
- 6.6.4.9.7 After coordination has been completed, but prior to the transfer of control, ATSU 1 proposes an amendment to the proposed coordination to F370 (cancelling the speed restriction) by transmitting a negotiation message (CDN) to ATSU 2. The CDN also contains a revised estimate of 1213 at OMKIN. The proposed amendment is not acceptable to ATSU 2, but an alternative level (FL360, without speed restriction) is available. ATSU 2 therefore proposes an amendment to the original CDN by responding with a negotiation message (CDN) to ATSU 1. The proposed amendment is acceptable to ATSU 1, and the proposal is accepted by the transmitting of an ACP response to ATSU 2.
- 6.6.4.9.8 ATSU 1 transmits a PCM to ATSU 2 to confirm that the coordination held by ATSU 2 is correct. ATSU 2 confirms that their coordination is up to date by responding with a PCA.
- 6.6.4.9.9 ATSU 1 proposes a transfer of control responsibility by transmitting a TOC to ATSU 2. ATSU 2 accepts control responsibility by responding with an AOC.
- 6.6.4.9.10 ATSU 1 terminates the CPDLC connection and transmits an FCN to ATSU 2 notifying them that the CPDLC connection has been terminated.
- 6.6.4.9.11 ATS Units implementing CDN messaging should be aware that multiple complex negotiation dialogues may be more easily solved using voice communication.



ATSU 1	(ABI-QFA121/A1475-YSSY-OMKIN/1209F350/GM081-NZQN-8/IS-9/B738/M-10/SADE2E3GHIJ3J5RWYZ/LB1D1-15/M081F350 OPTIC Y84 TONIM P766 ADKOS P753 QN DCT-18/PBN/A1B1C1D1O2S2T1 NAV/RNP2 GPSRNAV DOF/140118 REG/VHXZI EET/YBBB0008 NZZO0139 SEL/LMDP CODE/7C77FC OPR/QANTAS ORGN/YSSYQFAO PER/C)
ATSU 1	(EST-QFA121/A1475-YSSY-OMKIN/1211F350/GM081-NZQN)
ATSU 2	(ACP-QFA121/A1475-YSSY-NZQN)
ATSU 1	(FAN-QFA121/A1475-YSSY-NZQN-SMI/AFD FMH/QFA121 REG/VH-XZI FPO/4053S16042E FCO/ATC01 FCO/ADS01)
ATSU 2	(FCN-QFA121/A1475-YSSY-NZQN-CPD/1)
ATSU 1	(FAN-QFA121/A1475-YSSY-NZQN-SMI/AFD FMH/QFA121 REG/VH-XZI FPO/4102S16054E FCO/ATC01 FCO/ADS01)
ATSU 2	(FCN-QFA121/A1475-YSSY-NZQN-CPD/2)
ATSU 1	(CDN-QFA121/A1475-YSSY-NZQN-14/OMKIN/1213F370)
ATSU 2	(CDN-QFA121/A1475-YSSY-NZQN-14/OMKIN/1213F360)

ATSU 1	(ACP-QFA121/A1475-YSSY-NZQN)
ATSU 1	(PCM-QFA121/A1475-YSSY-OMKIN/1213F360-NZQN-8/IS-9/B738/M-10/SADE2E3GHIJ3J5RWYZ/LB1D1-15/N0442F360 OPTIC Y84 TONIM P766 ADKOS P753 QN DCT-18/PBN/A1B1C1D1O2S2T1 NAV/RNP2 GPSRNAV DOF/140118 REG/VHXZI EET/YBBB0008 NZZO0139 SEL/LMDP CODE/7C77FC OPR/QANTAS ORGN/YSSYQFAO PER/C))
ATSU 2	(PCA-QFA121/A1475-YSSY-NZQN)
ATSU 1	(TOC-QFA121/A1475-YSSY-NZQN)
ATSU 2	(AOC-QFA121/A1475-YSSY-NZQN)
ATSU 1	(FCN-QFA121/A1475-YSSY-NZQN-CPD/0)

6.6.4.10 Example 10 – Coordination re-negotiation of a revised destination, CPDLC transfer, infringing an adjacent ACI and use of the ADS message

- 6.6.4.10.1 ATSU 1 transmits a notification message (ABI) to ATSU 2. The ABI contains Estimate data of RUNOD at 0006 at F370.
- 6.6.4.10.2 ATSU 1 transmits an abbreviated coordination message (EST) to ATSU 2. The proposed coordination contains Estimate data of RUNOD at 0007 at FL370. ATSU 2 accepts the proposed coordination conditions by responding with an ACP.
- 6.6.4.10.3 After the coordination has been completed, but prior to the transfer of control, the aircraft requests a diversion to a new destination aerodrome (NZAA), which also involves an amended route and estimate data. ATSU 1 proposes an amendment to the proposed coordination by transmitting a negotiation message (CDN) to ATSU 2. The CDN contains new Estimate data of VEPAS at 2357 at FL370. ATSU 2 accepts the revised coordination by responding with ACP (which contains the original destination – NZCH). All subsequent AIDC messages for this aircraft contain “NZAA” as the destination aerodrome.
- 6.6.4.10.4 ATSU 1 transmits a FAN message to ATSU 2 providing the logon information that ATSU 2 requires to establish a CPDLC connection as well as ADS contracts.
- 6.6.4.10.5 When an inactive CPDLC connection is established, ATSU 2 transmits an FCN to ATSU 1.
- 6.6.4.10.6 The amended route now infringes the ACI associated with ATSU 3. ATSU 1 transmits a notification message (ABI) to ATSU 3. The ABI contains Estimate data of VEPAS at 2357 at F370. ATSU 3 previously would have had no flight plan for the aircraft but creates a flight plan from information in the ABI.
- 6.6.4.10.7 ATSU 1 transmits a coordination message (CPL) to ATSU 3. The proposed coordination contains Estimate data of VEPAS at 2358, at F370. ATSU 3 accepts the proposed coordination without modification by responding with an ACP. Note that the estimates coordinated to ATSU 2 and ATSU 3 differ by 1 minute. There is no requirement for ATSU 1 to re-coordinate the 1 minute revision to ATSU 2, because the discrepancy is less than that prescribed in bilateral agreements.

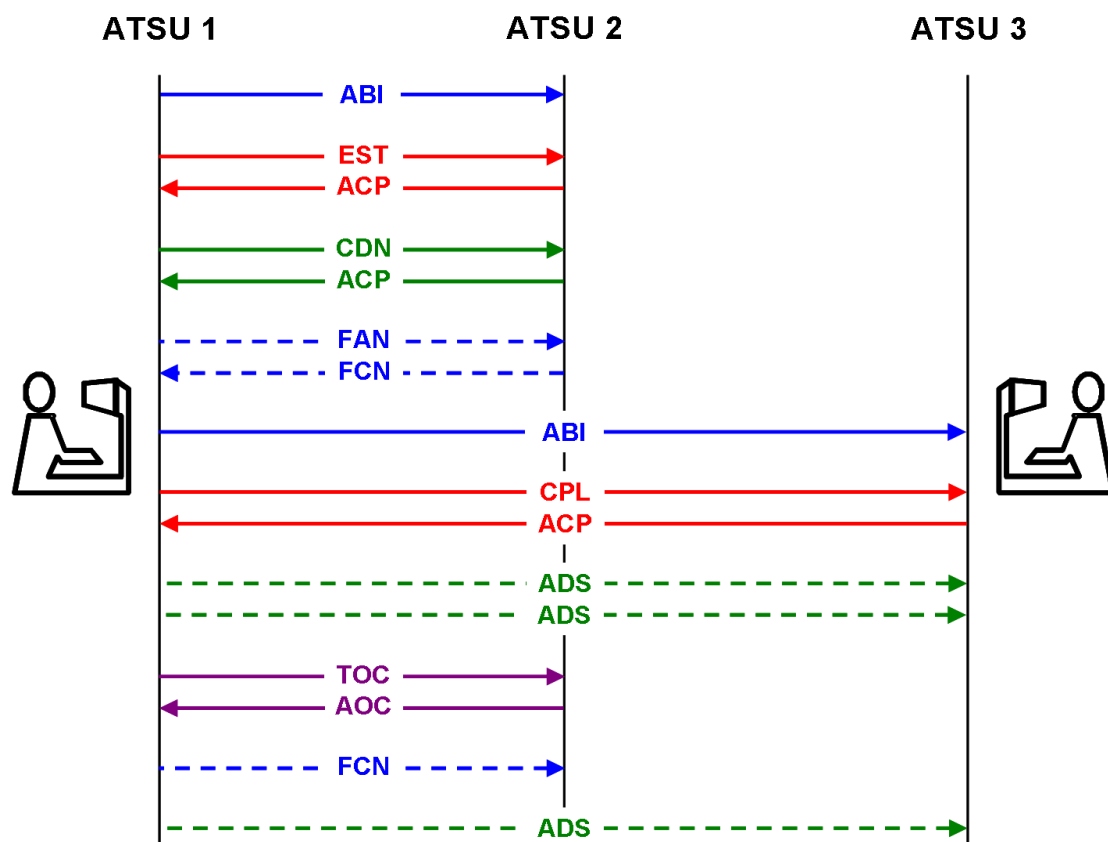
6.6.4.10.8 ATSU 3 does not support FANS-1/A, but does support the receipt of ADS-C reports via an ADS message. The contents of an ADS-C report received within a system time or position prior to the FIR or ACI boundary are transmitted to ATSU 3 in an ADS message.

6.6.4.10.9 Following receipt of another ADS-C report, the contents are transmitted to ATSU 3 in an ADS message.

6.6.4.10.10 ATSU 1 proposes a transfer of control responsibility by transmitting a TOC to ATSU 2. ATSU 2 accepts control responsibility by responding with an AOC.

6.6.4.10.11 ATSU 1 terminates the CPDLC connection and transmits an FCN to ATSU 2 notifying them that the CPDLC connection has been terminated.

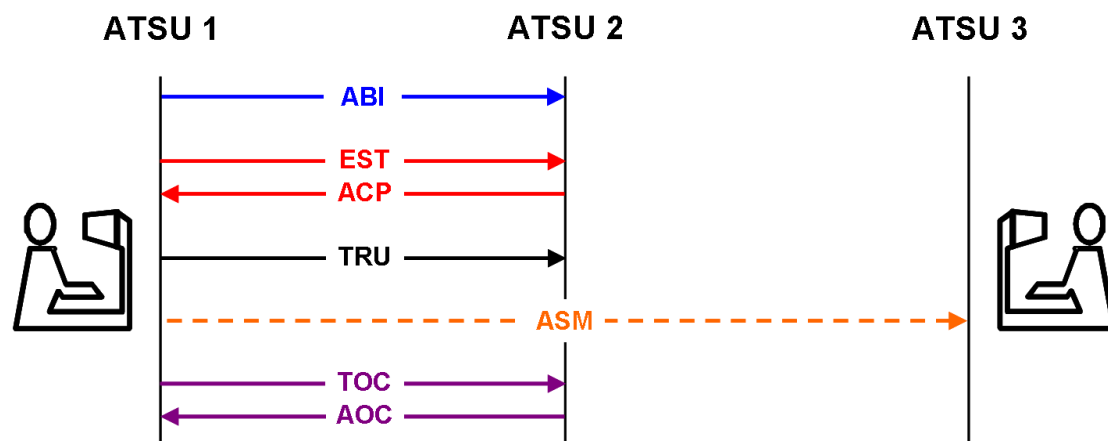
6.6.4.10.12 As the aircraft leaves the ACI associated with ATSU 1, an ADS message is sent to ATSU 3 to notify them that no further ADS messages will be transmitted to them.



ATSU 1	(ABI-ANZ136-YBBN-RUNOD/0006F370-NZCH-8/IS-9/A320/M-10/SDE1E3FGHIJ3J5M2RW/LB1D1-15/M078F350 DCT SCOTT Y76 SIFRA L503 CH DCT-18/PBN/A1C1D1O1S2T1 REG/ZKOJD EET/NZZO0137 NZZC0239 SEL/HSDG CODE/C816BF OPR/ANZ RMK/TCAS EQUIPPED)
ATSU 1	(EST-ANZ136-YBBN-RUNOD/0007F370-NZCH)
ATSU 2	(ACP-ANZ136-YBBN-NZCH)
ATSU 1	(CDN-ANZ136-YBBN-NZCH-14/VEPAS/2357F370-15/M078F350SCOTT Y32 SIFRA 3314S15941E VEPAS PAPTI AA-DEST/NZAA)
ATSU 2	(ACP-ANZ136-YBBN-NZCH)
ATSU 1	(FAN-ANZ136-YBBN-NZAA-SMI/AFD FMH/ANZ136 REG/ZK-OJD FPO/3320S16004E FCO/ATC01 FCO/ADS01)
ATSU 2	(FCN-ANZ136-YBBN-NZAA-CPD/2)
ATSU 1	(ABI-ANZ136-YBBN-VEPAS/2357F370-NZAA-8/IS-9/A320/M-10/SDE1E3FGHIJ3J5M2RW/LB1D1-15/M078F370 SCOTT Y32 SIFRA 3314S15941E VEPAS PAPTI AA-18/PBN/A1C1D1O1S2T1 REG/ZKOJD EET/NZZO0137 NZZC0239 SEL/HSDG CODE/C816BF OPR/ANZ RMK/TCAS EQUIPPED)
ATSU 1	(CPL-ANZ136-IS-A320/M-SDE1E3FGHIJ3J5M2RW/LB1D1-YBBN-VEPAS/2358F370-M078F370 SCOTT Y32 SIFRA 3314S15941E VEPAS PAPTI AA-NZAA-PBN/A1C1D1O1S2T1 REG/ZKOJD EET/NZZO0137 NZZC0239 SEL/HSDG CODE/C816BF OPR/ANZ RMK/TCAS EQUIPPED)
ATSU 3	(ACP-ANZ136-YBBN-NZAA)
ATSU 1	(ADS-ANZ136-YBBN-NZAA-ADS/.ZK-OJD030207E8D77390B64908A3949D0DE787539F4A090884C8E5B81BB54A0908800E2EB8F77FFC1008025E8E)
ATSU 1	(ADS-ANZ136-YBBN-NZAA-ADS/.ZK-OJD030207E8D77390B64908A3949D0DE787539F4A090884C8E5B81BB54A0908800E2EB8F77FFC1008025E8E)
ATSU 1	(TOC-ANZ136-YBBN-NZAA)
ATSU 2	(AOC-ANZ136-YBBN-NZAA)
ATSU 1	(FCN-ANZ136-YBBN-NZAA-CPD/0)
ATSU 1	(ADS-ANZ136-YBBN-NZAA-ADS/0)

6.6.4.11 Example 11 – Abbreviated coordination with TRU update

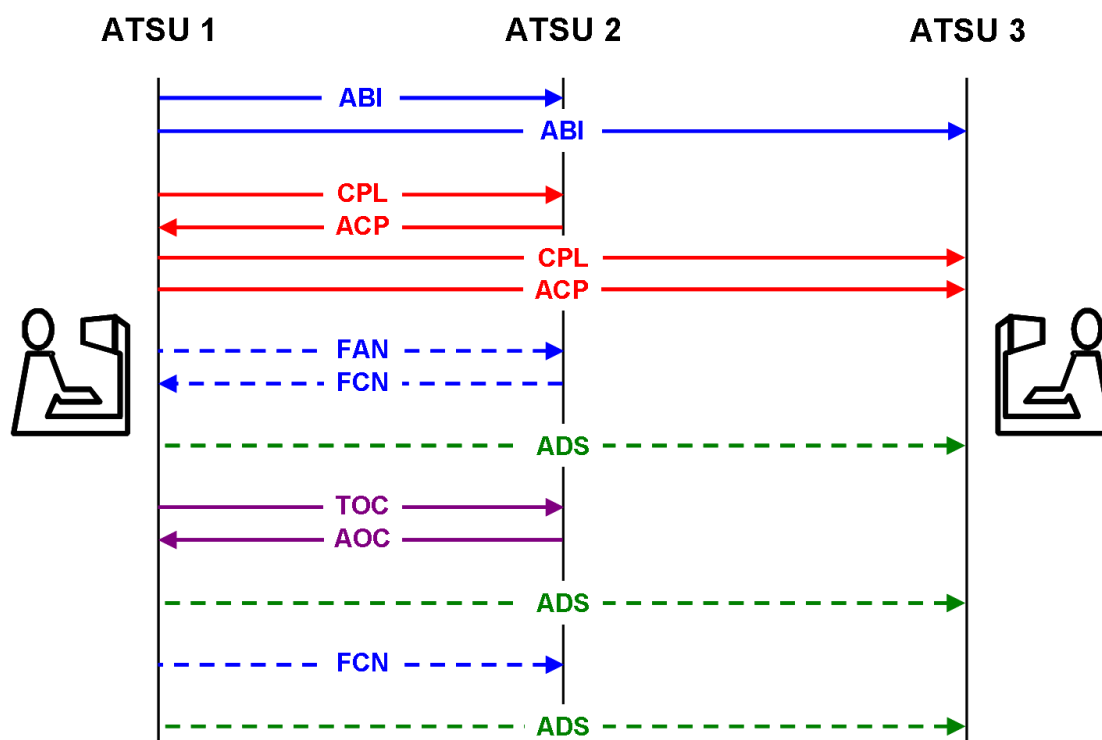
- 6.6.4.11.1 ATSU 1 transmits a notification message (ABI) to ATSU 2. The ABI contains Estimate data of EVONN at 0130 at F330.
- 6.6.4.11.2 ATSU 1 transmits an abbreviated coordination message (EST) to ATSU 2. The proposed coordination contains Estimate data of EVONN at 0130 at FL330. ATSU 2 accepts the proposed coordination conditions by responding with an ACP.
- 6.6.4.11.3 ATSU 1 transmits a TRU message to ATSU 2, providing a coordination update that the aircraft has been instructed to maintain FL200 and assigned a heading of 100 degrees magnetic.
- 6.6.4.11.4 ATSU 1 has not received any AIDC or application management messages from ATSU 3 for a system parameter, and so an ASM is transmitted to ATSU 3.
- 6.6.4.11.5 ATSU 1 proposes a transfer of control responsibility by transmitting a TOC to ATSU 2. ATSU 2 accepts control responsibility by responding with an AOC.



ATSU 1	(ABI-UAE412/A1415-YSSY-EVONN/0130F330-NZAA-8/IS-9/A388/H-10/SADE3GHIJ2J3J4J5M1RWXY/LB2D1-15/N0482F390 3357S15131E EVONN L521 WALTZ/N0482F330 L521 ESKEL/N0482F410 L521 LUNBI AA-18/PBN/A1B1C1D1L1O1S2T2 DOF/140116 REG/A6EEF EET/YBBB0014 NZZO0124 SEL/BPDR CODE/896185 RMK/TCAS ADSB)
ATSU 1	(EST-UAE412/A1415-YSSY-EVONN/0130F330-NZAA)
ATSU 2	(ACP-UAE412/A1415-YSSY-NZAA)
ATSU 1	(TRU-UAE412/A1415-YSSY-NZAA-HDG/100 CFL/F200)
ATSU 1	(ASM)
ATSU 1	(TOC-UAE412/A1415-YSSY-NZAA)
ATSU 2	(AOC-UAE412/A1415-YSSY-NZAA)

6.6.4.12 Example 12 – ACI coordination and use of ADS message

- 6.6.4.12.1 The route of the aircraft is such that it will enter the airspace of ATSU 2, as well as the ACI associated with ATSU 3.
- 6.6.4.12.2 ATSU 1 transmits a notification message (ABI) to ATSU 2. The ABI contains Estimate data of 2925S16300E at 0529 descending from F320 to F300. In addition, the aircraft has been cleared to descend to FL290 after passing 26S170E, and to be maintaining FL290 by NILAX. This level restriction is included in Field 15 of the ABI.
- 6.6.4.12.3 ATSU 1 also transmits a notification message (ABI) to ATSU 3. The ABI contains Estimate data of 2925S16300E at 0529 descending from F320 to F300. This ABI also contains the level restriction described in the previous paragraph.
- 6.6.4.12.4 ATSU 1 transmits a coordination message (CPL) to ATSU 2. The proposed coordination contains Estimate data of 2925S16300E at 0529 descending from F320 to F300, as well as the level restriction to descend to FL290. ATSU 2 accepts the proposed coordination without modification by responding with an ACP.
- 6.6.4.12.5 ATSU 1 transmits a coordination message (CPL) to ATSU 3. The proposed coordination contains Estimate data of 2925S16300E at 0529 descending from F320 to F300, as well as the level restriction to descend to FL290. ATSU 3 accepts the proposed coordination without modification by responding with an ACP.
- 6.6.4.12.6 ATSU 1 transmits a FAN message to ATSU 2 providing the logon information that ATSU 2 requires to establish a CPDLC connection as well as ADS contracts.
- 6.6.4.12.7 When an inactive CPDLC connection is established, ATSU 2 transmits a FCN to ATSU 1, including the appropriate HF frequency for the aircraft to monitor.
- 6.6.4.12.8 ATSU 3 does not support FANS-1/A, but does support the receipt of ADS-C reports via an ADS message. The contents of an ADS-C report received within a system time or position prior to the FIR or ACI boundary are transmitted to ATSU 3 in an ADS message.
- 6.6.4.12.9 ATSU 1 proposes a transfer of control responsibility by transmitting a TOC to ATSU 2. ATSU 2 accepts control responsibility by responding with an AOC.
- 6.6.4.12.10 Following receipt of another ADS-C report, the contents are transmitted to ATSU 3 in an ADS message.
- 6.6.4.12.11 ATSU 1 terminates the CPDLC connection and transmits an FCN to ATSU 2 notifying them that the CPDLC connection has been terminated.
- 6.6.4.12.12 As the aircraft leaves the ACI associated with ATSU 1, an ADS message is sent to ATSU 3 to notify them that no further ADS messages will be transmitted to them.



ATSU 1	(ABI-FJI930/A4425-YSSY-2925S16300E/0529F300F320B-NFFN-8/IS-9/A332/H-10/SDFGHIJ5LRWXY/LB1D1-15/M081F300 DCT NOBAR B450 ABARB DCT EKIDA DCT 2925S16300E 26S170E/F290/NILAX DCT VIPOB DCT MI DCT-18/PBN/A1L1S2 REG/DQFJV EET/YBBB0009 NFFF0125 SEL/LQJR CODE/C8801A RMK/TCAS EQUIPPED)
ATSU 1	(ABI-FJI930/A4425-YSSY-2925S16300E/0529F300F320B-NFFN-8/IS-9/A332/H-10/SDFGHIJ5LRWXY/LB1D1-15/M081F300 DCT NOBAR B450 ABARB DCT EKIDA DCT 2925S16300E 26S170E/F290/NILAX DCT VIPOB DCT MI DCT-18/PBN/A1L1S2 REG/DQFJV EET/YBBB0009 NFFF0125 SEL/LQJR CODE/C8801A RMK/TCAS EQUIPPED)
ATSU 1	(CPL-FJI930/A4425-IS-A332/H-SDFGHIJ5LRWXY/LB1D1-YSSY-2925S16300E/0529F300F320B-15/M081F300 DCT NOBAR B450 ABARB DCT EKIDA DCT 2925S16300E 26S170E/F290/NILAX DCT VIPOB DCT MI DCT-NFFN-PBN/A1L1S2 REG/DQFJV EET/YBBB0009 NFFF0125 SEL/LQJR CODE/C8801A RMK/TCAS EQUIPPED)
ATSU 2	(ACP-FJI930/A4425-YSSY-NFFN)
ATSU 1	(CPL-FJI930/A4425-IS-A332/H-SDFGHIJ5LRWXY/LB1D1-YSSY-2925S16300E/0529F300F320B-15/M081F300 DCT NOBAR B450 ABARB DCT EKIDA DCT 2925S16300E 26S170E/F290/NILAX DCT VIPOB DCT MI DCT-NFFN-PBN/A1L1S2 REG/DQFJV EET/YBBB0009 NFFF0125 SEL/LQJR CODE/C8801A RMK/TCAS EQUIPPED)

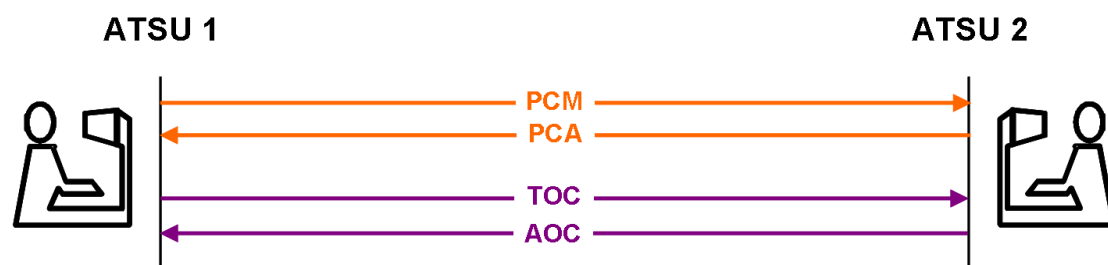
ATSU 3	(ACP-FJI930/A4425-YSSY-NFFN)
ATSU 1	(FAN-FJI930/A4425-YSSY-NFFN-SMI/AFD FMH/FJI930 REG/DQ-FJV FPO/3038S16014E FCO/ATC01 FCO/ADS01)
ATSU 2	(FCN-FJI930/A4425-YSSY-NFFN-CPD/2 FREQ/5565)
ATSU 1	(ADS-FJI930/A4425-YSSY-NFFN-ADS/.DQ-FJV07E9762B84080753363D9D0DEB15 CB9F4A0753075BEC6A33BECE4753000E1631100000103EA91E76)
ATSU 1	(TOC-FJI930/A4425-YSSY-NFFN)
ATSU 2	(AOC-FJI930/A4425-YSSY-NFFN)
ATSU 1	(ADS-FJI930/A4425-YSSY-NFFN-ADS/.DQ-FJV07E9762B84080753363D9D0DEB15 CB9F4A0753075BEC6A33BECE4753000E1631100000103EA91E76)
ATSU 1	(FCN-FJI930/A4425-YSSY-NFFN-CPD/0)
ATSU 1	(ADS-FJI930/A4425-YSSY-NFFN-ADS/0)

6.6.4.13 Example 13 – Profile confirmation as a safety net

6.6.4.13.1 Due to an error, notification and coordination to ATSU 2 has not occurred, and the controllers in ATSU 1 and ATSU 2 are unaware of this failure.

6.6.4.13.2 ATSU 1 transmits a PCM to ATSU 2 to confirm that the coordination held by ATSU 2 is correct. ATSU 2 updates their flight plan (if one exists, otherwise a flight plan is created from information in the PCM), and confirms that their coordination is up to date by responding with a PCA. Because coordination had not previously been received, the controller in ATSU 2 is alerted, to prompt them to confirm the coordination with ATSU 1 by other means (e.g. voice).

6.6.4.13.3 ATSU 1 proposes a transfer of control responsibility by transmitting a TOC to ATSU 2. ATSU 2 accepts control responsibility by responding with an AOC



ATSU 1	(PCM-UAE230/A3152-KSEA-7306N07157W/0602F310-OMDB-8/IS-9/B77W/H-10/SWXRGIDE2E3FHJ3J5M1YZ/LB2D1-15/M083F310 7306N07157W 7330N07000W 7500N06000W 7800N04000W 7800N02000W EXITA P190 INSEP P65 VANOS A74 PELOR G476 UREPI B958 BD BD3T FV R11 GUSLI M54 ADILA N82 ADANO N77 MAGRI UR654 SAV UP574 SYZ G666 ORSAR B416 DESDI-18/PBN/A1B1C1D1L1O1S2T1 NAV/RNVD1A1E2 DOF/131125 REG/A6ECH EET/KZSE0010 CZVR0019 CZEG0049 ENOB0618 ENOR0712 ULMM0730 ULLL0754 ULWW0833 UUWV0855 URRV1010 UGGG1103 UDDD1117 OIHX1136 OMAE1324 SEL/GLBJ RALT/CYXE BIKF RMK/ADSB TCAS)
ATSU 2	(PCA-UAE230/A3152-KSEA-OMDB)
ATSU 1	(TOC-UAE230/A3152-KSEA-OMDB)
ATSU 2	(AOC-UAE230/A3152-KSEA-OMDB)

6.6.4.14 Example 14 – Coordination with a restriction in field 15

6.6.4.14.1 ATSU 1 transmits a notification message (ABI) to ATSU 2. The ABI contains Estimate data of 63N030W at 1732 at F340.

6.6.4.14.2 ATSU 1 transmits a coordination message (CPL) to ATSU 2. The proposed coordination contains Estimate data of 63N030W at 1733 at F340

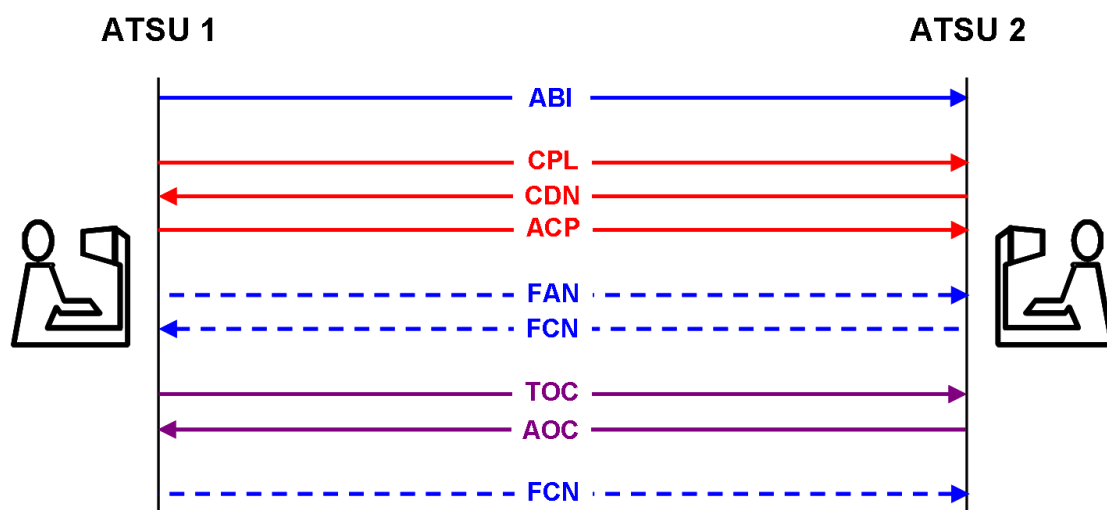
6.6.4.14.3 ATSU 2 responds by transmitting a negotiation message (CDN) to ATSU 1 proposing (or requesting) an amendment to the proposed coordination to F350 with a restriction that the aircraft must cross 62N040W at F350. ATSU 2 accepts the revised coordination by responding with ACP. The restriction is formatted as “F350/62N040W” in Field 15.

6.6.4.14.4 ATSU 1 transmits a FAN message to ATSU 2 providing the logon information that ATSU 2 requires to establish a CPDLC connection as well as ADS contracts.

6.6.4.14.5 When an inactive CPDLC connection is established, ATSU 2 transmits an FCN to ATSU 1, including the appropriate VHF frequency for the aircraft to monitor.

6.6.4.14.6 ATSU 1 proposes a transfer of control responsibility by transmitting a TOC to ATSU 2. ATSU 2 accepts control responsibility by responding with an AOC.

6.6.4.14.7 ATSU 1 terminates the CPDLC connection and transmits an FCN to ATSU 2 notifying them that the CPDLC connection has been terminated.



ATSU 1	(ABI-ICE631/A3577-BIKF-63N030W/1732F340-KBOS-8/IS-9/B752/M-10/SDFHIRWXYG/LB1-15/M078F340 63N030W 62N040W 60N050W PORGY HO T-18/PBN/A1L1B2B3B4B5D1S1 DOF/131124 REG/TFFIO EET/FLOSI0021 64N030W0032 CZQX0058 62N040W0115 BGGL0117 60N050W0158 CZQX0203 CZQX0242 CZUL0331 CZQM0400 KZBW0414 SEL/EQFL OPR/ICE RALT/BIKF CYYR)
ATSU 1	(CPL-ICE631/A3577-IS-B752/M-SDFHIRWXYG/LB1-BIKF-63N030W/1733F340-M078F340 63N030W 62N040W 60N050W PORGY HO T-KBOS-PBN/A1L1B2B3B4B5D1S1 DOF/131124 REG/TFFIO EET/FLOSI0021 64N030W0032 CZQX0058 62N040W0115 BGGL0117 60N050W0158 CZQX0203 CZQX0242 CZUL0331 CZQM0400 KZBW0414 SEL/EQFL OPR/ICE RALT/BIKF CYYR)
ATSU 2	(CDN-ICE631/A3577-BIKF-KBOS-15/M078F340 63N030W F350/62N040W 60N050W PORGY HO T)
ATSU 1	(ACP-ICE631/A3577-BIKF-KBOS)
ATSU 1	(FAN-ICE631/A3577-BIKF-KBOS-SMI/AFD FMH/ICE631 REG/TF-FIO FPO/6331N02537W FCO/ATC01 FCO/ADS01)
ATSU 2	(FCN-ICE631/A3577-BIKF-KBOS-CPD/2 FREQ/127.900)
ATSU 1	(TOC-ICE631/A3577-BIKF-KBOS)
ATSU 2	(AOC-ICE631/A3577-BIKF-KBOS)
ATSU 1	(FCN-ICE631/A3577-BIKF-KBOS-CPD/0)

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 neighboring 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 Pan Regional (NAT and APAC) 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	<p>ATSU1: Sends ABI approx. 80 minutes prior to boundary (73 minutes prior to the 50 nm expanded sector boundary).</p> <p>ATSU2: Sends ABI approx. 87 minutes prior to boundary (80 minutes prior to the 50 nm expanded sector boundary).</p> <p>(Note: An updated ABI will not be sent once a CPL has been sent.)</p>	<p>ATSU1 : ATSU2</p> <p>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.</p>

<i>CPL</i>	ATSU1 : ATSU2 <i>Send CPL messages approx. 37 minutes prior to the boundary (30 minutes prior to the 50 nm expanded sector boundary).</i>	ATSU1 : ATSU2 <i>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 50nm of the FIR boundary for information transfers.</i>
<i>CDN</i>	ATSU1 : ATSU2 <i>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.</i>	ATSU1 : ATSU2 <i>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.</i>
<i>PAC</i>	ATSU1 : ATSU2 <i>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.</i>	ATSU1 : ATSU2 <i>Will respond to a PAC message with an ACP. PAC messages should be verbally verified with receiving facility.</i>
<i>ACP</i>	ATSU1 : ATSU2	ATSU1 : ATSU2 <i>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.</i>
<i>TOC</i>	ATSU1 : ATSU2 <i>Not supported. Implicit hand in/off.</i>	
<i>AOC</i>	ATSU1 : ATSU2 <i>Not supported. Implicit hand in/off.</i>	
<i>MAC</i>	ATSU1 : ATSU2 <i>MAC messages are sent when a change to the route makes the other facility no longer the "next" responsible unit.</i>	ATSU1 : ATSU2 <i>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.</i>
<i>REJ</i>	ATSU1 : ATSU2 <i>REJ messages are sent in reply to a CDN message when the request change is unacceptable</i>	ATSU1 : ATSU2 <i>REJ messages are sent only as a response to a CDN message.</i>

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 Pan Regional Interface Control Document (PAN ICD) for AIDC, 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.

Continued to next page

Coordination – General, Continued

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 50nm 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 OCS: 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	

Continued to next page

Coordination – General, Continued**AIDC Message (continued)**

Message	Parameter	Notes
CDN	EUROCAT: Manually by the controller when required	<ul style="list-style-type: none"> • 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:

- Terminate the route details at the farthest possible ‘flight planned’ point of the flight outside the FIR and enter “T” immediately following this.
- 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.
- The minimum acceptable truncation point must be at least the first point in the adjoining FIR.
- 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.

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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.

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Coordination – General, Continued

Near Boundary Operations	ATS units should relay significant details of any flight which is, or intends operating within fifty nautical miles (50NM) 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
<i>(Name of Officer)</i> Oceanic Business Unit Manager Airways New Zealand		
<i>(Name of Officer)</i> Manager, Operations Strategic Air Services Limited Fiji		
<i>(Name of Officer)</i> Chairman, ATM Projects Committee, Airports Fiji Limited Fiji		

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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**
1. 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.
 2. Each facility should advise the other facility of any known equipment outage that will affect AIDC. In the event of AIDC outage, voice coordination procedures will apply.
 3. 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 not 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

Continued on next page

Memorandum of Understanding, Continued

Message	Parameter	Notes
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	
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

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Memorandum of Understanding, Continued

**Procedures,
Continued**

4. 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.
 5. If there is any doubt with regard to the final coordination conditions, voice coordination should be used for confirmation.
 6. 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
 7. For any reason where changes to this MOU are advisable the requesting unit should propose the pertinent revision. The revision should be emailed or 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 than 30 minutes prior to the TCP.

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Memorandum of Understanding, Continued

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
- If the receiving controller cannot 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 minutes 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.

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Memorandum of Understanding, Continued

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 minutes prior to these positions:

For aircraft entering NZZO FIR via:

- UPDAK descent to commence after NOGOL
- OSVAR descent to commence after OSVAR minus 10 minutes
- 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 Aeronautical Operational Control (AOCs) for flight planning. 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 for 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 track 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.

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. 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- <u>a</u> / <u>b</u> <sp> TRACKS<sp>	<u>a</u> designates the part number in the <u>b</u> parts of the NAT message (<u>a</u> and <u>b</u> are one decimal digit)
2	FLS<sp> <u>nnn</u> / <u>mmm</u> <sp>INCLUSIVE	<u>nnn</u> and <u>mmm</u> designating the minimum and maximum concerned flight levels in hundreds of feet (three decimal digits)
3	<crlf>	
4	<u>month</u> <sp> <u>d1/h1m1Z</u> <sp>TO<sp> <u>month</u> <sp> <u>d2/h2m2Z</u>	Validity time with: ➤ <u>month</u> : for the month of validity full month name in letters ➤ <u>d1/h1m1</u> : beginning time of validity ➤ <u>d2/h2m2</u> : 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> <u>a</u> <sp>OF<SP> b<sp> PARTS <u>b</u> -	<u>a</u> and <u>b</u> textual numbers (ONE, TWO, THREE, FOUR) or one decimal digit. Both numbers should represent the same digits as referred to in item Id 1 above.

Id	Message Text (syntax)	Description (semantics)
		Terminal character <u>S</u> may be omitted if <u>b</u> is ONE.

7	<crLf><crLf>	
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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	<u>L</u>	<p>letter designating the name of the NAT track.</p> <p>One of:</p> <p>ABCDEFGHJKLM 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.</p> <p>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.</p> <p>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.</p> <p>The first track in the message should be the most northerly one and each subsequent track should be the next one towards the south.</p>

9	<sp>	
---	------	--

10	<u>list of points</u>	<p>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:</p> <ul style="list-style-type: none"> ➤ xx/yy ➤ xxmm/yy ➤ xx/yymm ➤ xxmm/yymm
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Id	Message Text (syntax)	Description (semantics)
		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> <u>List of allowed levels</u>	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> <u>List of allowed levels</u>	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> <u>XXX</u> <sp> VIA<sp> <u>RP</u> 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. <u>XXX</u> designating the Irish/UK route structure linked to the NAT track. <u>RP</u> designating the point recommended to be over flown by westbound flights for joining the NAT track. The text “VIA<sp> <u>RP</u> ” is optional. Or There is no European link.
17	<crLf>	
18	NAR<sp> <u>list</u> 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

Id	Message Text (syntax)	Description (semantics)
		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>	<p>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.</p> <p>The remark text must contain the Track Message Identifier (TMI).</p> <p>It is recommended to consistently place the TMI in the first remark.</p> <p>The syntax for the TMI is as follows:</p> <p>Any text may precede the keywords that identify the TMI.</p> <p>The TMI is recognized as the first occurrence of the string (without the quotes) “TMI<sp>IS<sp><u>xxx</u>” is the TMI and “<u>a</u>” the optional track message revision letter.</p> <p>To facilitate automated processing, this string should be followed by a space character before any subsequent remark text is inserted in the track message.</p> <p>The TMI should be the Julian calendar day in the year – i.e. starting at one (<u>001</u>) on the first of January or each year, 002 for second of January etc.</p>
23	END<sp>OF<sp>PAR T<sp> <u>a</u> <sp>OF<sp> b	<u>a</u> and <u>b</u> textual numbers (ONE, TWO, THREE, FOUR) or one decimal digit.

Id	Message Text (syntax)	Description (semantics)
	<sp>PART <u>S</u>)	Both numbers must be the same as in field 6 above. Terminal character <u>S</u> may be omitted if <u>b</u> 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 ONE 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 Implementation Guidance Material

C.1 Introduction

C.1.1 The AIDC Message set described in Chapter 4, *AIDC Messages*, supports six ATS-related functions

1. Notification;
2. Coordination;
3. Transfer of Control;
4. General (Text) Information Interchange;
5. Surveillance Data Transfer; and
6. Application Management (Data and Communications Integrity Monitoring)

C.1.2 The use of AIDC is recognized by Air Navigation Service Providers as providing measurable operational and safety benefits. Because an initial AIDC implementation impacts many stakeholders it should be conducted with appropriate care

C.1.3 While the following guidance will assist commissioning an initial AIDC Message set, it may also be useful when implementing any extension of the message set or any change to the technical infrastructure supporting AIDC exchanges. Section C.2 provides guidance to ANSP when commissioning an initial AIDC Message set or an extension thereof. Section C.3 provides a generic implementation checklist to assist in operational implementation.

C.2 Process of Implementation

C.2.1 Structured Approach

One suitable approach to master the scope of the change required for an AIDC implementation is to manage the implementation as a project. Table C-1 below illustrates a generic project that is broken down into 7 stages and 30 actions.

Stage Number	Action A	Action B	Action C	Action D	Action E	Action F
1. PROJECT PLANNING	Identify the problem or improvement required	Assess applicability to operating environment and State regulations	Gather and review data related to the desired change	Assess economic feasibility and cost/benefit	Start the project, determine project budget and milestones	Plan tendering and maintenance contract process
2. DESIGN	Determine initial design of the desired change, including alternatives.	Determine Key Performance Indicators and/or success criteria	Design backup and transition procedures/ steps, including reversion	Determine maintenance considerations	Refine and agree on final design	Define system validation and verification (FAT, SAT)
3. SAFETY	Form safety teams or engage safety experts	Assess operational strengths and weaknesses opportunities and threats (SWOT)	Develop the safety case	Prepare and apply for regulatory approval or certification		
4. COMMUNICATION	Consult with key stakeholders	Coordinate Regionally and Bi-laterally	Conduct formal promulgation/ notification	Advertise and brief about the change		
5. TRAINING	Develop simulations and procedures	Source relevant training experts	Conduct simulation and relevant training	Assess competency and authorize		
6. IMPLEMENTATION	Conduct operational trials and testing	Assess stability and performance	Make a Go/ No-Go decision	Implement and monitor		
7. POST-IMPLEMENTATION	Develop review - Lesson learnt - Report - KPI achievement	Monitor medium and long term performance and safety				

Table C-1 Implementation project broken down into stages and actions

C.2.2 Structured approach for AIDC implementation

For an AIDC implementation, each one of the seven stages detailed in 2.1 can be detailed as follows.

Stage Number	Action A	Action B	Action C	Action D	Action E	Action F
1. PROJECT PLANNING	<ul style="list-style-type: none"> Identify the SCOPE: <ul style="list-style-type: none"> - Initial implementation of AIDC message set, an extension of messages currently in use, or a technical infrastructure change; - The sectors and teams impacted; and - Systems/subsystems impacted: Is this a system upgrade or involve the procurement of integrated system/COTS. 	<ul style="list-style-type: none"> Collect ICAO mandatory provisions and relevant national regulations as to coordination/ negotiation/ transfer of control and assess impact on the project with Regulator 	<ul style="list-style-type: none"> Define: <ul style="list-style-type: none"> - Adjacent impacted FIR and OPS/technical points of contacts - Agreements, formal or not, currently in force - Current methods of coordination 	<ul style="list-style-type: none"> Get first rough estimates of the system upgrade (or COTS integration) costs and maintenance costs Assess the costs of training⁽ⁱ⁾ Assess gains on sector capacity and telecommunications expenses 	<ul style="list-style-type: none"> Plan your project and budget (Note that some of the actions described here should be conducted concurrently.) 	<ul style="list-style-type: none"> Procurement: <ul style="list-style-type: none"> Derive the user requirements from the operational requirements.⁽ⁱⁱ⁾ Maintenance contract: <ul style="list-style-type: none"> Define a process for software upgrades for future operational needs, or evolution of standards, and for software corrections, and hardware changes
<p>⁽ⁱ⁾ Typically 1 day/ATCO and 1/2 day/ATSEP, refreshing 1/2 day per year as part of continuous training</p> <p>⁽ⁱⁱ⁾ See action 2A. For a COTS procurement, a subpart of the requirements should specify the AIDC exchanges, with a linkage to the flight plan requirements, and data link requirements</p>						

2. DESIGN	<ul style="list-style-type: none"> • Determine <ul style="list-style-type: none"> - Operational requirements (including HMI), - In the case of a COTS, take the actual design as an input - The AIDC message set that will be supported for each adjacent FIR - The linkage between AIDC exchanges and flight plan states and on data link function (transfer of communications).⁽ⁱⁱⁱ⁾ 	<ul style="list-style-type: none"> • Determine Key Performance indicators: <ul style="list-style-type: none"> - Efficiency: gains of capacity on sectors equipped with AIDC, or measured reduction of voice communications, - Safety: e.g. measured reduction of LHD due to erroneous coordinations - Other 	<ul style="list-style-type: none"> • The operator may develop a transition plan with a phased introduction of operational changes (e.g.: boundary by boundary). • Test and commissioning stages should be coordinated with the peer ANSP. 	<ul style="list-style-type: none"> • Plan <ul style="list-style-type: none"> - preventive scheduled maintenance procedures (internal and bilateral) - corrective maintenance procedures in case of failure 	<ul style="list-style-type: none"> • Detailed system/ components requirements and procedures for normal and degraded cases (revert to voice communications) • in case of COTS: validation of the system/components requirements, and of the needed changes • drafting of working methods 	<ul style="list-style-type: none"> • Define FAT tests based on the refined requirements • Define SAT tests with peer FIRs (all neighboring ATSU's if possible) and plan to conduct them with test platforms embarking the same software as the one intended for operational use.
<p>⁽ⁱⁱⁱ⁾ A good approach consists of capturing operational requirements through use cases for the implementation of planned AIDC phases using PAN ICD guidance as a starting point:</p> <p>Consider - how is it working now? How will it work with AIDC?</p> <p>- does future automation bring new opportunities? (e.g.: frequent position update in case of areas of common interest coming from the other ATSU's system, etc.)</p> <p>This should associate the neighboring ATSU's, at least for final review. The use cases may state the actions by the operators and by the system. When system actions are expected to be automatic, conditions for its triggering, including timing, should be specified. In coordination with the safety case, this initial phase may determine what could go wrong, and design the need for alerts or alarms notification and acknowledgment. Note also a new responsibility to handle queued AIDC messages which should be assigned to an operator. Associated HMI should be designed/reviewed as well. In the initial design, the operator may also review the provisions for performance/safety monitoring: end-to-end transit times measurement, number of messages transmitted/rejected/discarded and associated errors, alerts/alarms raised and acknowledged.</p>						

3. SAFETY	<ul style="list-style-type: none"> Integrate a skilled safety engineer in the procurement/design team 	<ul style="list-style-type: none"> Network performance, handling of congestion Human performance: addressing of messages (AFTN), handling of queued AIDC messages by FDO, ATCO Ground systems: addressing of messages, processing time 	<ul style="list-style-type: none"> Study and mitigate hazards including: <ul style="list-style-type: none"> HMI design Loss of AIDC messages Out of sequence messages Too early or too late delivery of AIDC messages Corruption of AIDC messages Misdirection of AIDC messages Flooding by AIDC messages 	<ul style="list-style-type: none"> Safety case, evidence that regulatory requirements are met 		
4. COMMUNICATION	<ul style="list-style-type: none"> Common writing and cross checking of LOAs 	<ul style="list-style-type: none"> Test phase with AIDC test platforms (SAT and live trials) Cut-over date Post transition operations (typically: date at which voice coordination will cease for nominal cases) 				
5. TRAINING	<ul style="list-style-type: none"> Scenarios developed for design can be used to build the simulations. AIDC should be introduced in the simulator, identical to the OPS. 	<ul style="list-style-type: none"> Source relevant experts. Benchmarking from other ANSP may be useful. 	<ul style="list-style-type: none"> Train ATCOs, and other affected staff Training may be associated with the global transition to a new system, or be a delivered as a dedicated session. 	<ul style="list-style-type: none"> Conduct the evaluation of normal and degraded situations 		

6. IMPLEMENTATION	<ul style="list-style-type: none"> • Conduct technical trials between test platforms and then operational trials, including reverting to voice 	<ul style="list-style-type: none"> • Assess the stability and performance of your AIDC communications, against voice communications 	<ul style="list-style-type: none"> • Based on results of training, tests, trials, and LOA cross-check, make a coordinated GO/NO GO decision with neighboring FIRs (refer to Chapter 3 checklist) 	<ul style="list-style-type: none"> • Implement and monitor 		
7. POST - IMPLEMENTATION	<ul style="list-style-type: none"> • Build a project Report with Lessons learnt and KPI achievement. 	<ul style="list-style-type: none"> • Keep monitoring the handling of message queues, and messages discarded and take relevant actions 				

C.3 Checklist

C.3.1 The following template is provided to give guidance as to specific agreements needed when implementing an AIDC implementation with an adjacent ATSU.

Stakeholders: (ATSU1) and (ATSU2).....

Date:

No	Item	Yes/No	Remarks
1	System Readiness		
1.1	Liaison established with adjacent ATSU		
1.2	AIDC Addressing Information agreed		
1.3	AIDC version agreed		
1.4	AIDC message format agreed		
2	LOA		
2.1	COPs agreed		
2.2	AIDC Messages agreed		
2.3	Procedures agreed		
2.4	Time parameters agreed		
2.5	Contingency Fall back measures agreed		
3	Quality & Safety Management System		
3.1	Hazard/risk identification completed		
3.2	Safety Assessment completed		
3.3	Transition plan completed		
4	Training		
4.1	ATCO training/briefing completed		
4.2	Other staff training/briefing completed		
5	Transition Activities		
5.1	Limited time parallel operations agreed		From..... To.....
6	Implementation		
6.1	Operational cut-over agreed		Date/Time.....
7	Post Implementation		
7.1	Post-implementation monitoring and performance parameters agreed		
Signatures			
Name:		Name:	

