

CNS SG/17

Appendix E to the Report

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

Coordination Draft
Version 0.7 — April, 2013

Sponsored by the North Atlantic Systems Planning Group (NAT SPG) and
Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG)

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. The working method was to port material from both documents with differences between the two original documents highlighted as follows:

Procedures material from the Asia/Pacific Regional ICD for AIDC is highlighted in green.

Procedures material from the North Atlantic Common Coordination ICD is highlighted in blue.

Procedures material from the NAT CC ICD new version 1.2.9 is highlighted in yellow

Procedures material from the NAT CC ICD new version 1.3.0 is highlighted in pink

Procedures material contained in both the NAT ICD and APAC ICD is not highlighted.

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

AMENDMENTS

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

RECORD OF AMENDMENTS AND CORRIGENDA

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| --- | --- | --- | --- | --- |
| No. | Date Applicable | Date Entered | Entered By | Description of Change |
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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, the PAN ICD became effective on [date].

1.3 This document provides a consolidation of the founding documents which includes material from each of the regional documents taking into account lessons learned, global implications and guidance on more recent initiatives.

2. Scope

2.1 This document specifies the facilities and messages to be used for the exchange notification, coordination, transfer and related data between automated air traffic service (ATS) systems.

2.2 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 ICAO Doc 4444 Appendix 3 will continue to be used to perform functions not provided by the AIDC application.

2.3 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.

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

2.5 The message sets and procedures described in the ICD have been designed for use with the existing Aeronautical Fixed Telecommunications Network (AFTN) and the future Aeronautical Telecommunication Network (ATN). In the interest of global standardisation, ICAO methods and messages as defined in PANS-ATM Doc 4444 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 ICD defines the following:

1. Basic communications and support required to coordinate implementation of AIDC;
2. Common boundary agreements between all the ATSUs concerned;
3. Implementation guidance material;
4. NAT/EUR ATS interface messages; and,
5. Relationship to the ICAO OPLINKP (formerly the ADS Panel) AIDC message set. Relationship to the ICAO ADS Panel AIDC message set.

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

3. Document amendment

3.1 This ICD is under configuration control and is administered by the ICAO European and NAT Regional Office and the ICAO APAC Regional Office.

3.2 Changes to the document shall only be made as a result of agreement by all States in the Region. The ICAO regional office will coordinate the change proposal within its own region, other regions, and ICAO HQ, to determine the acceptability of the change proposal. Once the ICAO regional office has completed coordination and the participating PIRGs accept the change proposal, the change is concluded by each of the PIRGs.

**Amendments to the PAN ICD**

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

# List of Acronyms

When the following acronyms are used in the present document they have the following meanings.

| Acronym |
| --- |
| **ABI**. Advance Boundary Information (AIDC message) |
| **ACARS**. Aircraft Communication Addressing and Reporting System. |
| **ACC**. Area Control Centre |
| **ACI**. Area of Common Interest |
| **ACP**. Acceptance (AIDC message) |
| **ADS**. Automatic Dependent Surveillance |
| **ADS-B**. Automatic Dependent Surveillance – Broadcast |
| **ADS-C**. Automatic Dependent Surveillance – Contract |
| **AFN**. ATS Facilities Notification |
| **AFTN**. Aeronautical Fixed Telecommunications Network |
| **AIDC**. ATS Inter facility Data Communications |
| **AOC**. Airline Operational Control (also stands for Assumption of Control) |
| **AMHS**. ATS Message Handling System |
| **APANPIRG**. Asia Pacific Air Navigation Planning and Implementation Regional Group |
| **ARINC**. Aeronautical Radio Inc. |
| **ARTCC**. Air Route Traffic Control Center |
| **ASIA/PAC**. Asia/Pacific |
| **ASM**. Application Status Monitor (AIDC message) |
| **ATC**. Air Traffic Control |
| **ATFM.** Air Traffic Flow Management |
| **ATSC**. Air Traffic Service Center |
| **ATM**. Air Traffic Management |
| **ATMOC**. Air Traffic Management Operations Center |
| **ATN**. Aeronautical Telecommunications Network |
| **ATS**. Air Traffic Services |
| **ATSU**. Air Traffic Service Unit |
| **CADAG.** Communications, Automation, and Data Link Applications Group |
| **COMAG.** Communications and Automation Group |
| **C-ATSU**. Controlling ATSU |
| **CDN**. Coordination (AIDC message) |
| **CHG**. ICAO Modification Message |
| **CPDLC**. Controller Pilot Data Link Communications |
| **CPL**. Current Flight Plan (AIDC message) |
| **CRC**. Cyclic Redundancy Check |
| **D-ATSU**. Downstream ATSU |
| **DIA**. Coordination Dialogue |
| **EMG**. Emergency (AIDC message) |
| **EST**. Coordination Estimate (AIDC message) |
| **ETX**. End of Text |
| **FAN**. FANS Application Message (AIDC message) |
| **FANS**. (also FANS-1/A) Future Air Navigation System |
| **FCN**. FANS Completion Notification (AIDC message) |
| **FCO**. Facilities Notification Contact |
| **FDPS.** Flight Data Processing System |
| **FI**. Flight Identifier |
| **FIC**. Flight Information Centre |
| **FIR**. Flight Identification Region |
| **FMC**. Flight Management Computer |
| **FMD**. Flight Management Computer (Selected) |
| **FMH**. Facilities Notification Message Header |
| **FML**. Flight Management Computer (Left) |
| **FMR**. Flight Management Computer (Right) |
| **FN CAD**. Contact Advisory |
| **FPL**. Filed Flight Plan |
| **FPPS**. Flight Plan Processing System |
| **FPO**. Facilities Notification Current Position |
| **GOLD**. Global Operational Data Link Document |
| **IA-5**. International Alphabet 5 |
| **ICAO**. International Civil Aviation Organization |
| **ICD**. Interface Control Document |
| **IGM**. Implementation Guidance Material |
| **IMI**. Imbedded Message Identifier |
| **LAM**. Logical Acknowledgement Message (AIDC message) |
| **LOA**. Letter of Agreement |
| **LRM**. Logical Rejection Message (AIDC message) |
| **MAC**. Coordination Cancellation (AIDC message) |
| **MIS**. Miscellaneous (AIDC message) |
| **MLF.** Master List of Fixes |
| **MTI**. Message Type Identifier |
| **NAT**. North Atlantic |
| **NAT SPG.** North Atlantic Systems Planning Group |
| **NAT ID.** North Atlantic Implementation Document |
| **NDA**. Next Data Authority (CPDLC message); or Next Data Authority (Next unit that will communicate with the aircraft using CPDLC) |
| **OAC**. Oceanic Area Control Centre |
| **OCS**. Oceanic Control System |
| **ODF**. Optional Data Field |
| **OLDI**. On-Line Data Interchange |
| **OPLINKP**. Operational Data Link Panel |
| **OSI**. Open System Inter-connection |
| **PAC**. Pre-activation (AIDC message) |
| **PANS-ATM**. Procedures for Air Navigation Services – Air Traffic Management |
| **REJ**. Rejection (AIDC message) |
| **R-ATSU**. Receiving ATSU |
| **RNP**. Required Navigation Performance |
| **SARPs**. Standards and Recommended Practices |
| **SITA**. Societe Internationale de Telecommunciations Aeronautiques |
| **SMI**. Standard Message Identifier |
| **SOH**. Start of Header |
| **SOTA.** Shannon Oceanic Transition Area |
| **STX**. Start of Text |
| **TCP**. Transfer of Control Point |
| **TDM**. Track Definition Message (AIDC message) |
| **TEI**. Text Element Identifier |
| **TOC**. Transfer of Control (AIDC message) |
| **TRU**. Track Update (AIDC message) |
| **UTC**. Universal Coordinated Time |
| **VSP**. Variable System Parameter |
| **WGS/84.** World Geodetic System 1984 |

# Purpose, Policy and Units of Measurement

## Purpose

* 1. The AIDC application supports information exchanges between ATC application processes within automated ATS systems located at different ATSUs, as defined in Doc 4444, Appendix 6. This application supports the Notification, Coordination, and the Transfer of Communications and Control functions between these ATSUs. Crosscheck with \Doc 4444
	2. This document specifies the facilities and messages to be used for the exchange of notification, coordination, transfer and related data between automated ATS systems.
	3. The messages defined in this document are used during the active phase of flight. Though outside the scope of the AIDC application, the Emergency, Flight Planning and Supplementary Message Categories as defined in ICAO *Procedures for Air Navigation Services – Air Traffic Management* (PANS-ATM) Appendix 3 will continue to be used to perform functions not provided by the AIDC application.
	4. 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.

## Policy

* 1. The application of AIDC shall be based on a step-by-step data distribution scheme comprising three (3) phases: NOTIFICATION, COORDINATION and TRANSFER OF CONTROL. In support of all the operational phases, application management messages are required to support application level dialogue between automated ATS systems.
		1. The Advance Boundary Information (ABI) message shall be used for notification, subject to bi-lateral agreement. ABI can also be used to represent the cleared profile, particularly when using abbreviated coordination and not utilising the CPL message.
		2. For the coordination phase, The Current Flight Plan (CPL) message shall act as the initial cleared profile coordination message and the Coordination (CDN) message shall be used to negotiate changes. Coordination dialogues must be terminated using an Accept (ACP) or a Reject (REJ) message.
		3. Automated Transfer of Control (TOC) and Acceptance of Control (AOC) procedures shall be supported.
	2. The capability to revert to verbal coordination and manual transfer of control shall be retained.
	3. Flight plans shall continue to be filed in accordance with existing procedures. .

## Units of measurement and data conventions

**2.3.1 Units of measurement**

* 1. AIDC messages described in the PAN ICD may support different units of measurement to those described below. If this occurs, bilateral agreements shall determine the units to be transmitted, as well as their format and any associated limitations (e.g. minimum/maximum value, resolution etc).
	2. **Time and date.**
		1. All time information shall 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 shall be expressed in YYMMDD format
	3. **Geographic position information.**
		1. Geographic position information shall be specified in accordance with *PANS-ATM, Doc 4444*.
	4. **Level information.**
		1. All level information shall be specified as flight level(s) or altitude(s) expressed in hundreds of feet. With the exception of block levels, level information – including supplementary crossing data and crossing conditions – shall be specified in accordance with *PANS-ATM, Doc 4444*.
		2. **Block level information**
			1. Where a block level is to be included in an AIDC message, it shall 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.

* 1. **Speed information**
		1. All speed information shall be expressed as true airspeed in knots or as a true Mach number. With the exception of Mach Number Technique, speed information shall be specified in accordance with *PANS-ATM, Doc 4444*.
		2. **Mach Number Technique Information**
			1. Where Mach Number technique information is to be included in an AIDC message it shall be expressed as:
* A single character describing whether an aircraft will be maintaining the notified Mach Number or less (L), the notified Mach Number or greater (G), or exactly the notified Mach Number (E); and
* Four characters defining the notified Mach Number, expressed as the letter M followed by 3 numerics 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 Technique information may be included in Field 14 of any AIDC message

* 1. **Offset and Weather Deviation Information**
		+ 1. Where Offset or weather deviation information is to be included in an AIDC message it shall be expressed as:
				- A single character describing whether the information is associated with an offset (O) or a weather deviation (W); and,
				- One to three characters indicating the distance of route associated with this clearance (leading zeros shall 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 |

* + 1. 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. When *transmitting an AIDC message containing Offset information, the direction “E” (either side of route) shall not be used*.
		3. 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).
	1. Functional addresses.
		1. A functional address, which refers to a function within an OAC/ACC (e.g. an ATC watch supervisor), may be substituted in certain messages 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.

**Restriction formats**

* 1. Principles.
		1. The restriction information provided by the C-ATSU to the D-ATSU shall be limited to the flight profile at and beyond the ACI boundary.
		2. The cleared level, supplementary crossing data and crossing conditions in field 14 shall be based on the conditions at the ACI boundary.
		3. If a fix other than a filed route point is used in the level and/or speed clearance at and beyond the ACI boundary, it shall be part of the appropriate flight profile in field 15.
	2. Level and speed restrictions.
		1. Use of restrictions is not mandatory. If they are used, the following convention shall be used.
		2. Route, speed and level information contained in the Route field (ICAO ATS Field 15) represent the current cleared profile of the aircraft. Where a clearance requires a speed/level change subsequent to a route point, then the ICAO convention of route point followed by an oblique stroke and the new speed/level will be used:

*Example*

60N010W/M084F350

* + 1. Where a clearance requires a speed/level change to be completed by a route point, then the items will be reversed:

*Example*

M084F350/62N020W

* + 1. A combination of these two conventions will describe a clearance with a defined starting and completion point:

*Example*

60N010W/M084F350/62N020W

* 1. Time restrictions.
		1. There are three types of time restrictions describing when an aircraft should arrive at a fix:

AT/ (UNTIL);

AT OR BEFORE; or,

AT OR LATER.

* + 1. A suffix will be added to the four digit time to denote the restriction type, as follows:

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

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

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

* + 1. The restriction itself will begin with a slash (/), e.g., /1230B, and will appear after the fix with which it is associated. For example, 49N050W/1230L signifies that the aircraft should arrive at 49N 50W at or later than 1230 Z.
		2. A time restriction may be used in conjunction with speed/level restrictions as follows:

60N010W/1230L/M084F350

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

M084F350/62N020W/1230A

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

at time 1230Z

60N010W/M084F350/62N020W/1230B

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

Cross 62N020W at or before 1230Z

* + 1. Time restrictions may only appear in the Route field (Field 15).
		2. The use of time restrictions shall be bilaterally agreed between ATS providers.
	1. Time restrictions related to level and speed.
		1. There are three types of time restrictions, describing when an aircraft should commence or terminate a level and/or speed change. A suffix will be added to the four digit time to denote the restriction type, as follows:

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

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

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

* + 1. The restriction itself will begin with a slash, i.e., "/", e.g., /1230B, and will appear directly after the element with which it is associated. For example, M080F350/1230L signifies that the aircraft should cruise M080 at F350 at or later than time 1230Z.
		2. A time restriction related to level and speed may be used in conjunction with a fix restriction as follows:

*Example*:

M080F350/1135A/M080F370/1220B 53N030W

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

M080F330/1135A/M080F370 53N030W

Maintain M080 F330 until 1135Z then climb to F370

60N010W/M084F350/1230B

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

M083F330/1135L/60N020W

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

M083F330/1135L

At 1135Z or later cleared M083 F330

# Communications and Support Mechanisms

## Introduction

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

## Message headers, timers and ATSU indicators

* 1. Message headers.
		1. The AFTN IA-5 Message Header, including the use of the Optional Data Field defined in ICAO Annex 10, Vol II and herein, will be employed for the exchange of all ATS data. The AFTN priority indicator FF shall normally be used for all data exchanges.
		2. Optional data field.
			1. The optional data field provides a flexible way to convey information from end-to-end, undisturbed by the communication processes along the path. Since the information is optional it is necessary to specify a unique number and ending for each defined use. Option 1 has already been allocated for additional addressing use, and will be found in ICAO Annex 10, Vol II. Option numbers 2 and 3 have been defined for computer applications to convey message/data unit identification and message/data unit reference information, respectively, and are adopted in this ICD. Other options can be defined and added as the need arises. The proposed encoding has no impact on AFTN switching centers as they ignore this part of the origin line. The ODF is required for AIDC. When AMHS or AFTN/AMHS gateways are used for AIDC messages exchanges the ODF elements as specified in this ICD shall be supported.
		3. Addressing.
			1. The Source and Destination addresses of the AFTN header convey the direction and logical identity of the application processes exchanging AIDC data information. The application process must be aware of the AFTN addresses that are used for this function. The first four characters specify the location as per the ICAO Location Indicators (Doc 7910), while the next three characters specify an office/agency or a processor at the given location as per Doc 8585. The eighth character of the address indicates the end system application and details of the naming assignment are contained in Chapter 6, *ATM Application Naming Conventions*..
		4. Message/data identification number.
			1. The message/data identification number is a six digit number, taken from a single application pool of available numbers. The identification of the sending and receiving units would use the normal eight character addresses of the AFTN header.
			2. The message/data identification number is encoded and conveyed in the AFTN message header Optional Data Field (ODF), option 2. The AFTN implementation provides functionality consistent with the OSI primitive/parameter structure.
			3. A message/data identification number will be assigned to each message/data unit requiring confirmation of receipt by the initiating processor. This number will be assigned by the application process basis in such a way as to guarantee a unique identification number for a period of time as specified in paragraph 3.21.7 below. For messages/data not requiring confirmation the message/data identification parameter shall not be used.
		5. Reference Information.
			1. The message/data reference information is a way of linking a message/data unit to a previously sent message. This function is encoded and conveyed in the AFTN ODF, option 3. This implementation would make the linking information consistent with the abstract OSI protocol primitive/parameter structure. The reference information consists of the message/data identification number of the previously sent message/data unit being referenced. As the previous message being referenced could have been originated by either processor, the location indicator of the message source shall be used as a prefix to the reference number. Examples are found in paragraph 3.22.5 below.
		6. Time stamp.
			1. The time stamp is expressed as 12 digits in year, month, day, hours, minutes, and seconds (YYMMDDHHMMSS). The precision (seconds) of the time stamp will support computation of transmission delays. This data item is conveyed as option 4 of the ODF. The AFTN date time group may be used by administrations to monitor performance of the messaging exchanges
		7. Cyclic Redundancy Check (CRC).
			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 (to be confirmed). 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 shall be excluded from the CRC calculation. This data item is conveyed as option 5 of the ODF.
	2. Timers.
		1. In order to guarantee the uniqueness of the message/data identification number, and yet allow for the efficient reuse of the numbers in the pool, two timers are required for each message/data unit requiring confirmation: accountability and reuse.
		2. Accountability timer.
			1. The accountability timer determines the maximum period of time for the responding application to confirm receipt of a given message/data unit. The default value for this timer nominally shall be three minutes. If there is no valid response from the responding application, the initiating processor shall retransmit the message/data unit and reset the timer, or initiate local recovery procedures. When local procedures allow retransmission, a maximum value, such as three, must be determined before local recovery procedures are initiated. The accountability timer shall be cancelled by the receipt of any message with the appropriate message/data reference identifier, which will typically be a LAM or LRM. Retransmissions use the same message/data identification number as the original message/data unit.
		3. Reuse timer.
			1. The reuse timer function employs two timers that determine the minimum period of time during which a message/data identification number is guaranteed to be unique. Reuse timer A shall be set for exchanges not involving dialogues between processors. The range for reuse timer A shall be from 1 to 30 minutes, in one minute increments. The default value for reuse timer A shall be 5 minutes, or as agreed by the concerned ATSUs. Reuse timer B shall be set for exchanges where a dialogue is involved in the exchange. The range for reuse timer B shall be 2 to 90 minutes, in one minute increments. The default value for reuse timer B shall be 10 minutes, or as agreed for communicating applications by the concerned administrations. A given message/data identification number can be reused when an ACP, AOC, or REJ response message is received or the reuse timer has expired.
		4. System Failure Timer Procedures.
			1. In the event of system failure, the accountability and reuse timers will be reset and resume timing upon completion of system recovery.
		5. The following examples depict four AIDC Messages encoded in accordance with the previous procedures. The second message is a reference to the first message. SOH, STX, message ending and ETX characters are omitted for clarity, as are the alignment functions. The proposed encoding would have no impact on AFTN switching centres as they ignore this part of the origin line.

FF NFFFZOZO

122145 KZOAZOZO 2.000033-4.940412214523-5.A34B-

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

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

FF KZOAZOZO

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

­(ACP-UAL714-KLAX-YSSY)

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

FF KZNYZOZO

122145 CZQMZOZO 2.000033-4.940412214523-5.A34B-

(CPL-UAL714-KJFK- etc.)

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

940412 214523.

FF CZQMZOZO

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

(ACP-UAL714-KJFK-EGLL)

**Explanation**: Sending message number 000044 from KZNYZOZO to CZQMZOZO at

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

## Engineering considerations

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

* 1. Performance Criteria.
		1. In order to effectively use the AIDC application for the interchange of ATC coordination data, performance requirements need to be specified. These specified performance requirements need to be agreed to by states implementing AIDC through bi-lateral agreements. For recommended performance figures the ICAO RCP Manual (Doc 9869) may be referred to and Chapter 7, *Implementation Guidance Material,* paragraph 7.23.1.
	2. Recording of AIDC data.
		1. The contents and time stamps of all AIDC messages shall be recorded in both end systems in accordance with the current requirements for ATS messages.
		2. Facilities shall be available for the retrieval and display of the recorded data.

## Test considerations

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

# ATS Coordination Messages

## Introduction

* 1. The following sections describe those messages used for AIDC. AIDC data fields shall conform to ICAO definitions per PANS-ATM Doc 4444.
	2. All ATS data shall be enclosed between parentheses. Only one ATS message shall be included within a transmission.

## Message item requirements

* + 1. Field 3 requirements.
			1. All messages shall use field 3a only.
			2. Fields 3b and 3c are not used since, for AIDC, these reference numbers are included in the ODF, option 3. See Chapter 3, para 3.21.5.
		2. Field 7 requirements.
			1. Where Field 7 is mandatory in a message, Field 7a (Aircraft Identification) shall always be included. Fields 7b (SSR Mode) and 7c (SSR Code) are optional but should be included if the information is available and applicable
		3. Item 13 requirements.
			1. In respect of ATS Field 13, only Field 13 a), the departure aerodrome designator, is required. Field 13 b) is not to be transmitted.
		4. Item 14 requirements
			1. **Field 14 – Estimate data**

While AIDC messages may contain a variety of flight plan information, Field 14 – Estimate data – could be considered as the most crucial information, as it contains the ‘agreed coordination conditions’ of a flight between the transferring and receiving ATSU.

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

|  |  |  |  |
| --- | --- | --- | --- |
| Data | Example | Mandatory/Optional | Comment |
| Position(14a) | 46N150W1545S16545EGOOFY | M | Normally a waypoint located on the FIR boundary, but by bi-lateral agreement may  be an agreed waypoint close to the FIR boundary, or a system calculated FIR boundary position |
| Estimate(14b) | 2200 | M | The estimate for the position in 14a |
| Level(14c) | A090F330F330F370 | M | The coordinated level of the aircraftWhile 14c is mandatory, the support for the block level format is optional |
| Supplementary crossing data(14d) | F290F350 | 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) | AB | Included when applicable | (A) The aircraft may be on climb from the level specified in 14d(B) The aircraft may be on descent from the level specified in 14d |
| Mach Number Technique | GM084EM076LM083 | O |  |
| Offset and weather deviation | W25RW100EO30R | O | When an offset or weather deviation is in effect, the position in 14a should be a position on the flight planned route, rather than the offset route |

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

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

**4.2.4.2 Block level information in Field 14**

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

*Example*

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

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

4.2.4.3 Mach Number Technique Information in Field 14

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

*Example*

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

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

*Example*

|  |  |
| --- | --- |
| Field 14 | Explanation |
| SPEDY/1237F310F330B/LM083Subsequently followed by:SPEDY/1238F310 | The aircraft is estimating SPEDY at 1237, assigned F310 and will cross SPEDY at or below F330, maintaining M0.83 or lessThe aircraft is now estimating SPEDY at 1238, is maintaining F310 (i.e. no longer on descent at SPEDY), and the mach number restriction has been cancelled |

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

4.2.4.4 Offset and Weather Deviation Information in Field 14

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

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



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.

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

*Example*

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

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

|  |  |
| --- | --- |
| Field 14 | Explanation |
| 34N040W/1519F330/W15RSubsequently followed by:34N040W/1520F330 | The aircraft is deviating up to 15NM right of trackThe aircraft is back on track (and one minute later than previously coordinated) |

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



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

**Field 15 – Route**

A number of different AIDC messages (ABI, PAC, CPL, CDN) may contain Field 15 – an aircraft’s route information. Depending on the specific AIDC message, this route information may the cleared route of the aircraft, or a proposed amendment to it.

The following section describes the contents of Field 15, as well as providing examples of how the various route elements may be incorporated into the route field.

|  |  |  |  |
| --- | --- | --- | --- |
| Data | Example | Mandatory/Optional | Comment |
| Speed(15a) | M084N0488 | M | Included in a flight plan as the initial requested speed. In AIDC exchanges it should represent the speed being used for processing by the C-ATSU |
| Level(15b) | F310 | M | Included in a flight plan as the initial requested flight level. In AIDC exchanges it should represent the level currently assigned to the aircraft by the C-ATSU |
| Route(15c) |  | M | Route of flight. May contain any or all of:* Named waypoints
* Navigation aids
* Aerodromes
* Latitude/longitude
* Airways
* Place/bearing/distance
* Speed/level changes\*
* Level, time or speed restrictions
* Truncation indicator (‘T’)
 |

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

The contents of 15c are defined in *PANS-ATM, Doc 4444*, with the exception of level/time/speed restrictions which are described in <insert reference> “Restriction formats”.

**Airways**

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

**Truncation indicator**

In accordance with *PANS-ATM Doc 4444* the truncation indicator shall only follow a significant point in Field 15 and shall not follow an ATS Route designator

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

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

While it is desirable for Field 15 to describe the 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’).

Bi-lateral agreements shall define whether the Truncation indicator represents:

* the point at which the route rejoins the original(?) Route, or
* the point at which the route exits Oceanic airspace

Examples of Field 15

|  |  |
| --- | --- |
| SY L521 AA | Navaid, airway |
| SY L521 GEROS 32S160E 3425S16300E LUNBI AA | Navaid, airway, waypoint, lat/long (dd), lat/long (ddmm) |
|  | Speed/level change |
|  | Truncation indicator |
|  | Restrictions |
|  | More generic examples, including all combinations |

## Message group

* + 1. The core messages shown in Table ~~A-1~~ 4-1 below are to be supported by ATSUs using AIDC..
		2. Optional messages may be supported by ATSUss. Such messages will be detailed in bi-lateral agreements.

Table 4‑. AIDC Messages

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

## Notification messages

4.4.1 ABI (Advance Boundary Information).

4.4.1.1 Purpose.

4.4.1.2 Used to give advance information on flights and shall be transmitted at a bilaterally agreed time. Transmission will normally be triggered at a time or position (Variable System Parameter) before the common boundary, or by a flight state change. Changes to a previously transmitted ABI shall be communicated by means of another ABI. Changes to the cleared route of flight will result in the retransmission of an ABI.

4.4.1.3 Message format.

ATS Field Description

3 Message type

7 Aircraft identification

13 Departure aerodrome

14 Estimate time

16 Destination aerodrome

22 Amendment

Field 22 shall contain as a minimum the following fields:

 9 Number, type of aircraft and wake turbulence category

15 Route (see Chapter 4, *ATS Coordination Messages*, para 4.12.1)

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

 8 Flight rules

 10 Equipment and capabilities

18 Other information as contained in the current flight plan must be transmitted, with the sole exception of the EET sub-field, which is optional. Note that this field shall contain information as received by the sending centre or a subset thereof as agreed between the parties

*Example*

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

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

An aircraft containing full route details until destination.

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

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

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

Field 15 containing a NAT track.

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

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

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

170643 YBBBZQZF 2.251169-4.130117064329-5.2728-

(ABI-ANZ716/A1565

-YSSY-ESKEL/0743F370

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

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

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

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

170657 NZZOZQZF 2.000320-4.130117065645-5.550B-

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

-8/IS

-9/A388/H

-10/SADE3GHIJ2J3J4J5M1RWXYZ/LB2D1

-15/M084F400 LENGU PEBLU N759 BADGR

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

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

ADSB)

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

161520 YBBBZQZF 2.245917-4.130116152015-5.EF17-

(ABI-SQC7290/A1564

-YMML-SASRO/1620F350

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

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

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

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

ABI sent by YBBB to NZZO, containing a truncation indicator

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

 Text Amended Destination

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

*Example*

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

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

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

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

## Coordination messages

* + 1. CPL (Current Flight Plan)
			1. Purpose.
				1. Used to initiate the initial coordination dialogue between automated ATS systems for a specific flight. The D-ATSU shall signal its acceptance by issuing an ACP, else the coordination dialogue will be continued using a CDN message.
			2. Message format.

ATS Field Description

3 Message type

7 Aircraft identification

8 Flight rules and type of flight

9 Aircraft type Number and type of aircraft and wake turbulence category

10 Equipment and capabilities

13 Departure aerodrome

14 Estimate data

15 Route (see ~~Appendix A, paragraph 1.2.1~~ Chapter 4, *ATS Coordination Messages*, paragraph 4.12.1)

16 Destination aerodrome

18 Other information as contained in the original flight plan must be transmitted, with the sole exception of the EET sub-field, which is optional

*Example*

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

(CPL-UAL815-IS

-B773/H-SDIJ5RXW/SD1

-LFPG-54N030W/1417F350

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

-KIAD

-PBN/A1L1 REG/N456UA SEL/KLBF)

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

(CPL-ICE615-IS

-B753/H-SWX/C

-BIKF-62N030W/1701F350F310A

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

-KJFK

-0)

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

(CPL-IBE6123-IS

 -B744/H-SXWC/C

-LEMD-41N030W/1325F350

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

HEATT

-KMIA

-0)

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

(CPL-VIR2-IS

-B744/H-SXW/C

-KEWR-55N040W/2323F330

-M085F330 55N040W NATY NURSI UN551 BEL UL10 HON BNN2A

-EGLL

-0)

Field 15 containing a NAT track.

(CPL-BAW242-IS

-B744/H-SIRWXY/C

-MMMX-42N050W/0623F330

-EGLL

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

UR8 GIBSO

-EGLL

-EET/KZHU0054 CZQX0546 45N040W0556 EGGX0643 49N020W0732 BEDRA0757

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

RMK/TCAS SEL/BPCE DOF/040212)

 Field 18, other information.

4.5.2 EST (COORDINATION ESTIMATE)

4.5.2.1 Purpose.

4.5.2.1.1 Used in conjunction with, and following an ABI to inform the D-ATSU of the estimate data for a flight. The EST should be used when the flight is in compliance with agreements between the two ATSUs. An ACP message shall be transmitted to complete the coordination process. The only valid response to an EST is an ACP.

4.5.2.2 Message Format

ATS Field Description

3 Message type

7 Aircraft identification

13 Departure aerodrome

14 Estimate data

16 Destination aerodrome

*Example*

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

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

4.5.3 PAC (PREACTIVATION)

4.5.3.1 Purpose.

4.5.3.1.1 Used in conjunction with, and following an ABI to inform the D-ATSU of the estimate data for a flight which has not yet departed. Normally it is used when the departure point is close to the FIR boundary and preflight coordination is required. The PAC should be used when the flight is in compliance with agreements between the two ATSUs. An ACP message shall be transmitted to complete the coordination process. The only valid response to a PAC is an ACP

4.5.3.2 Message Format

ATS Field Description

3 Message type

7 Aircraft identification

13 Departure aerodrome

14 estimate data

16 Destination aerodrome

22 Amendment (optional field)

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

 8 Flight rules

 9 Number, type of aircraft and wake turbulence category

 10 Equipment

15 Route (see Chapter 4, *ATS Coordination Messages*, paragraph 4.12.1)

 18 Other information. Note that this field shall contain information as

received by the sending centre or a subset thereof as agreed between the parties.

*Example*

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

4.5.4 MAC (CANCELLATION OF NOTIFICATION AND/OR COORDINATION)

4.5.4.1 Purpose.

4.5.4.1.1 Used specifically to indicate to a D-ATSU that all notification and/or coordination received for a flight is no longer relevant to that centre. This message is not to be considered as a CNL message.

4.5.4.2 Message Format

ATS Field Description

3 Message type

7 Aircraft identification

13 Departure aerodrome

16 Destination aerodrome

22 Amendment (optional field)

Field 22 may contain the following fields:

 14 Estimate Data

 18 Other information

Field 14 may be transmitted containing the estimate data previously transmitted. It may be used if required, to correctly identify the flight concerned by the MAC, when appropriate. If a MAC is transmitted as a result of a diversion to a new destination (i.e. such that the receiving ATSU is no longer affected by the flight), Field 16 – Destination aerodrome – should contain the destination contained in the original Notification and/or coordination messages.

Example

(MAC-BCA789-EGKK-KLAX)

(MAC-ICE234-BIKF-EGPF)

(MAC-SIA286-NZAA-WSSS)

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

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

* + 1. CDN (COORDINATION NEGOTIATION)
			1. Purpose.
				1. Used to propose changes to the coordination conditions agreed to in a previously transmitted CPL, EST, PAC, or CDN message. Only one CDN dialogue can be active per flight at any given time between the same two ATSUs (refer Chapter 7, *Implementation Guidance Material,* para 7.33.5). The initial coordination dialogue is always terminated by an ACP message; otherwise a unit receiving a CDN can indicate that the coordination conditions should be left as previously agreed by transmitting an REJ message or propose new coordination conditions via CDN. CDN dialogues should be closed prior to the Transfer of Control occurring..
				2. ATSUs should ensure that appropriate procedures are defined in bilateral agreements for dealing with CDN messages containing a number of revisions (e.g. a revised estimate and level). There may be occasions when the D-ATSU can accept one of the amendments but not the other.
			2. Message Format.

ATS Field Description

3 Message type

7 Aircraft identification

13 Departure aerodrome

16 Destination aerodrome

22 Amendment

Under normal circumstances, Field 22 may only contain fields 14, 15, and 18. Subject to

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

 10 Equipment

 Text Amended Destination

* + - 1. 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-NWA36-KBOS-EDDF-14/54N030W/0446F370)

Example of a CDN message with a route change

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

32N050W 37N040W 42N030W 45N020W OMOKO GUNSO GAPLI

UL620 GIBSO)

Example of a CDN message containing changes in field 18:

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

DOF/120412 REG/GBNLI

EET/KZHU0054 LPPO0546 CZQX0606 EGGX0643 49N020W0732

BEDRA0757

GUNSO0813 EGTT0833 SEL/BPCE ORGN/EGLLBAWH RALT/CYQX

EIDW RMK/TCAS)

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

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

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

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

DEST/0150N16745E)

* + - 1. The last two examples demonstrate a CDN proposing a new route to an amended destination. In example iii, there is no change to Field 14 – Estimate data. The last example shows a change of route with a corresponding change to Field 14. The “DEST/” included in this example refers to the proposed destination, rather than the original “ZZZZ” destination. Refer to Chapter 7, *Implementation Guidance Material*, for the methodology in proposing a diversion to a new destination.
		1. ACP (ACCEPTANCE)
			1. Purpose.
				1. Used to confirm that the conditions contained in a received CPL, CDN, EST or PAC message are accepted. ACP messages may be generated automatically or manually.
			2. Message Format.

ATS Field Description

3 Message type

7 Aircraft identification

13 Departure aerodrome

16 Destination aerodrome

*Example*

(ACP-ACA860-NZAA-KSFO)

* + 1. REJ (REJECTION)
			1. Purpose.
				1. Used to reject an amendment proposed by a CDN to a previously coordinated flight and terminate the coordination dialogue. The coordination remains as was previously agreed.
			2. Message Format.

ATS Field Description

3 Message type

7 Aircraft Identification

13 Departure Aerodrome

16 Destination Aerodrome

*Example*

(REJ-AAL780-KJFK-EGLL)

(REJ-AAL780-KSFO-RJAA)

* + 1. TRU (TRACK UPDATE)
			1. Purpose.
				1. Used to coordinate amendments to previously agreed coordination conditions where prior coordination of the changes is not required. Because there is no operational response to the TRU message, use of this message must be in strict accordance with bilateral agreements between ATSUs concerned.
				2. Message Format.

ATS Field Description

3 Message type

7 Aircraft Identification

13 Departure Aerodrome

16 Destination Aerodrome

Text Track Data

* + - * 1. Track data is a free text field used in the TRU message to permit the transfer of updated information from one ATSU to another. This field contains a number of elements which are described below. Each element consists of an “identifier” and a value which are separated by a “/” character.
				2. All of the elements within the Track data field are optional, and multiple elements may be included, separated by a single <space> character. Track data will contain at least one element. When multiple elements are to be transmitted in a single TRU message, the order of the elements within the Track data field is the order in which they are listed below. Unused elements are not included in the Track data field.

*Example*

Flight Plan Route (FPR)

This optional element is preceded by the identifier ‘FPR’ and contains the current cleared route of flight. The “current cleared route” as amended by ATC.

* + - * 1. Requested Flight Level (RFL)

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

Example

RFL/F390

* + - * 1. Present Level (PRL)

This element is preceded by the identifier ‘PRL’ and contains the aircraft’s last reported level. Typically used to provide a “maintaining” report to another ATS Unit.

Example

PRL/F390

* + - 1. Heading (HDG)
				1. This element is preceded by the identifier ‘HDG’ and contains the magnetic heading that has been assigned to the aircraft, expressed as a three digit number between 001 and 360.

*Example*

 HDG/080

* + - 1. Cleared Flight Level (CFL)
				1. This l element is preceded by the identifier ‘CFL’ and contains the amended level that the aircraft has been assigned. Block levels in accordance with Chapter 2, *Purpose, Policy and Units of Measurement*, para 2.34.2, are also supported.

*Example*

 CFL/F330

 CFL/F310F330

 CFL/F310F330F210A

* + - 1. Speed (SPD)
				1. This l 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 numeric giving the true Mach Number or to the nearest .01 Mach.

Indicated airspeeds are expressed as “I” followed by 4 numerics giving the Indicated Airspeed in knots.

* + - * 1. To cancel an assigned speed that had been previously coordinated, the SPD identifier is followed by a “/” character, followed by a zero (0).

*Example*

SPD/M084

SPD/I0250

SPD/0

* + - 1. Direct to (DCT)
				1. 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

* + - 1. Off track deviation (OTD)
				1. 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 2.35; i.e.,

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

an off track distance associated with this clearance:

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

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

* + - * 1. To cancel a previously coordinated off track deviation, the OTD identifier is followed by a “/” character, followed by a zero (0).

*Example*

OTD/W20R

OTD/O30L

OTD/0

* + - 1. Depending on automation, the receiving ATSU may automatically update their flight plan data, or simply display the message to the responsible controller.

*Example*

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

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

## Transfer of control messages

* + 1. TOC (TRANSFER OF CONTROL)
			1. Purpose.
				1. Used to offer the receiving centre executive control of a flight
			2. Message Format

ATS Field Description

3 Message type

7 Aircraft identification

13 Departure aerodrome

16 Destination aerodrome

*Example*

(TOC-TAP451-LPPT-KJFK)

(TOC-TAP451/A2217-YMML-NZCH)

* + 1. AOC (ASSUMPTION OF CONTROL)
			1. Purpose.
				1. Sent in response to a TOC to indicate acceptance of executive control of a flight.
			2. Message Format.

ATS Field Description

3 Message type

7 Aircraft identification

13 Departure aerodrome

16 Destination aerodrome

*Example*

(AOC-TAP451-LPPT-KJFK)

(AOC-TAP451/A2217-NFFN-PHNL)

## General information messages

* + 1. EMG (EMERGENCY)
			1. Purpose.
				1. Used at the discretion of ATSUs when it is considered that the contents require immediate attention. Normally the information would be presented directly to the controller responsible for the flight or to the controller expecting to receive responsibility for the flight. When the message does not refer to a specific flight, a functional address shall be used and the information presented to the appropriate ATS position. Where such an address is used it is preceded by an oblique stroke (/) to differentiate it from aircraft identification. The following are some examples of circumstances which could justify the use of an EMG message.
				2. Reports of emergency calls or emergency locator transmission reports.
				3. Messages concerning hi-jack or bomb warnings.
				4. Messages concerning serious illness or disturbance among passengers.
				5. Sudden alteration in flight profile due to technical or navigational failure.
				6. Communications failure.
			2. Message format.

ATS Field Description

3 Message type

7 Aircraft identification or functional address

18 Other information

*Example*

(EMG-UAL123-RMK/Free Text)

(EMG-/ASUP-RMK/Free Text)

* + 1. MIS (MISCELLANEOUS)
			1. Purpose.
				1. Used to transmit operational information which cannot be formatted to comply with any other message type and for plain language statements. Normally the information would be presented directly to the controller responsible for the flight or to the controller expecting to receive responsibility for the flight. When the message does not refer to a specific flight, a functional address shall be used and the information presented to the appropriate ATS position. Where such an address is used it is preceded by an oblique stroke (/) to differentiate it from an aircraft’s identification.
			2. Message format.

ATS Field Description

3 Message type

7 Aircraft identification

18 Other information

*Examples*

(MIS-NWA456-RMK/Free Text)

(MIS-/ASUP-RMK/Free Text)

* + 1. TDM (TRACK DEFINITION MESSAGE)
			1. Purpose.
				1. Used to distribute Pacific track information to affected ATSUs and Airline Operational Control Centres (AOCs) (TBC Adam) for flight planning. Details could be found in Appendix X. The message contains track definition and activity time periods.
			2. Message Format.

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.

2. General Information. General information contains:

 a. Date and time the track was generated and message number tor that particular track in YYMMDDHHMMNN format where NN represents the message number. The initial TDM date/time message number group will look like: 941006134501. Message numbers 02 to 99 indicate TDM amendments or revisions. Note that an additional preceding zero may be required to provide the correct number of digits.

 b. Track status. Blank field for initial message or “AMDT” for amendment.

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.

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.

5. Optional Fields

 a. Level: This optional field will not be used in the Pacific operations since levels are published in separate documents, e.g. Pacific SUPPS (Doc 7030) . A rack level list may be specified for the east and westbound directions of flight and a track level list would contain the complete list of levels available on the track for the specified direction of flight. The levels would apply to all waypoints in the track waypoint list.

 b. Connecting routes (RTS): The RTS field is an optional field not normally used by automated ATS systems. When used, it is located after the waypoint list (before the remarks field) and begins with the keyword ’RTS/’ at the beginning of a line. Each line of the RTS field contains a single connecting route (to the ingress fix or from the egress fix).

7. Remarks: The Remarks subfield is a free text field that can contain additional comments. If there are no remarks a zero (0) is inserted as the only text. The remarks subfield begins with ’RMK/’.

*Examples*

The following TDM describes a route connecting Honolulu and Japan:

(TDM TRK A 940413124001

9404131900 9404140800

LILIA 27N170W 29N180E 31N170E 32N160E MASON

RTS/PHNL KEOLA2 LILIA

MASON OTR 15 MOLT OTR 16 SUNNS OTR20 LIBRA RJAA RMK/0)

The following TDM Revision describes a revision to the TDM shown above.

(TDM TRK A 940413131502 AMDT

9404131900 9404140800

LILIA 27N170W 29N180E 30N170E 32N160E MASON

RTS/PHNL KEOLA2 LILIA

MASON OTR15 SMOLT OTR16 SUNNS OTR20 LIBRA RJAA RMK/0)

In the example given above, the message number (as delineated by the last two digits of the message generation date/time group) indicates it as the second (“2”) message for the track. This is followed by ’AMDT’ to signify the previous message has been amended.

ADD examples with FLs

* + 1. NAT (ORGANIZED TRACK STRUCTURE)
			1. Purpose.
				1. Used to publish the NAT organized track structure and the levels available. Details could be found in Appendix X. The message may be divided into several parts to enable it to be transmitted.
			2. Message Format.

ATS Field Description

3 Message type

Text Structured text

* + - 1. Structured Text Format.
				1. It is required to adhere strictly to the syntax described hereafter in order to facilitate automated processing of NAT messages.
				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 shall 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.
				3. It shall be noted that NAT Track messages shall 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 shall 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.
				4. Characters in **bold underlined** in Message Text (syntax) column are to be replaced or dealt with as explained in the Description column.
				5. The structured text is first composed of a NAT message header, as follows:

**Id Message Text (syntax) Description (semantics)**

1 (NAT-**a**/**b**<sp> **a** designates the part number in the **b** parts of the NAT

 TRACKS<sp> message (**a** and **b** are one decimal digit)

2 FLS<sp>**nnn**/**mmm nnn** and **mmm** designating the minimum and maximum

 <sp>INCLUSIVE concerned flight levels in hundreds of feet (three decimal digits)

3 <crlf>

4 **month**<sp>**d1/h1m1**Z Validity time with:

<sp>TO<sp> **month**: for the month of validity full month name in letters

**month**<sp>**d2/h2m2**Z **d1/h1m1**: beginning time of validity

**d2/h2m2**: ending time of validity(day/hour minute,

2 digits each, no space, leading zero required if number

is less than 10)

5 <crlf>

6 PART<sp>**a a** and **b** textual numbers (ONE, TWO, THREE, FOUR) or one decimal <sp>OF<SP> digit. Both numbers shall represent the same digits as referred to in item Id 1 above.

b<sp> PARTS- Terminal character **S** may be omitted if **b** is ONE.

7 <crlf><crlf>

* + - * 1. Following the NAT message header is a repeat of the following structure for each North Atlantic Track part of the message. If the resulting NAT message text is longer than 1800 characters, it must be separated into as many parts as necessary. Separation must happen between individual North Atlantic Track descriptions, not within an individual description.

**Id Message Text (syntax) Description (semantics)**

8 **L** letter designating the name of the NAT track.

One of:

 ABCDEFGHIJKLM for Westbound tracks. The most northerly Track of the day is designated as NAT Track Alpha, the adjacent Track to the south as NAT Track Bravo, etc.

 NPQRSTUVWXYZ for Eastbound tracks The most southerly Track of the day is designated as NAT Track Zulu, the adjacent Track to the north as NAT Track Yankee, etc.

Tracks must be defined in sequence starting at any letter in the appropriate set, each following track using the immediately following letter in that set, e.g. UVWXYZ or ABCDE etc.

The first track in the message shall be the most northerly one and each subsequent track shall be the next one towards the south.

9 <sp>

10 **list of points** Each point, separated by a space, is either significant points (named points from the published ICAO list of fixes) or a LAT/LONG given in degrees or degrees and minutes. At present only whole degrees are used.

 Acceptable LAT/LONG syntaxes are:

xx/yy

xxmm/yy

xx/yymm

xxmm/yymm

Where xx is the north latitude, yy the west longitude, and mm the minutes part of the latitude or longitude.

11 <crlf>

12 EAST LVLS<sp>**List** list the allowed flight levels for eastbound flights. This list can **of allowed levels** contain NIL if there is no allowed level or a list of numbers (3

 decimal digits) for each allowed level separated by a space.

13 <crlf>

14 West LVLS<sp>**List** list the allowed flight levels for westbound flight. This list can

 **of allowed levels** 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> (optional field)

WEST<sp>**XXX** <sp> Note that the indentation does not indicate the presence of

 VIA<sp>**RP** space characters, it is a presentation mechanism to highlight

two variant syntaxes for this field.

 OR

EUR<sp>RTS<sp> Description of European links to the tracks, this description will

WEST<sp> NIL be given separately for Eastbound and/or Westbound flights.

**XXX** designating the Irish/UK route structure linked to the

NAT track.

**RP** designating the point recommended to be over flown by

westbound flights for joining the NAT track.

The text “VIA<sp>**RP**” is optional.

Or

There is no European link.

17 <crlf>

18 NAR<sp>**list**  (optional)

OR Description of North American links to the tracks list

NAR<sp>NIL list of North American airways recommended to be

 overflown by flights for joining or leaving the NAT track

 Or

 There are no recommended North American airways

19 -

20 <crlf><crlf>

And to terminate the NAT message is composed of a trailer

**Id Message Text (syntax) Description (semantics)**

21 <crlf>

22 REMARKS<crlf>**text** This field is optional and can only be present in the last part

 <crlf> of a multipart NAT message, or in the unique part in case of a

mono-part NAT message.

The remark text must contain the Track Message Identifier

(TMI).

It is recommended to consistently place the TMI in the first remark.

The syntax for the TMI is as follows:

Any text may precede the keywords that identify the TMI.

The TMI is recognised as the first occurrence of the string (without the quotes) “TMI<sp>IS<sp>**xxx”** is the TMI and “**a**” the optional track message revision letter.

To facilitate automated processing, this string shall be followed by a space character before any subsequent remark text is inserted in the track message.

The TMI shall be the Julian calendar day in the year – i.e. starting at one (001) on the first of January or each year, 002 for second of January etc.

23 END<sp>OF<sp>PART **a** and **b** textual numbers (ONE, TWO, THREE, FOUR) or one

<sp>**a**<sp>OF<sp>**b** decimal digit.

<sp>PART**S**) Both numbers must be the same as in field 6 above.

Terminal character **S** may be omitted if **b** is ONE.

* + - * 1. Example of westbound message set.

(NAT-1/3 TRACKS FLS 310/390 INCLUSIVE

JULY 01/1130Z TO JULY 01/1800Z

PART ON OF THREE PARTS-

A 57/10 59/20 61/30 62/40 62/50 61/60 RODBO

EAST LVLS NIL

WEST LVLS 320 340 360 380

EUR RTS WEST NIL

NAR N498C N4996C N484C-

B 56/10 58/20 60/30 61/40 60/50 59/60 LAKES

EAST LVLS NIL

WEST LVLS 310 330 350 370 390

EUR RTS WEST 2

NAR N434C N428C N424E N416C

C 55/10 57/20 59/30 60/40 59/50 PRAWN YDP

EAST LVLS NIL

WEST LVLS 310 32 330 340 350 360 370 380 390

EUR RTS WEST NIL

NAR N322B N326B N328C N336H N346A N348C N352C N356C N362B-

D MASIT 56/20 58/30 59/40 58/50 PORGY HO

EAST LVL NIL

WEST LVLS 310 320 330 340 350 360 370 380 390

EUR RTS WEST DEVOL

NAR N284B N292C N294C N298H N302C N304E N306C N308E N312A-

E 54/15 55/20 57/30 57/40 56/50 SCROD VALIE

EAST LVLS NIL

WEST LVLS 310 320 330 340 350 360 370 380 390

EUR RTS WEST BURAK

NAR N240C N248C N250E N252E N254A N256A N258A N260A-

END OF PART ONE OF THREE PARTS

(NAT-2/3 TRACKS FLS 310.390 INCLUSIVE

JULY 01/1130Z TO JULY 01/1800Z

PART TWO OF THREE PARTS

F 53/15 54/20 56/30 56/40 55/50 OYSTR STEAM

EAST LVLS NIL

WEST LVLS 310 320 330 340 350 360 370 380 390

EUR RTS WEST GUNSO

NAR NIL-

END OF PART TWO OF THREE PARTS)

(NAT-3/3 TRACKS FLS 310/390 INCLUSIVE

JULY 01/1130Z TO JULY 01/1800Z

PART THREE OF THREE PARTS-

H BANAL 43/20 44/30 44/40 43/50 JEBBY CARAC

EAST LVLS NIL

WEST LVLS 310 350 370

EUR RTS WEST DIRMA

NAR N36E N44B-

REMARKS

1. TMI IS 182 AND OPERATORS ARE REMINDED TO INCLUDE THE TMI NUMBER AS PART OF THE OCEANIC CLEARANCE READ BACK.

2. OPERATORS ATTENTION IS DRAWN TO CZUL NOTAM A2152/01

3. OPERATORS ATTENTION IS DRAWN TO UK NOTAMS A1098/01 AND G0120/01

4. MNPS AIRSPACE EXTENDS FROM FL285 TO FL420. OPERATORS ARE REMINDED THAT SPECIFIC MNPS APPROVAL IS REQUIRED TO FLY IN THIS AIRSPACE. IN ADDITION, RVSM APPROVAL IS REQUIRED TO FLY BETWEEN FL310 AND FL390 INCLUSIVE.

5. EIGHTY PERCENT OR GROSS NAVIGATION ERRORS RESULT FROM POOR COCKPIT PROCEDURES. ALWAYS CARRY OUT PROPER WAY POINT CHECKS.-

END OF PART THREE OR THREE PARTS)

* + - * 1. 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)

## Application management messages

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

ATS Field Description

3 Message type

*Example*

(LAM)

* + 1. LRM (LOGICAL REJECTION MESSAGE)
			1. Purpose.
				1. Sent in response to each AIDC message not eligible for a LAM to be sent. The message identifier and reference identifier are found in the message header, which is defined in Chapter 3, *Communications and Support Mechanism*. The LRM will identify the first field found that contains invalid information if this field information is available.
			2. Message Format.

ATS Field Description

3 Message type

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

* + - 1. Field 18 will only use the RMK/ sub-field. It will comprise an error code, supporting text and the ICAO field number in which the error occurred (where applicable).
			2. The following format is used in the RMK/ sub-field of the LRM to report errors:

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

* + - 1. The <error code> shall contain the appropriate error code number from Chapter 5, *Error Code*, Table 5-1. The error code is described using up to three numeric characters without leading zeros. When multiple errors are detected in an AIDC message, only a single LRM should be generated in response. This LRM would usually contain the error code of the first error detected.
			2. The <field number> will contain the field number corresponding to the error code extracted from Table 5-1, *Error Codes*. Where multiple field numbers are assigned to an error code, only the first field number containing the error will be sent. Where no field number is referenced in Table 5-1, *Error Codes*, and the field number sub-field will be empty. The field number can be described using up to six alphanumeric characters.

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

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

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

* + - 1. The following shows a number of LRM examples. Where more than one LRM format is shown, the format of the first one is the preferred option.

*Example*

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

**OR**

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

(See Note following paragraph 4.7.2.7)

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

**OR**

(LRM-RMK/17/16/)

(See Note following paragraph 4.7.2.8)

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

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

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

170501 YBBBZQZF 2.250425-4.130117050127-5.F284-

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

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

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

180538 YBBBZQZF 2.257939-4.130118053818-5.9C09-

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

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

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

200425 YMMMZQZF 2.431237-4.130118072515-5.87F7-

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

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

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

* + 1. ASM (APPLICATION STATUS MONITOR)
			1. Purpose.
				1. Sent to an adjacent ATSU to confirm that end-to-end messaging is available. It is transmitted when no application messages have been received within a specified time as defined in bi-lateral agreement. Typical values should be between 5 and 30 minutes.
			2. Message Format.

ATS Field Description

3 Message type

*Example*

(ASM)

* + 1. FAN (FANS APPLICATION MESSAGE)
			1. Purpose.
				1. Transmitted by one ATSU (generally the C-ATSU) to another ATSU (generally the D-ATSU) to provide the required information necessary to establish CPDLC and/or ADS-C connections with FANS equipped aircraft. Use of the FAN message significantly reduces the number of data link messages required to effect a data link transfer.
			2. Message Format.

ATS Field Description

3 Message type

7 Aircraft identification

13 Departure aerodrome

16 Destination aerodrome

Text Application data as described below

* + - 1. Receipt or transmission of a FAN message does not change the coordination state of the flight.
			2. Application data field.
				1. Application data field is a free text field used in the FAN message to permit the transfer of FANS logon information from one ATSU to another. This field contains a number of elements which are 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)
				2. The order of the elements within the FAN message is the order that they are listed below, with consecutive elements being separated by a single <space> character. Although some elements within the Application data field may be “optional”, they should be included if the corresponding data is available (i.e. if the C-ATSU transmitting the FAN message has received this information either from a logon or a FAN message). This is for the benefit of D- ATSUs that may use the information within these optional elements. If data is not available for an optional element, that element is not to be included in the FAN message.
				3. Additional information concerning the elements described below is contained in Chapter 7, *Implementation Guidance Material*.
			3. Standard message identifier (SMI)
				1. This mandatory element is preceded by the identifier ‘SMI’, and contains information relating to the address uplink messages are routed to in the avionics. The value of the SMI sent in the FAN message is the downlink SMI as it was received in either the most recently received logon or FAN message.
				2. Allowable values for the SMI are listed in ARINC 620. Examples of SMIs include “FML”, “FMR”, “FMD”, FM3” and “AFD”.

*Example*

SMI/FMD

* + - 1. Aircraft identification
				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

* + - 1. Aircraft registration
				1. This mandatory element is preceded by the identifier ‘REG’ and contains the registration details of the aircraft – including the hyphen if applicable – as it was received in either the most recently received logon or FAN message.

*Example*

REG/N12345

REG/9V-ABC

* + - 1. Aircraft Address (ICAO 24 bit code)
				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

* + - 1. Aircraft position information
				1. This optional element is preceded by the identifier ‘FPO’ and contains the position of the aircraft as determined by the ATSU at the time of transmission of the FAN message, if this information is available. The position of the aircraft is expressed as a latitude/longitude in either dd[NS]ddd[EW] or ddmm[NS]dddmm[EW] format.

*Example*

FPO/23S150E

FPO/0823N11025E

* + - 1. ATS Application and Version Number
				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.
				2. The value associated with FCO identifier consists of three letters to describe the application name immediately followed by (i.e. with no intervening spaces) two numeric 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

* + - * 1. The second example illustrates a FAN message with ADS-C application only. This may be either because the aircraft is not CPDLC equipped, or because the FAN is being used with an adjacent ATSU to enable monitoring using ADS-C by that ATSU when the aircraft is only entering the Area of Common Interest (ACI).

*Example*

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

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

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

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

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

* + - * 1. ATSUs should ensure that at least two of the ACID, REG, or CODE elements are used to ensure that the logon information contained in the FAN message is associated with the correct flight plan.

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

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

* + 1. FCN (FANS COMPLETION NOTIFICATION)
			1. Purpose.
				1. The FCN may be transmitted by the C- ATSU or D-ATSU to provide information concerning the CPDLC Connection status of the aircraft. It is transmitted by the C- ATSU when their CPDLC Connection with the aircraft is terminated, providing notification to the D- ATSU that they are the CPDLC Current Data Authority. It may also be transmitted by the D- ATSU to provide notification of the establishment of a CPDLC Connection or a failure of a CPDLC Connection request.
			2. Receipt or transmission of an FCN message does not change the coordination state of the flight.
			3. An FCN transmitted by the D-ATSU may also (optionally) include contact/monitor frequency information to be issued to the aircraft by the C-ATSU.
			4. Message Format.

ATS Field Description

3 Message type

7 Aircraft identification

13 Departure aerodrome

16 Destination aerodrome

18 Field 18 in the FCN message is used for the purpose of transmitting two sub-fields; the CPDLC connection identifier and the frequency identifier, both of which are described below

Text Communication Status as described below

* + - 1. Communication Status field.
				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.
			2. CPDLC Connection Status identifier (CPD)
				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 ‑. CPDLC Connection Status

|  |  |
| --- | --- |
| **CPDLC Connection Status** | **Meaning** |
| FCN sent by transferring ATSU | FCN sent by receiving ATSU |
| 0 |  | The CPDLC Connection with the aircraft has been terminated |
|  | 0 | No CPDLC Connection could be established with the aircraft |
|  | 1 | The CPDLC Connection Request failed due to the receiving ATSU not being the nominated CPDLC Next Data Authority |
|  | 2 | A CPDLC Connection has been established with the aircraft |

* + - 1. Frequency identifier (FREQ)
				1. This optional element is preceded by the identifier ‘FREQ’ and may be included in an FCN message transmitted by the D-ATSU to advise of any changes to a previously notified (or a default) frequency. The FREQ/ identifier provides advice to the C-ATSU of the voice frequency to be transmitted to the aircraft in the CPDLC Contact/Monitor instruction. If no frequency information is to be transmitted this element should not be included in the FCN message.
				2. When transmitted in the FCN message, the frequency variable does not contain units, spaces or leading zeroes. It may be up to 7 characters in length, containing integers or a decimal point selected from the frequency range below.

Table ‑. Frequency Identifier

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

*Example*

FCN transmitted by receiving ATSU:

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

 *The CPDLC Connection request for SIA221 failed*

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

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

 FCN transmitted by transferring ATSU:

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

 *The CPDLC Connection with ICE615 has been terminated*

## Surveillance data transfer service messages

* + 1. ADS (SURVEILLANCE ADS-C)
			1. Purpose.
				1. Used to transfer information contained in an ADS-C report from one ATSU to another.
			2. Message Format.

ATS Field Description

3 Message type

7 Aircraft identification

13 Departure aerodrome

16 Destination aerodrome

Text ADS-C Data

* + - 1. ADS-C data field.
				1. ADS-C data is a free text field used in the ADS message to permit the transfer of information contained in an ADS-C report from one ATSU to another. The data field consists of an identifier ’ADS’ followed by a delimiter “/” character, followed by a text string containing specific text extracted from the encoded ACARS ADS-C report received from the aircraft.
				2. The ADS-C data field may also be used to indicate that no further ADS messages will be sent

to the receiving ATSU for the flight. To indicate this state the ADS identifier is followed by a delimiter “/” character, followed by a “0” (zero). The trigger would be by bilateral agreement (e.g. an ADS-C report has been received that places the aircraft outside the ACI and the predicted route group indicates that the aircraft will not re-enter the ACI).

* + - * 1. The specific text to be included in the AIDC ADS message is described in Chapter 7 – *Implementation Guidance Material*.

*Example*

(ADS-ANZ90-RJAA-NZAA-ADS/.ZK-OKC030007FF946B6F6DC8FC044

B9D0DFC013B80DA88FC0A64F9E4438B4AC8FC000E34D0EDC0001014

0F3E86)

(ADS-ANZ90-RJAA-NZAA-ADS/0)

Table ‑. PAN AIDC Messages and their Field Composition

|  |  |  |  |  |  |
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| **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 |  |
| PAC | M - - | MOO |  |  |  | M - | MMMOO |  | M - - |  |  |  |  | OO | OOO | OO |  | OOO | O |  |
| CPL | M - - | MOO | MO | MMM | MM | M - | MMMOO | MMM | M - - | M |  |  |  |  |  |  |  |  |  |  |
| EST | M - - | MOO |  |  |  | M - | MMMOO |  | M - - |  |  |  |  |  |  |  |  |  |  |  |
| CDN | M - - | MOO |  |  |  | M - |  |  | M - - |  |  |  |  |  |  | OO | OOOOO | OOO | OO | O |
| ACP | M - - | MOO |  |  |  | M - |  |  | M - - |  |  |  |  |  |  |  |  |  |  |  |
| LAM | M - - |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| MAC | M - - | MOO |  |  |  | M - |  |  | M - - |  |  |  |  |  |  |  | O |  | O |  |
| REJ | M - - | MOO |  |  |  | M - |  |  | M - - |  |  |  |  |  |  |  |  |  |  |  |
| EMG | M - - | MOO |  |  |  |  |  |  |  | M |  |  |  |  |  |  |  |  |  |  |
| MIS | M - - | MOO |  |  |  |  |  |  |  | M |  |  |  |  |  |  |  |  |  |  |
| LRM | M - - | MOO |  |  |  |  |  |  |  | M |  |  |  |  |  |  |  |  |  |  |
| TRU | M - - | MOO |  |  |  | M - |  |  | M - - |  |  |  |  |  |  |  |  |  |  | M |
| TOC | M - - | MOO |  |  |  | M - |  |  | M - - |  |  |  |  |  |  |  |  |  |  |  |
| AOC | M - - | MOO |  |  |  | M - |  |  | M - - |  |  |  |  |  |  |  |  |  |  |  |
| TDM | M - - |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | M |
| NAT | M - - |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | M |
| ASM | M - - |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| FAN | M - - | MOO |  |  |  | M - |  |  | M - - |  |  |  |  |  |  |  |  |  |  | M |
| FCN | M - - | MOO |  |  |  | M - |  |  | M - - |  |  |  |  |  |  |  |  |  | M | O |
| ADS | M - - | MOO |  |  |  | M - |  |  | M - - |  |  |  |  |  |  |  |  |  |  | M |

# Error Codes

## Introduction

* 1. A set of error codes has been developed for those messages contained in the AIDC message set. A list of the codes, associated field number and error text is contained in the table below. This information is for the inclusion in any Logical Rejection Message transmitted in response to the reception of an AIDC message containing an error.
	2. Error codes for incorrect message sequences, such as attempting a change in coordination conditions (CDN) while a transfer of control is in progress (TOC) have not yet been developed.

Table 5‑. 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 CNA CNS EQUIPMENT DESIGNATOR |
| 16 | 10 | INVALID SSR EQUIPMENT DESIGNATOR |
| 17 | 13,16,17 | INVALID AERODROME DESIGNATOR |
| 18 | 13 | INVALID DEPARTURE AERODROME |
| 19 | 16 | INVALID DESTINATION AERODROME |
| 20 | 17 | INVALID ARRIVAL AERODROME |
| 21 | 13,16,17 | EXPECTED TIME DESIGNATOR NOT FOUND |
| **Error Code** | **Field Number** | **Error Text** |
| 22 | 13,16,17 | TIME DESIGNATOR PRESENT WHEN NOT EXPECTED |
| 23 | 13,14,16,17 | INVALID TIME DESIGNATOR |
| 24 | 13,14,16,17 | MISSING TIME DESIGNATOR |
| 25 | 14 | INVALID BOUNDARY POINT DESIGNATOR |
| 26 | 14,15 | INVALID EN ROUTE POINT |
| 27 | 14,15 | INVALID LAT/LON DESIGNATOR |
| 28 | 14,15 | INVALID NAVAID FIX |
| 29 | 14,15 | INVALID LEVEL DESIGNATOR |
| 30 | 14,15 | MISSING LEVEL DESIGNATOR |
| 31 | 14 | INVALID SUPPLEMENTARY CROSSING DATA |
| 32 | 14 | INVALID SUPPLEMENTARY CROSSING LEVEL |
| 33 | 14 | MISSING SUPPLEMENTARY CROSSING LEVEL |
| 34 | 14 | INVALID CROSSING CONDITION |
|  35 | 14 | MISSING CROSSING CONDITION |
| 36 | 15 | INVALID SPEED/LEVEL DESIGNATOR |
| 37 | 15 | MISSING SPEED/LEVEL DESIGNATOR |
| 38 | 15 | INVALID SPEED DESIGNATOR |
| 39 | 15 | MISSING SPEED DESIGNATOR |
| 40 | 15 | INVALID ROUTE ELEMENT DESIGNATOR |
| 41 | 15 | INVALID ATS ROUTE/SIGNIFICANT POINT DESIGNATOR |
| 42 | 15 | INVALID ATS ROUTE DESIGNATOR |
| 43 | 15 | INVALID SIGNIFICANT POINT DESIGNATOR |
| 44 | 15 | FLIGHT RULES INDICATOR DOES NOT FOLLOW SIGNIFICANT POINT |
| 45 | 15 | ADDITIONAL DATA FOLLOWS TRUNCATION INDICATOR |
| 46 | 15 | INCORRECT CRUISE CLIMB FORMAT |
| 47 | 15 | CONFLICTING DIRECTION |
| 48 | 18 | INVALID OTHER INFORMATION ELEMENT |
| 49 | 19 | INVALID SUPPLEMENTARY INFORMATION ELEMENT |
| **Error Code** | **Field Number** | **Error Text** |
| 50 | 22 | INVALID AMENDMENT FIELD DATA |
| 51 |  | MISSING FIELD nn (See Note 2)INVALID AMENDMENT FIELD DATA |
| 52 |  | MORE THAN ONE FIELD MISSING |
| 53 |  | MESSAGE LOGICALLY TOO LONG |
| 54 |  | SYNTAX ERROR IN FIELD nn (See Note 2) |
| 55 |  | INVALID MESSAGE LENGTH |
| 56 |  | USE APPROPRIATE ERROR |
| 57 |  | INVALID MESSAGE |
| 58 |  | MISSING PARENTHESIS |
| 59 |  | MESSAGE NOT APPLICABLE TO zzzz OAC (See Note 2) |
| 60 | 3 | INVALID MESSAGE MNEMONIC (i.e., 3 LETTER IDENTIFIER) |
| 61 | Header | INVALID CRC |
| 62-71 |  | RESERVED FOR FUTURE USE |
| 62 |  | UNDEFINED ERROR |
| 63 |  | MSG SEQUENCE ERROR: ABI IGNORED |
| 64 |  | MSG SEQUENCE ERROR: INITIALCOORDINATION NOT PERFORMED |
| 65 |  | MESSAGE SEQUENCE ERROR: EXPECTINGMSG xxx; RECEIVED MSGyyy (See Note 2) |
| 66 | 14 | INVALID BLOCK LEVEL |
| 67 | 14 | INVALID OFF-TRACK CLEARANCE TYPE |
| 68 | 14 | INVALID OFF-TRACK DIRECTION |
| 69 | 14  | INVALID OFF-TRACK DISTANCE |
| 70 | 14 | INVALID MACH NUMBER QUALIFIER |
| 71 | 14 | INVALID MACH NUMBER |
| 72 | ADF (See Note ~~1~~ 3) | INVALID IDENTIFIER |
| 73 | ADF (See Note ~~1~~ 3) | INVALID SMI |
| 74 | ADF (See Note ~~1~~ 3) | INVALID ACID IN FMH/IDENTIFIER |
| 75 | ADF (See Note ~~1~~ 3) | INVALID REGISTRATION IN REG/IDENTIFIER |
| 76 | ADF (See Note ~~1~~ 3) | INVALID AIRCRAFT ADDRESS IN CODE/IDENTIFIER |
| **Error Code** | **Field Number** | **Error Text** |
| 77 | ADF (See Note ~~1~~ 3) | INVALID LOCATION IN FPO/IDENTIFIER |
| 78 | ADF (See Note ~~1~~ 3) | INVALID DATA LINK APPLICATION FCO/IDENTIFIER |
| 79 | ADF (See Note ~~1~~ 3) | INVALID OR UNSUPPORTED CPDLC VERSION NUMBER |
| 80 | ADF (See Note ~~1~~ 3) | INVALID OR UNSUPPORTED ADS-C VERSION NUMBER |
| 81 | ADF (See Note ~~1~~ 3) | INVALID IDENTIFIER IN FAN MESSAGE |
| 82 | CSF (See Note 4)18 | INVALID CPDLC CONNECTION STATUS |
| 83 | CSF (See Note 4)18 | INVALID FREQUENCY IN FREQ/IDENTIFIER |
| 84-255 |  | RESERVED FOR FUTURE USE |
| 84 | ADF (See Note 5) | INVALID IDENTIFIER IN ADS MESSAGE |
| 85 | ADF (See Note 5) | INVALID DATA IN ADS MESSAGE**Note.** This error message refers to the encoded ADS-C data (e.g. if it contains non-hexadecimal characters), rather than whether the contents of the decoded ADS-C report itself are valid |
| 86 | TDF (See Note 6) | INVALID IDENTIFIER IN TRU MESSAGE |
| 87 | TDF (See Note 6) | INVALID HEADING IN HDG/IDENTIFIER |
| 88 | TDF (See Note 6) | INVALID POSITION IN DCT/IDENTIFIER |
| 89 | TDF (See Note 6) | INVALID OFF TRACK DEVIATION IN OTD/IDENTIFIER |
| 90 | TDF (See Note 6) | INVALID FLIGHT LEVEL IN CFL/IDENTIFIER |
| 91 | TDF (See Note 6) | INVALID SPEED IN SPD/IDENTIFIER |
| 92-256 |  | RESERVED FOR FUTURE USE |

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

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

**Note 3.** In the FAN message, the “ADF” field number refers to the Application data field.

**Note 4.** In the FCN message, the “CSF” field number refers to the Communication Status field.

**Note 5.** In the ADS message, the “ADF” field refers to the ADS-C data field.

**Note 6**. In the TRU message, the “TDF” field refers to the Track data field.

# ATM Application Naming Conventions

## Introduction

* 1. Eight character AFTN addresses will be used by the AIDC application to identify automated ATS end-systems. The first four characters identify the ATS unit location, while the last four characters identify an organization, end-system, or application process at the given location.
	2. The table below describes a proposed naming convention, developed by the ATN Panel for identifying ATM end-systems and applications. The last (eighth) character of the end-system’s or application’s AFTN address should be selected in accordance with Table 6-1.

Table 6‑1. Proposed ATM Application Naming Convention

|  |  |
| --- | --- |
| **8th character** | **ATM ground system application process** |
| **A** | Air space management |
| **B** | Unassigned |
| **C** | Unassigned |
| **D** | Dynamic track generation |
| **E** | Unassigned |
| **F** | Flight data processing (processor routes to appropriate control sector based on internal configuration information). |
| **G** | Reserved for State use |
| **H** | Reserved for State use |
| **I** | Reserved for State use |
| **J** | Reserved for State use |
| **K** | Reserved for State use |
| **L** | Reserved for State use |
| **M** | OPMET data bank |
| **N** | AIS data bank |
| **O** | Oceanic data processing |
| **P** | Unassigned |
| **Q** | Unassigned |
| **R** | Radar data processing (processor routes to appropriate control sector based on internal configuration information). |
| **S** | System management |
| **T** | Air traffic flow management |
| **8th character** | **ATM ground system application process** |
| **U** | Unassigned |
| **V** | Unassigned |
| **W** | Unassigned |
| **X** | Default value |
| **Y** | Service function |
| **Z** | Unassigned |

# Implementation Guidance Material

## Introduction

* 1. The AIDC Message set described in ~~Appendix A of the ASIA/PAC Regional Interface Control Document (ICD)~~ Chapter 4, *ATS Coordination 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).

* 1. . This chapter contains Implementation Guidance Material (IGM) of an explanatory nature. Information on how the message set as a whole is intended to be used is provided, with particular emphasis on the first three functions. The objective is to provide useful information and guidance to software engineers responsible for implementing the AIDC Message set within an automated ATS system.

## Preliminaries

* 1. Assumptions.
		1. The following assumptions have been made:
			1. The material described below applies only to data transfers between two automated ATS systems.;
			2. It must be possible to revert to manual intervention of the Notification, Coordination, and Transfer of Control processes at any time;
			3. Exceptional conditions, such as loss of communications between two ATSUs are not addressed and are subject to local procedures and,
			4. An ATSU’s Area of Common Interest (ACI) is defined as the airspace for which the ATSU is responsible, i.e., an FIR, and surrounding border regions just outside the FIR. These surrounding border regions are usually determined by the required separation minima.
	2. AFTN message header.
		1. Every message transmitted shall contain an AFTN header, as specified in Chapter 3, *Communications and Support Mechanisms*. This header shall contain the optional data fields described in Chapter 3.
		2. Message identifier numbers (optional data field 2) shall be sequential. Receipt of an out of sequence message shall result in a warning being issued.
		3. A check for duplicate message identifier numbers shall be made. In general, since 1,000,000 numbers are available, no duplicates should be present.
		4. Message identifier numbers shall begin at 0, proceed through 999,999, and then rollover to 0. The same sequence shall be repeated when necessary.
		5. Each unique ATSU-to-ATSU interface shall select message identifier numbers from its own pool of numbers. Each pool shall encompass the entire possible range, i.e., include all numbers from 0 to 999,999.
	3. Response messages.
		1. Application response.
			1. Every AIDC message received by an ATSU, except a LAM or LRM, shall be responded to with a LAM or LRM. While no LAM is generated for a valid LRM, an ATSU may choose to respond to an invalid LRM with an LRM. Such a response is termed an Application Response, and is generated automatically by the automation system. A LAM shall be transmitted when the receiving automation system found the received message to be syntactically correct and the message data was accepted for further processing or presentation. Otherwise, an LRM message shall be transmitted. Every message possessing an associated message identification number (other than an LAM or LRM) must be responded to by the addressee with an (1) LAM if the message was processed and no errors were found by the receiving Air Traffic Control (ATC) application; otherwise an (2) LRM if the message was not accepted due to errors.
			2. The time out value Talarmassociated with an application response should typically be within 180 seconds and may be specified by bi-lateral agreement. The time out value corresponds to the nominal value associated with the accountability timer described in Chapter 3, *Communications and Support Mechanisms*, para 3.22.2.
			3. Failure to receive an expected application response (i.e. a LAM or LRM) within Tr seconds (≤Talarm) can optionally result in a re-transmission (up to a maximum number Nr) of the original message, using the same information contained in optional data fields 2 and 3 found in the original message header. The timeout timer Tr shall be reset upon re-transmission. Failure to receive an application response within Talarm seconds from the original transmission of the message should result in a warning being issued.
			4. The transmission of a LAM or LRM shall be triggered by the ATC application process, not the communications process. This is because an application response LAM and LRM indicates that the received message was examined by the ATC application process(s), not just the communications functions. Note the distinction between an ATC application process, which implements a critical ATC function such as Coordination or Transfer of Control and a communications process which is responsible for the reliable delivery of data, but not data interpretation..
			5. Receipt of an LRM shall cause the D-ATSU to take a corrective action before re-transmitting the message. This action may be automatic, or manual. Receipt of an LRM terminates the transaction. .
		2. Operational response.
			1. Several AIDC messages require a response, in addition to the normal application response by another AIDC message. Such a response is termed an Operational Response. Table 7-1 below indicates the required response to a received message. AIDC messages not listed in Table 7-1 have no operational response.

Table 7‑. Required Operational Response

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

* + - 1. An REJ is not available in an Initial Coordination Dialogue initiated by a CPL, EST or PAC. An REJ is only available in a CDN dialogue.
			2. Failure to receive a response within an adapted operational response timeout period Top shall result in a warning being issued.
			3. The value of Top is dependent on whether manual processing is required to generate the operational response. In general, Top should be less than 600 seconds when a manual action is required to trigger the operational response.
			4. An operational response shall employ the AFTN header optional data field 3 to reference the original message being responded to. A coordination dialogue which is initiated by one message and contains a sequence of message exchanges until terminated by an ACP or REJ shall always reference the original message which triggered the dialogue. For example, C- ATSU may initiate a coordination dialogue by transmitting a CPL message to an D-ATSU. A sequence of CDN messages may be terminated by an ACP message. The CDN and ACP messages would all reference the original CPL message. After completion of the initial coordination dialogue in the preceding example one ATSU may initiate another coordination dialogue by transmitting a CDN message. A sequence of CDN messages may ensue terminated by an ACP message. Messages in this new coordination dialogue would reference the first CDN message in the dialogue. Santa Maria and New-York implementation supports this implementation until the dialog is closed.
	1. Application management.
		1. Application acceptance (LAM), application rejection due to errors (LRM), status monitoring (ASM), and FANS data link connection transfer (FAN and FCN) capabilities are supported.
		2. The ASM message is used to confirm that the AIDC application is on-line. This message is sent by ATSU A to (adjacent) ATSU B if, after a mutually agreed time, no communication has been received from ATSU B. ATSU B responds, if the ATC application is active and functioning, by sending a LAM to ATSU A. If ATSU A does not receive a response LAM from ATSU B within a specified time, local contingency procedures should be executed. This message would normally be sent automatically, but may be sent manually for testing purposes. Non receipt of a response to an ASM may indicate either a communication link failure or an ATC system failure. .
		3. The FAN message may be used to transfer a data link aircraft’s logon information from one ATSU to another. Implementation of this message obviates the need to utilize the five step “Address Forwarding” process (initiated by the FN\_CAD) that was developed for FANS-1/A. The message contains all the information that is required to establish ADS-C and/or CPDLC connections with the aircraft. In the event that only an ADS-C connection will be required, the C-ATSU should include ADS-C information only. If a FAN message is transmitted containing ADS-C information only, there should be no expectation of receiving an FCN (see below) response. If a FAN message is received containing ADS-C application information only, there should be no attempt to establish a CPDLC connection.
		4. Normally, one FAN message would be sent for each data link transfer per flight. However, when an FCN is received with a communication status field value of (1) indicating the D-ATSU is not the Next Data Authority the C-ATSU should send another NDA message to the aircraft and another FAN message to the D-ATSU to indicate that the NDA has been sent (refer to Figure 7-4). While the second FAN may not be required for address forwarding purposes it does provide the D-ATSU with a positive indication that another NDA has been sent to the aircraft.
		5. 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. Similarly to Address Forwarding, the FAN message should be sent at a time parameter prior to the boundary with the D-ATSU. This parameter should be in accordance with guidance outlined in the ICAO Global Operational Data Link Document (GOLD). Functionality for the transmission of a FAN message manually by ATC should also be available.
		7. 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. ATS Item 7a) at the beginning of the FAN message is the identification of the aircraft from the ATS flight plan.

* + - 1. When extracting the identity of the aircraft from the logon, the information required is the aircraft identification within the CRC protected portion of the logon – not the flight identifier (FI) that is contained in Line 4 of the ACARS logon message. In the example below, the aircraft identification is **QFA924** rather than the QF0924 contained in Line 4 of the ACARS message.

QU BNECAYA

.QXSXMXS 010019

AFD

FI QF0924/AN VH-EBA

DT QXT POR1 010019 J59A

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

* + 1. 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.
		2. A hyphen within the registration that was contained in either the logon or any previously received FAN message must also be included in the REG element of any transmitted FAN message. Without this hyphen, data link messages transmitted by the ATSU may not be delivered to the aircraft.

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

* + - 1. Any “padding” in the registration contained in the logon (e.g. preceding periods <.>s) must not be included in the FAN message. In the sample ACARS message above, the registration to be included in the FAN message would be “VH-EBA”, not “.VH-EBA”.
		1. Some ATSUs may utilise the aircraft position which is an optional field that may be contained in the logon. If the aircraft position information element is to be included in any transmitted FAN message, there is little purpose in simply relaying the aircraft position from the original logon – the calculated position of the aircraft should be used instead.
		2. The FCN message, where used, provides advice to the transferring ATSU that the receiving ATSU has established an (inactive) CPDLC connection with an aircraft. The transmission of an FCN message is triggered by an event such as the termination of a CPDLC Connection by the transferring ATSU, or the establishment of (or failure to establish) a CPDLC Connection by the receiving ATSU. FCN messages should only be transmitted when a CPDLC transfer is being effected – i.e. not for transfers involving aircraft that are only ADS-C equipped.
		3. Multiple FCN messages.
			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 the receiving unit not being the nominated next data authority – see Table 7-2 below).

Table ‑. FCN Transmission

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

* + - 1. Procedures following a change to CPDLC Connectivity following the transmission of an FCN message should be described in local procedures (e.g. voice coordination), rather than by transmission of another FCN message.
		1. Procedures for the notification of changes to the voice frequency after the transmission of an FCN message should be described in local procedures rather than via the transmission of another FCN message.
		2. Sample flight threads involving FAN and FCN messages
			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 ‑. Routine Data Link Transfer Using FAN and FCN Messaging

![C__FIG7-1~1[1]]()

* + - 1. Figure 7-1 shows a routine CPDLC transfer from one ATSU to the next. The first step in the transfer process is the uplinking of a CPDLC Next Data Authority message to the aircraft advising the avionics of the next centre that will be communicating with the aircraft via CPDLC. A FAN message is then sent to the next ATSU to provide them with the aircraft’s logon information. The receiving ATSU then successfully establishes a CPDLC connection with the aircraft and transmits a ‘successful’ FCN (CPD = 2) back to the transferring ATSU. On termination of the CPDLC connection, the transferring ATSU transmits an FCN (CPD = 0) to the receiving ATSU.

Figure 7‑. CPDLC Transfer Using FAN and FCN Messaging – Initial Connection Request Failed

**![C__FIG7-2~1[1]]()**

* + - 1. Figure 7-2 shows a CPDLC transfer where there is no response by the avionics to the initial Connection Request uplinked by the receiving ATSU. A subsequent Connection Request is uplinked to the aircraft which is successful. Because the CPDLC connection is finally established prior to the ‘time out’ VSP before the FIR boundary, a successful FCN (CPD=2) is transmitted to the transferring ATSU. On termination of the CPDLC connection, the transferring ATSU transmits an FCN (CPD=0) to the receiving ATSU.

Figure 7‑. CPDLC Transfer Using FAN and FCN Messaging – Unable to Establish CPDLC Connection

**![C__FIG7-3~1[1]]()**

* + - 1. Figure 7-3 shows an attempted CPDLC transfer where there is no response by the avionics to multiple CPDLC connection requests uplinked by the receiving ATSU before the ‘time out’ VSP prior to the FIR boundary. An unsuccessful FCN (CPD=0) is transmitted to the transferring ATSU. Letters of Agreement should describe the procedures to be followed in the event that the receiving ATSU establishes a CPDLC connection after this FCN has been transmitted. Even though the receiving ATSU has advised of their inability to establish a CPDLC connection, the transferring ATSU still transmits an FCN (CPD=0) when their CPDLC connection with the aircraft is terminated.

Figure 7‑. CPDLC Transfer Using FAN and FCN Messaging – Initial NDA not Delivered

![C__FIG7-4~1[1]]()

* + - 1. Figure 7-4 shows a CPDLC transfer in which the original Next Data Authority message uplinked by the transferring ATSU is not delivered to the aircraft. An FCN (CPD=1) is transmitted by the receiving ATSU advising of the failure of their CPDLC Connection request. Another Next Data Authority message is uplinked to the aircraft. The transferring ATSU may send another FAN message after which the receiving ATSU successfully establishes a CPDLC connection. Because this occurs before the time out VSP prior to the FIR boundary, a successful FCN (CPD=2) is transmitted back to the transferring ATSU. On termination of the CPDLC connection, the transferring ATSU transmits an FCN (CPD=0) to the receiving ATSU.

## Phases of flight

* 1. From an ATSU’s perspective, a flight is considered to progress through several phases. The IGM is principally concerned with three phases: Notification, Coordination, and Transfer of Control.
	2. Notification phase.
		1. An ATSU receives information during the Notification phase on a flight which will at enter its ACI.
		2. Notification dialogue.
			1. ABI messages shall be used to transfer notification information. The sending ATSU transmits an ABI to the downstream D-ATSUs (including the next D-ATSU) with which it must coordinate the flight. The ATSU is responsible for determining which D-ATSUs must be notified.
		3. Re-Route Notification.
			1. When an aircraft has been re-routed, the information on the revised route will be gradually passed to all affected D-ATSUs as ABIs are passed from one ATSU to another. Re-route dissemination shall be performed as a minimum capability on a stepwise (i.e. from one D-ATSU to the next D-ATSU) basis, as appropriate. An ATSU receiving an ABI is responsible for passing any route changes to any other affected D-ATSUs at the appropriate time.
		4. Route to Destination.
			1. The above procedure requires the C-ATSU to acquire the complete route to destination. Initially, this information is found in the route field of the Filed Flight Plan (FPL). As re-routes occur, the filed route must be updated by the C-ATSU, and transmitted to D-ATSUs. In cases where this is not possible, the route field shall be terminated after the last known significant point with the ICAO truncation indicator, which is the letter “T”..
		5. Re-route to new destination.
			1. The procedures described below apply when the notification and coordination of amended destinations has been included in bilateral agreements.
			2. If an amendment to the destination aerodrome occurs **prior to** the transmission of the first ABI to an adjacent ATSU:

Field 16 shall contain the original destination of the aircraft; and,

The Amended destination field shall contain the new destination of the aircraft.

* + - 1. Subsequent AIDC messages shall contain the new destination in Field 16, without reference to an amended destination.
			2. If an amendment to the destination aerodrome occurs **after** the transmission of the first ABI to an adjacent ATSU, but before coordination has occurred, a new ABI shall be transmitted.

Field 16 shall contain the original destination of the aircraft; and,

Amended destination field shall contain the new destination of the aircraft.

* + - 1. Subsequent AIDC messages shall contain the new destination in Field 16, without reference to an amended destination.
			2. The format of the Amended destination field shall be one of the options described below:

ICAO four-letter location indicator; or

Name of the destination aerodrome, for aerodromes listed in Aeronautical Information Publications; or

Latitude/Longitude in the format dd[NS]ddd[EW] or ddmm[NS]dddmm[EW]; or

Bearing and distance from a significant point, using the following format:

 The identification of the significant point, followed by

The bearing from the significantly point in the form of 3 figures giving degrees magnetic, followed by

The distance from the significant point in the form of 3 figures expressing nautical miles.

* + 1. Notification Cancellation.
			1. A notification can be cancelled using a MAC message. Receipt of a MAC by an ATSU means that any notification data previously received for the flight is no longer relevant. Filed flight plan information (and any modifications) shall continue to be held, in accordance with local ATSU procedures.
	1. Coordination phase.
		1. Coordination between adjacent ATSUs shall occur when the flight will enter an ACI of D-ATSU. An initial coordination dialogue can be automatically initiated at a time or distance from the ACI boundary,, or it can be manually initiated as documented within a bi-lateral agreement. There are several types of coordination dialogues which occur, depending on where the aircraft is and what previous dialogues have occurred.
		2. Initial Coordination Dialogue.
			1. This coordination dialogue (or Abbreviated Initial Coordination dialogue) shall be completed before later coordination dialogues are initiated. The C-ATSU transmits a CPL to the R-ATSU. The R-ATSU then responds with either an ACP, which signifies acceptance of the coordination conditions contained within the CPL, or a CDN which proposes a modification to the conditions contained in the CPL. If a CDN is the R-ATSU’s response to the CPL, a sequence of CDNs may be exchanged between the two ATSUs. This dialogue is eventually terminated by the ATSU which last received a CDN transmitting an ACP to the other ATSU. Transmission of an ACP indicates that coordination conditions are mutually acceptable and an initial coordination has been achieved.
		3. Abbreviated Initial Coordination Dialogue.
			1. An Abbreviated Initial Coordination dialogue may be used in place of an Initial Coordination Dialogue when it is known *via bi-lateral agreements* (that a flight’s coordination data is mutually acceptable to both the C-ATSU and R-ATSU, accurate route information is available at the R-ATSU (e.g., from either an ABI or FPL message), and both ATSUs have agreed to permit the use of this dialogue. The C-ATSU transmits an EST or PAC to the R-ATSU. The R-ATSU then responds with an ACP, which signifies acceptance of the coordination conditions (i.e., boundary crossing data) contained within the EST or PAC. Either this dialogue or a full (i.e., CPL-based) Initial Coordination dialogue shall be successfully completed before any later coordination dialogues are initiated. Note that negotiation via CDNs is not permitted within this dialogue.
			2. PAC is only used when coordination is required before departure. This normally only occurs when the FIR boundary is close to the departure airport. PAC signals to the R-ATSU that the departure is imminent as well as initiating coordination.
		4. Re-Negotiation Dialogue.
			1. This is an optional dialogue used to propose new coordination conditions after the initial dialogue has been completed. Either ATSU may initiate this dialogue by transmitting a CDN (in contrast to a CPL in the Initial Coordination Dialogue) to the other ATSU. The dialogue then proceeds with an exchange of additional CDNs as necessary. Either ATSU may terminate the dialogue in one of two ways: (1) with an ACP indicating that the coordination proposal contained in the latest CDN is acceptable; or (2) with an REJ indicating that the previously agreed upon coordination conditions remain in effect.
		5. Active CDN.
			1. For a given flight, only one CDN may be active between any pair of ATSUs. Note, however, that coordination between more than two ATSUs (for the same flight) may have a total number of active CDNs greater than one, though each pair of ATSUs is still restricted to a maximum of one active CDN per flight. In the exceptional (rare) case where a C-ATSU and D-ATSU both simultaneously transmit CDNs, the C-ATSU shall transmit a REJ to the D-ATSU cancelling the D-ATSU’s CDN.
		6. CDNs Are Proposals.
			1. Note that CDNs are only proposals; no changes are made in a flight’s profile until an ACP is sent and acknowledged.
		7. Use of CDN for alternative destinations
			1. To ensure interoperability between ATSUs when using a CDN to propose a diversion to an alternative destination, the following procedures shall be used:
			2. The mandatory Field 16 shall contain the original (i.e., the “current”) destination aerodrome. The Amended Destination text field shall contain the amended destination.
			3. The format of the Amended destination field shall 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.

* + - 1. The mandatory Field 16 contained in the operational response (ACP, REJ, CDN) to a CDN that proposes an amended destination shall contain the original (i.e. the “current”) destination aerodrome.
				1. Due to the complexities involved with maintaining multiple profiles for “current destination” vs. “amended destination” ATSUs should consider prohibiting (via bilateral agreement) an operational response of CDN in any coordination renegotiation dialogues that contain an amended destination.
			2. Provided that the proposed amendment is agreed to, all subsequent AIDC messages concerning this aircraft shall contain the new destination in the mandatory Field 16.
		1. Cleared Flight Profile Update.
			1. The cleared flight profile (which is used for control purposes) shall only be updated after successful completion of a coordination dialogue, i.e., an ACP has been sent and acknowledged. This will require temporarily storing a proposed flight profile undergoing coordination separate from the cleared flight profile. The cleared profile shall then be updated using the newly coordinated profile upon successful completion of the coordination dialogue.
		2. Automatic update of coordination conditions.
			1. When included in bilateral agreements between ATSUs, changes to previously agreed coordination conditions may be coordinated by way of a TRU message. The intent of this message is to allow amendments to certain elements of an aircraft’s clearance to be coordinated to an adjacent ATSU. In contrast to the CDN, there is no operational response to a TRU message – this message is used when there is agreement to what amendments can be made to an aircraft’s clearance by the controlling ATSU after initial coordination has occurred without prior coordination.
			2. Whilst a number of the elements that may be coordinated by TRU message may be more suited to an environment associated with an ATS Surveillance system (e.g. Heading, Direct to, etc.), other elements may be applicable in *any* ATS environment (e.g. Cleared Flight Level, Off track deviation, Speed, etc).
			3. The TRU message makes use of the Track data field to provide updated clearance information to an adjacent ATSU. Track data may be used to update assigned heading, assigned level, off track clearance, assigned speed, or ‘direct to’ information.
			4. When using the DCT/[position] element in the TRU message, [position] would normally be located on the flight planned route of the aircraft. Local procedures should specify the actions to be taken in the event that [position] is not on the flight planned route.
			5. For the purpose of the TRU message, the format of [position] is one of the following:

From 2 to 5 characters being coded designator assigned to an en-route point or aerodrome; or

ddmm[NS]dddmm[EW]; or

dd[NS]ddd[EW]; or

2 or 3 characters being the coded identification of a navigation aid followed by 3 decimal numerics giving the bearing from the point in degrees magnetic followed by 3 decimal numerics giving the distance from the point in nautical mile.

* + 1. Coordination Cancellation.
			1. Coordination can be cancelled using a MAC message. Receipt of a MAC by an ATSU means that any coordination data previously received for that flight is no longer relevant. Filed flight plan information (and any modification) shall continue to be held in accordance with local ATSU procedures.
		2. Coordination and the ACI.
			1. ATSU A may need to coordinate with or provide information to ATSU B on all aircraft that enter ACI B, even if they do not enter FIR B. Consider the case of aircraft A in FIR A and aircraft B in FIR B, both flying near the FIR A – FIR B boundary, but never penetrating the other FIR’s airspace. The maintenance of adequate separation between these two aircraft may require coordination between or the provision of information to adjoining ATSUs.
	1. Transfer of control phase.
		1. Transfer Dialogue.
			1. This phase occurs when the C-ATSU is ready to relinquish control of the flight to the R-ATSU normally just before the FIR boundary crossing. The C-ATSU transmits a TOC message to the R-ATSU which responds with an AOC message. The R-ATSU then becomes the C-ATSU once an application response for the AOC has been received.
		2. Transfer of Control and the ACI.
			1. Note that the Transfer of Control process will not occur for all flights. Some flights fly near an FIR boundary, and may require coordination or the provision of other information, but do not actually enter the FIR

## Flight state transitions

* 1. Notifying states.
		1. Consider an aircraft that is currently within an FIR – FIR A – controlled by ATSU A (i.e. the C-ATSU) progressing towards the next FIR, FIR B (i.e. the R-ATSU). The aircraft is several hours from the boundary between the two FIRs. The flight is initially in a Pre-Notifying state from ATSU B’s perspective. ATSU B usually will have previously received a Filed Flight Plan (an FPL message) possibly with later amendments (as contained in CHG messages). ATSU A will employ a Notification dialogue to transfer information to ATSU B. (This transfer occurs at either a system parameter time (e.g. 60 minutes), or distance prior to the flight crossing the FIR A – FIR B boundary.) This places the flight in a Notifying state from ATSU B’s perspective. Additional Notification dialogues may be invoked by ATSU A as needed to inform ATSU B of flight changes. If the aircraft for some reason, such as a change in route, is no longer expected to penetrate ACI B, ATSU A sends a MAC message to ATSU B causing the flight to be placed back in Pre-Notifying state from ATSU B’s perspective.
	2. Initial coordination states.
		1. An Initial Coordination Dialogue is employed to effect the initial coordination. ATSU A transmits a CPL to ATSU B when the aircraft is at a mutually agreed upon predetermined time (e.g. thirty minutes) or distance (e.g., 60nm) from the FIR A – FIR B boundary. The flight is now in Negotiating state from both ATSU A’s and ATSU B’s perspectives. ATSU B can accept the conditions specified in the CPL “as is” by transmitting an ACP message to ATSU A, or it can propose modifications using the CDN message. Negotiations between the two ATSUs are carried out using the CDN until a mutually acceptable flight profile is achieved. This acceptance is signaled by one ATSU sending an ACP, as before, to the other ATSU. This establishes the initial coordination conditions. From the perspective of both ATSUs the flight is now in a Coordinated state.
		2. For an Abbreviated Initial Coordination, ATSU A transmits an EST to ATSU B when the aircraft is at a mutually agreed upon predetermined time (e.g. thirty minutes) or distance from FIR A – FIR B boundary. The flight is now in a Coordinating state. ATSU B responds with an ACP which places the flight in a coordinated state. This sequence of messages corresponds to an Abbreviated Initial Coordination Dialogue.
	3. Re-negotiation states.
		1. On occasions it may be necessary to open a coordination negotiation dialogue after initial coordination has been completed. A coordination negotiation dialogue is used to effect profile or other changes to flight plan information. The dialogue is opened when one ATSU (either A or B) transmits a CDN to the other ATSU causing the flight to be in a Re-Negotiating state. A CDN can be replied to with a CDN which proposes another alternative.. The dialogue is closed when an ACP or REJ is received. An ACP closes the dialogue with a new mutually agreed upon flight profile. An REJ however, immediately terminates the dialogue with the previously accepted coordination conditions remaining in effect. Any proposed changes are null and void. Transmission of an ACP or REJ places the flight back into the coordinated state.
		2. For a given flight, only one CDN may be active between any pair of ATSUs. Note, however, that coordination between more than two ATSUs (for the same flight) may have a total number of active CDNs greater than one, though each pair of ATSUs is still restricted to a maximum of one active CDN.
		3. .
	4. Transfer states.
		1. Transfer of control is supported by the TOC and AOC messages. ATSU A sends a TOC to ATSU B when the aircraft is about to cross the boundary. Alternatively, ATSU A can send a TOC when it is ready to relinquish control even if the aircraft will remain in FIR A airspace several minutes before entering FIR B. The flight is now in a Transferring state from both ATSU A’s and ATSU B’s perspectives. ATSU B responds by transmitting an AOC to ATSU A signaling acceptance of control responsibility. The flight is now in a Transferred state from ATSU A’s perspective.
		2. The aircraft has now entered FIR B, and is under the control of ATS Unit B, progressing towards the next FIR, FIR C. The same process described above is repeated between ATS Units B and C.
		3. No changes to the flight profile may be made while in the ACI without mutual agreement between ATS Units A and B. If a flight has entered FIR B, and either ATS Unit A or B desires a change in the coordination conditions, negotiation must occur using CDNs. This negotiation is terminated with either an ACP or REJ.
	5. Backward Re-Negotiating state.
		1. A flight’s profile may occasionally require changes after Transfer of Control has been completed, but the aircraft is still within ATSU A’s ACI. A Re-Negotiating dialogue is employed to effect profile changes after transfer has been completed. This places the flight in a Backward Re-Negotiating State from both ATSU’s perspectives. Completion of this dialogue returns the aircraft to the Transferred state.
	6. Flight state
		1. Several flight states are identified in the above description. These states are listed in Table 7-3.

Table ‑. Flight States

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

* + 1. . A description of the allowable flight state transitions along with the message event that triggers the transitions is given in Table 7-4.

Table ‑. Flight State Transitions

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

A flight state transition diagram is shown in Figure 7-5. This diagram depicts graphically how the flight transitions from one state to the next. It can be seen that the AIDC messages act as triggers forcing the necessary state transitions

Figure 7‑. Flight State Transition Diagram

 TOC

Transferred

Backward-

Re-Negotiating

AOC

Transferring

Coordinated

Re-Negotiating

CDN

CDN

MAC

Notifying

MAC

ACP

Negotiating

ABI

CDN

REJ

ACP

CDN

CDN

ACP

REJ

EST

PAC

Coordinating

CPL

ACP

Pre-Notifying

ABI

TRU

LEGEND

MSG Message transmitted by the controlling ATSU

MSG Message transmitted by a downstream ATSU

MSG Message transmitted by either a controlling or a downstream ATSU

Table ‑. Flight State Transitions

|  |  |  |
| --- | --- | --- |
| **State Transition** | **Message Trigger** | **Description** |
| Pre-Notifying/Notifying | ABI | An initial ABI begins the Notification phase.An ABI updates the information a downstream ATS Unit maintains on a flight that is expected to enter its ACI at some future time. This data can be sent hours in advance of the actual entry. |
| Notifying/Notifying | ABI | An ABI updates the information a downstream ATSU maintains on a flight that is expected to enter its ACI at some future time. This data can be sent hours in advance of the actual entry. |
| Notifying/Pre-Notifying | MAC | A flight that was expected to enter a downstream ATSU’s ACI will no longer do so. |
| Notifying/Negotiating | CPL | A CPL is used to initiate the coordination process for an aircraft that will enter the downstream ATSU’s ACI. A CPL contains the current clearance to destination landfall. |
| Notifying/Coordinating | EST | An EST is used to initiate an Abbreviated Coordination process for an aircraft that will enter the downstream ATSU’s ACI. |
| Notifying/Coordinating | PAC | A PAC is used to initiate an Abbreviated Coordination process for an aircraft not yet airborne that will enter the downstream ATSU’s ACI. |
| NotifyingNegotiating/Negotiating | CDN | If the downstream ATSU does not likecannot accept the current clearance (and boundary crossing conditions), a Negotiation process is carried out using CDNs. |
| Negotiating/Coordinated | ACP | The negotiation process is terminated when one ATSU signals its acceptance of the coordination conditions using an ACP. |
| NegotiatingCoordinating/Coordinated | ACP | The Abbreviated Coordination dialogue is terminated by the receiving ATSU transmitting an ACP. |
| Coordinated/ Re-Negotiating | CDN | The coordination dialogue can be re-opened at any time after the initial coordination and before the initiation of the transfer of control procedure. |
| Re-Negotiating/Re-Negotiating | CDN | Either ATSU may attempt to change the previously agreed upon coordination conditions any time after the initial coordination dialogue has been completed. |
| Re-Negotiating/Coordinated | ACPREJ | An ACP terminates a re-negotiation dialogue with a new mutually agreed upon profile in effect. An REJ immediately terminates the dialogue with the coordination conditions remaining as previously agreed (which is usually, but not necessarily the initial coordination conditions). |
| **State Transition** | **Message Trigger** | **Description** |
| Coordinated/Coordinated | TRU | A TRU may be sent by the controlling ATSU after the initial coordination dialogue has been completed to update previously agreed coordination conditions. |
| Coordinated/Transferring | TOC | A TOC is sent after coordination occurs bur but (usually just) before the boundary is crossed to the accepting ATSU. The TOC informs the accepting ATSU that it now has control authority for the aircraft |
| Coordinated/Pre-Notifying | MAC | A flight that was expected to enter a downstream ATSU’s ACI will no longer do so. |
| Transferring/Transferred | AOC  | The formerly downstream ATSU is now the controlling ATSU. |
| Transferred/ Backward-Re-NegotiatingTransferred/Backward-Coordinating | CDN | An attempt is made (by either the previous or new controlling ATSU) to change the coordination conditions while the aircraft is near the common boundary |
| Backward-Re-Negotiating/Backward-Re-NegotiatingBackward-Coordinating/Backward-CoordinationCoordinating | CDN | Either ATSU may propose changes to attempt to change the previously agreed upon coordination conditions any time after transfer of control has been completed, but while the aircraft remains in the common boundary region. |
| Backward-Re-Negotiating/TransferredBackward-Coordinating/Transferred | ACPREJ | Similar to a Re-Negotiation/Coordinated state transmissiontransition. An ACP terminates a backward coordination dialogue with a new mutually agreed upon profile in effect. An REJ immediately terminates the dialogue with the coordination conditions remaining as previously agreed (which is usually, but not necessarily the initial coordination conditions). |

## Message sequencing

* 1. . In this section, a table of two-message sequences is constructed as shown in Table 7-5. The Table identifies the allowable messages (the next message column) that may correctly follow or be received after the message in the first column. Application Management Messages LAM and LRM are not shown but must be sent in response to any received Notification, Coordination or Transfer of Control.

Table 7‑. Message Sequences

|  |  |  |
| --- | --- | --- |
| **Received Message** | **Next Valid Message** |  |
|  |  |  **Notification and Negotiation Sequences** |
| ABI | ABI |  |
|  | MAC |  |
|  | CPL |  |
|  | EST |  |
|  |  |  Negotiation and **Coordination Sequences** |
| CPL | ACP |  |
| CDN |  |
| EST | ACP |  |
| PAC | ACP |  |
| CDN | ACP |  |
|  | CDN |  |
|  | REJOnly permissible if the flight has previously been in a coordinated state  |  |
| TRU | CDN |  |
|  | TOC |  |
|  | TRU |  |
|  | MAC |  |
| ACP | CDN |  |
| TRU |  |
|  | TOC |  |
|  | MAC |  |
| **Received Message** | **Next Valid Message** |  |
| REJ | CDN |  |
| TOC |  |
| MAC |  |
|  |  |  **Transfer of Control Sequence** |
| TOC | AOC |  |
| AOC | CDN |  |

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

Table 7‑. Valid Messages by ATSU and flight states

|  |  |  |
| --- | --- | --- |
| **Flight State** | **Message** | **Sent by** |
| Notifying | ABI | upstream ATSU |
| Notifying | MAC | upstream ATSU |
| Notifying | CPL | Upstream ATSU |
| Notifying | EST | Upstream ATSU |
| Notifying | PAC | Upstream ATSU |
| Negotiating | CDN | Either ATSU |
| Negotiating | ACP | Either ATSU |
| Coordinating | ACP | Downstream- ATSU |
| Coordinated | CDN | Either ATSU |
| Coordinated | TRU | Upstream ATSU |
| Coordinated | TOC | Controlling ATSU |
| Coordinated | MAC | Upstream ATSU |
| Re-Negotiating | CDN | Either ATSU |
| Re-Negotiating | ACP | Either ATSU |
| Re-Negotiating | REJ | Either ATSU |
| Transferring | AOC | Downstream ATSU |
| **Flight State** | **Message** | **Sent by** |
| Transferred | CDN | Either ATSU |
| Backward-Re-Negotiating | CDN | Either ATSU |
| Backward-Re-Negotiating | ACP | Either ATSU |
| Backward-Re-Negotiating | REJ | Either ATSU |

## Other messages

* 1. The previous sections have discussed the use of Notification, Coordination, Transfer of Control, and Application Management messages. There are two remaining message subgroups in the AIDC messages: (1) General Information messages; and (2) Surveillance Data Transfer messages. All messages within these two subgroups require an application response; no operational response is defined.
	2. General information messages.
		1. EMG and MIS Messages.
			1. These messages support the exchange of text information between ATSUs. A communicator (usually a person, but a computer or application process is also permitted) in one ATSU can send a free text message to a functional address at another ATSU. Typical functional addresses could be an area supervisor or an ATC sector. If further EMG or MIS messages are transmitted in response to a previously received EMG or MIS, the later messages shall include the original message identifier within field 3 of the AFTN header. The EMG shall have an AFTN emergency priority (SS).
	3. Surveillance data transfer messages.
		1. The ADS message is used to transfer data contained within an ADS-C report including optional ADS-C groups to an adjacent ATSU.
		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.
		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-Creport | QU BNECAYA.QXSXMXS 011505PARFI NZ0090/AN ZK-OKCDT QXT POR1 011505 F59A- ADS.ZK-OKC030007FF946B6F6DC8FC044B9D0DFC013B80DA88FCOA64F9E4438B4AC8FC000E34D0EDC00010140F3E8660F3 |
| ADS-C data field | ADS/.ZK-OKC030007FF946B6F6DC8FC044B9D0DFC013B80DA88FC0A64F9E4438B4AC8FC000E34D0EDC00010140F3E86 |

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

* + 1. The types of ADS-C reports (i.e. periodic or event) transmitted by the AIDC ADS message shall 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.
			1. The AIDC ADS message is used to transfer ADS-C information only. Other messaging protocols exist for the transfer of ADS-B information.
			2. 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-OKC0300FF946B6F6DC8FC044B9D0DFC013B80DA88FC0A64F9E4438B4AC8FC00

 0E34D0EDC00010140F3EE8660F3

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

QU AKLCBYA

.BNECAYA 011505

PAR

FI NZ0090/AN ZK-OKC

DT QXT POR1 011505 F59A

 - ADS.ZK-OKC0300FF946B6F6DC8FC044B9D0DFC013B80DA88FC0A64F9E4438B4AC8FC00

 0E34D0EDC00010140F3EE8660F3

## Examples

* 1. Several examples illustrating the use of the AIDC Message set are presented. No Application Management messages (principally the LAM, but also the LRM and ASM) are shown for clarity, though these messages are almost always sent as an application acknowledgement response to the receipt of a Notification, Coordination or Transfer of Control message.
	2. Standard coordination.
		1. Brisbane transmits a notification message (ABI) to Auckland forty five minutes prior to the time that QFA108 is expected to cross the FIR boundary (1209). The destination of the flight is Christchurch.
		2. The abbreviated coordination message (EST) is transmitted by Brisbane thirty minutes prior to the boundary estimate (which is now 1213). Auckland accepts the proposed coordination conditions by responding with an ACP. Auckland accepts ATC responsibility by responding with an AOC.
		3. Brisbane transfers ATC responsibility approaching the FIR boundary by transmitting a TOC.
		4. The timing of the transmission of these messages is defined in bilateral agreements between the two ATS units.

*Example* Standard coordination

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

* + 1. Santa Maria Oceanic Area Control (OAC) informs New York OAC several hours in advance that flight TAP001 is expected to cross the Santa Maria FIR boundary into the New York FIR at approximately 1209 PM (ABI). The flight will continue on to San Juan, Puerto Rico.
		2. Coordination between Santa Maria OAC and New York OAC occurs approximately twenty minutes before the expected boundary crossing time, which has been revised to 1213 PM (CPL). New York OAC accepts the coordination conditions without modification (ACP).
		3. Santa Maria OAC transfers ATC responsibility near the boundary (TOC). New York OAC accepts ATC responsibility by responding with an AOC.

*Example* Standard coordination

|  |  |
| --- | --- |
| ***Santa Maria OAC*** | ***New York OAC*** |
| (ABI-TAP001-LPPT–34N040W/1209F350–TJSJ-8/IS-9/B744/H-10/D1J2RSW/SB2–15/M082F35027N050W 24N055W22N060W 19N065W SJU)(CPL-TAP001-IS-B744/H-SW/SB2-LPPT--34N040W/1213F350-M082F35027N050W 24N055W 22N060W19N065W SJU-TJSJ-PBN/A1)(TOC-TAP001-LPPT-TJSJ) | (ACP-TAP001-LPPT-TJSJ) (AOC-TAP001-LPPT-TJSJ) |

* 1. Negotiation of coordination conditions.
		1. Brisbane transmits a notification message (ABI) to Auckland forty five minutes prior to the time that TAP001 is expected to cross the FIR boundary (1209). The destination of the flight is Christchurch.
		2. The coordination message (CPL) is transmitted by Brisbane thirty minutes prior to the boundary estimate (which is now 1213).
		3. Auckland responds with a negotiation message (CDN) requesting a change in the boundary crossing altitude to F390. Brisbane responds with an ACP indicating that the revised altitude is acceptable.
		4. Brisbane transfers ATC responsibility approaching the FIR boundary by transmitting a TOC. Auckland accepts ATC responsibility by responding with an AOC.
		5. The timing of the transmission of these messages is defined in bilateral agreements between the two ATS units.

*Example* Negotiation of Coordination Conditions

|  |  |
| --- | --- |
| ***Brisbane*** | ***Auckland*** |
| (ABI-QFA56-YBBN-33S163E/1209F350-NZCH-8/IS-9/B744/H-10/SDHIWRJ-15/M084F35035S164E 36S165E ...) |  |
| (CPL-QFA56-IS-B744/H-SDHIWRJ-YBBN-33S163E/1213F350-M084F35035S164E 36S165E NZCH -0.) |  |
|  | (CDN-QFA56-YBBN-NZCH-14/33S163E/1213F390) |
| (ACP-QFA56-YBBN-NZCH) |  |
| (TOC-QFA56-YBBN-NZCH) |  |
|  | (AOC-QFA56-YBBN-NZCH) |

* + 1. Santa Maria OAC informs New York OAC several hours in advance that flight TAP001 is expected to cross the Santa Maria FIR boundary into the New York FIR at approximately 1209 PM (ABI). The flight will continue on to San Juan, Puerto Rico.
		2. Coordination between Santa Maria OAC and New York OAC occurs approximately twenty minutes before the expected boundary crossing time, which has been revised to 1213 PM (CPL). New York OAC requests a change in the boundary crossing altitude to F390 (CDN), which Santa Maria OAC signals as acceptable (ACP).
		3. Santa Maria OAC transfers ATC responsibility near the boundary (TOC). New York OAC accepts ATC responsibility by responding with an AOC.

*Example* Negotiation of Coordination Conditions

|  |  |
| --- | --- |
| ***Santa Maria OAC*** | ***New York OAC*** |
| (ABI-TAP001-LPPT–34N040W/1209F350–TJSJ-8/IS-9/B744/H-10/DIJ2RSW/SB2–15/M082F35027N050W 24N055W22N060W 19N065W SJU)(CPL-TAP001-IS-B744/H-DIJ2RSW/SB2-LPPT--34N040W/1213F350-M082F35027N050W 24N055W 22N060W19N065W SJU-TJSJ-PBN/A1)(ACP-TAP001-LPPT-TJSJ)(TOC-TAP001-LPPT-TJSJ) |  (CDN-TAP001-LPPT-TJSJ –14 / 34N040W/1213F390) (AOC-TAP001-LPPT-TJSJ) |

* 1. Re-negotiation rejected.
		1. Brisbane transmits a notification message (ABI) to Auckland forty five minutes prior to the time that QFA108 is expected to cross the FIR boundary (1209). The destination of the flight is Christchurch.
		2. The coordination message (CPL) is transmitted by Brisbane thirty minutes prior to the boundary estimate (which is now 1213). Auckland accepts the proposed coordination conditions without modification by responding with and ACP.
		3. Some time after the initial coordination process has been completed, but before the start of the Transfer of Control process, Auckland requests an amendment to the boundary crossing altitude by transmitting a negotiation message (CDN). Brisbane cannot accept the proposed change due to conflicting traffic in its FIR and therefore rejects the request (REJ).
		4. Brisbane transfers ATC responsibility approaching the FIR boundary by transmitting a TOC. Auckland accepts ATC responsibility by responding with an AOC.
		5. The timing of the transmission of these messages is defined in bilateral agreements between the two ATS units.

*Example.* Rejection of Renegotiated Coordination

|  |  |
| --- | --- |
| ***Brisbane*** | ***Auckland*** |
| (ABI-QFA108-YBBN-33S163E/1209F350-NZCH-8/IS-9/B744/H-10/SDHIWRJ-15/M084F350 35S164E 36S165E….) |  |
| (CPL-QFA108-IS-B744/H-SDHIWRJ-YBBN-33S163E/1213F350-M084F35035S164E 36S165E NZCH -0.) |  |
|  | (ACP-QFA108-YBBN-NZCH) |
|  | (CDN-QFA108-YBBN-NZCH-14/33S163E/1213F390) |
| (REJ-QFA108-YBBN-NZCH) |  |
| (TOC-QFA108-YBBN-NZCH) |  |
|  | (AOC-QFA108-YBBN-NZCH) |
|  |  |
|  |  |
|  |  |

* + 1. Santa Maria OAC informs New York OAC several hours in advance that flight TAP001 is expected to cross the Santa Maria FIR boundary into the New York FIR at approximately 1209 PM (ABI). The flight will continue on to San Juan, Puerto Rico.
		2. Coordination between Santa Maria OAC and New York OAC occurs approximately twenty minutes before the expected boundary crossing time, which has been revised to 1213 PM (CPL). New York OAC accepts the coordination conditions without modification (ACP).
		3. Some time after the initial Coordination process has been completed, but before the start of the Transfer of Control process, New York OAC attempts to modify the boundary crossing altitude (CDN), due to unexpected traffic in the area. Santa Maria OAC can not accept the proposed change due to conflicting traffic in its FIR, and therefore rejects the proposal (REJ).
		4. Santa Maria OAC transfers ATC responsibility near the boundary (TOC). New York OAC accepts ATC responsibility by responding with an AOC.

*Example* Rejection of Renegotiated Coordination

|  |  |
| --- | --- |
| ***Santa Maria OAC*** | ***New York OAC*** |
| (ABI-TAP001-LPPT–34N040W/1209F350–TJSJ-8/IS-9/B744/H-10/DIJ2RSW/SB2–15/M082F35027N050W 24N055W22N060W 19N065W SJU)(CPL-TAP001-IS-B744/H-DIJ2RSW/SB2-LPPT--34N040W/1213F350-M082F35027N050W 24N055W 22N060W19N065W SJU-TJSJ-PBN/A1)(REJ-TAP001-LPPT-TJSJ)(TOC-TAP001-LPPT-TJSJ) |  (ACP-TAP001-LPPT-TJSJ) (CDN-TAP001-LPPT-TJSJ –14 / 34N040W/1213F390)  (AOC-TAP001-LPPT-TJSJ) |

* 1. Abbreviated coordination.
		1. Several minutes before AAA842’s departure time (e.g. at taxi time), coordination between Bali and Brisbane is effected by Bali transmitting a coordinationa message (PAC). This message alerts Brisbane that the flight is pending and indicates a boundary estimate of 1213 at f290. Brisbane accepts the coordination conditions without modification by responding with an ACP.
		2. On departure, the aircraft’s actual estimate differs from that coordinated by more than the value specified in bilateral agreements. The new estimate is coordinated to Brisbane by Bali transmitting a CDN message to Brisbane. Brisbane accepts this revised estimate by responding with an ACP message.
		3. Bali transfers ATC responsibility approaching the FIR boundary by transmitting a TOC. Brisbane accepts ATC responsibility by responding with an AOC.
		4. The timing of the transmission of these messages is defined in bilateral agreements between the two ATS units.

*Example.* Abbreviated coordination

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

* 1. Multiple modifications + AIDC cancellation.
		1. Brisbane transmits a notification message (ABI) to Auckland forty five minutes prior to the time that QFA11 is expected to cross the FIR boundary (1105). The destination of the flight is Los Angeles.
		2. Prior to transmitting the coordination message, a modification to the cleared flight level is made resulting in the transmission of another notification message. This ABI contains the latest boundary information of the aircraft showing that the current boundary estimate is now 1107.
		3. The abbreviated coordination message (EST) is transmitted by Brisbane thirty minutes prior to the boundary estimate (which is now 1108). Auckland accepts the proposed coordination conditions by responding with an ACP.
		4. Due to weather QFA11 requests and is issued an amended route clearance that will now no longer affect Auckland. To advise of the cancellation of any previously transmitted AIDC messages, a MAC message is transmitted to Auckland.
		5. The timing of the transmission of these messages is defined in bilateral agreements between the two ATS units.

*Example.* Multiple notifications + AIDC cancellation

|  |  |
| --- | --- |
| ***Brisbane*** | ***Auckland*** |
| (ABI-QFA11-YSSY-31S163E/1105F290-KLAX-8/IS-9/B744/H-10/SDHIWRJ-15/M085F29033S158E 30S168E….) |  |
| (ABI-QFA11-YSSY-31S163E/1107F310KLAX-8/IS-9/B744/H-10/SDHIWRJ15-M084F29033S158E 30S168...) |  |
| (EST-QFA11-YSSY-31S163E/1108F310-KLC |  |
|  | (ACP-QFA11-YSSY-KLAX |
| (MAC-QFA11-YSSY-KLAX) |  |
|  |  |

* 1. Multiple negotiations.
		1. Brisbane transmits a notification message (ABI) to Auckland forty five minutes prior to the time that QFA108 is expected to cross the FIR boundary (1209). The destination of the flight is Christchurch.
		2. The abbreviated coordination message (EST) is transmitted by Brisbane thirty minutes prior to the boundary estimate (which is now 1213). Auckland accepts the proposed coordination conditions by responding with an ACP.
		3. QFA108 requests F370. The bilateral Letter of Agreement between Brisbane and Auckland requires that prior coordination is completed before issuing a change of level after initial coordination. Brisbane transmits a negotiation message (CDN) proposing the change of level to F370. This level is not available in Auckland’s airspace, but an alternative level is available. Auckland therefore responds with a negotiation message proposing F360. Brisbane responds with an ACP indicating that this level is acceptable to Brisbane (and QFA108).
		4. Brisbane transfers ATC responsibility approaching the FIR boundary by transmitting a TOC. Auckland accepts ATC responsibility by responding with an AOC.
		5. The timing of the transmission of these messages is defined in bilateral agreements between the two units.
			1. Complex re-negotiations may be more easily solved by voice communication.

*Example.* Multiple negotiations

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

* 1. Standard coordination with proposed amended destination.
		1. Brisbane transmits a notification message (ABI) to Auckland forty five minutes prior to the time that ANZ136 is expected to cross the FIR boundary (1400). The destination of the flight is Christchurch.
		2. The abbreviated coordination message (EST) is transmitted by Brisbane thirty minutes prior to the boundary estimate (which is now 1401). Auckland accepts the proposed coordination conditions by responding with an ACP.
		3. ANZ136 requests a deviation to Auckland (NZAA). Brisbane transmits a Coordination message (CDN) to Auckland proposing changes to the previously agreed coordination conditions (route and boundary estimate) as well as the new destination. Auckland accepts the proposed revision(s) by the transmission of an ACP. All subsequent AIDC messages for ANZ136 contain “NZAA” as the destination aerodrome.
		4. Brisbane transfers ATC responsibility approaching the FIR boundary by transmitting a TOC. Auckland accepts ATC responsibility by responding with an AOC.
		5. The timing of the transmission of these messages is defined in bilateral agreements between the two ATS units.

*Example*  Coordination of amended destination

|  |  |
| --- | --- |
| ***Brisbane*** | ***Auckland*** |
| (ABI-ANZ136-YBBN-RUNOD/1400F350-NZCH-8/IS-9/A320/M-10/SDHIWR-15/M078F350 SCOTT Y32LOKET L503 LALAP DCT ...) |  |
| (EST-ANZ136-YBBN-RUNOD33S163E/1401F350-NZCH) |  |
|  | (ACP-ANZ136-YBBN-NZCH) |
| (CDN-ANZ136-YBBN-NZCH-14/ESKEL/1357F350-15/ SCOTT Y32LOKET WOOLY ESKEL L521 AA-DEST/NZAA) |  |
|  | (ACP-ANZ136-YBBN-NZAA) |
| (TOC-ANZ136-YBBN-NZAA) |  |
|  | (AOC-ANZ136-YBBN-NZAA) |

* 1. Standard coordination including FAN/FCN exchange.
		1. Brisbane transmits a notification message (ABI) to Auckland forty five minutes prior to the time that UAL815 is expected to cross the FIR boundary (0330).
		2. The abbreviated coordination message (EST) is transmitted by Brisbane thirty minutes prior to the boundary estimate. Auckland accepts the proposed coordination conditions by responding with an ACP.
		3. Brisbane transmits a FAN message to Auckland providing the logon information that Auckland requires to establish a CPDLC connection as well as ADS contracts.
		4. When a CPDLC connection is established, Auckland transmits a FCN to Brisbane containing the appropriate frequency for the aircraft to monitor.
		5. The current flight plan message (CPL) is transmitted by Brisbane thirty minutes prior to the boundary estimate. Auckland accepts the proposed coordination conditions by responding with an ACP.
		6. Brisbane transfers ATC responsibility approaching the FIR boundary by transmitting a TOC. Auckland accepts ATC responsibility by responding with an AOC.
		7. Brisbane terminates the CPDLC connection with UAL815 and transmits an FCN to Auckland to advise them that the CPDLC connection has been terminated.
		8. The timing of the transmission of these messages is defined in bilateral agreements between the two ATS units.

*Example.* Standard coordination including FAN and FCN exchanges

|  |  |
| --- | --- |
| ***Brisbane*** | ***Auckland*** |
| (ABI-UAL815-YSSY-3050S16300E3200S16300E/0330F290-KLAX-8/IS-9/B744/H-10/SDHIRZYWJ1P/SB2G1-15/N0499F310NOBAR A579 JORDYDCT 3200S16000E 3050S16300E2800S16500E-PBN/A1L1) |  |
| (EST-UAL815-YSSY-3050S16300E33S163E/0330F290-KLAX) |  |
|  | (ACP-UAL815-YSSY-KLAX) |
| (FAN-UAL815-YSSY-KLAX-SMI/FMLFMH/UAL815 REG/N123UAFPO/3330S15910E FCO/ATC01FCO/ADS01) |  |
|  | (FCN-UAL815-YSSY-KLAX-CPD/2-FREQ/13261) |
| (TOC-UAL815-YSSY-KLAXz) |  |
|  | (AOC-UAL815-YSSY-KLAX) |
| (FCN-UAL815-YSSY-KLAX-CPD/0) |  |

* 1. Standard coordination with TRU update.
		1. An abbreviated coordination message (EST) is transmitted by Melbourne as soon as UAE412 departs Sydney. Brisbane accepts the proposed coordination conditions by responding with an ACP.
		2. The Sydney Departure controller assigns the aircraft a heading of 100 degrees magnetic and issues instructions to maintain FL200. A TRU is transmitted to update the Brisbane controller’s flight details.
		3. Melbourne transfers ATC responsibility approaching the FIR boundary by transmitting a TOC. Brisbane accepts ATC responsibility by responding with an AOC.

*Example* Coordination of amended clearances via TRU

|  |  |
| --- | --- |
| ***Brisbane*** | ***Auckland*** |
| (EST-UAE412-YSSY-EVONN/0130F280-NZAA) |  |
|  | (ACP-UAE412-YSSY-NZAA) |
| (TRU-UAE412-YSSY-NZAA-HDG/100CFL/F200) |  |
| (TOC-UAE412-YSSY-NZAA) | (AOC-UAE412-YSSY-NZAA) |
|  |  |

## Notes

* 1. The IGM concerns communications between two ATSUs within the NAT/APAC Regions. Inter-centre communications within one country, and communications with ATSUs outside the NAT/APAC regions, though important to an ATC system’s design and implementation are not part of the scope of this material.
	2. Initialization and termination conditions.
		1. Only material pertaining to flights within NAT/APAC oceanic FIRs is included. Most flights depart from aerodromes outside the region, then transition into the NAT/APAC. Similarly, most flights transition from a NAT/APAC FIR into a non-NAT/APAC FIR. These transitions are not discussed. The required Notification, Coordination and Transfer of Control processes are dependent on the particular transition. For example, the transition from New York oceanic FIR to New York domestic is different than the transition from Shanwick oceanic to UK domestic. These transitions must be accounted for when designing and implementing an ATC system; however, they are outside the scope of the NAT Common Coordination ICD.
		2. Air/ground events.
			1. Certain air/ground events may be associated with the particular flight states. These include ADS contract establishment and Data Link Transfer. Assume that an aircraft is ADS equipped, and that the current controlling centre is receiving ADS reports. The flight then undergoes a coordination process, leaving it in Coordinated state with one or more downstream ATS Units. These ATS Units may now establish separate ADS contracts with the aircraft to monitor its position just before and after entry into a new FIR. The Coordinated state has been linked with a specific A/G event – establish an ADS contract.
			2. Similarly, Transfer of a Data Link connection may be linked with the Transferred state. Only one ATS Unit has control authority over an aircraft at any given time. This unit would transfer its Data Link connection during the Transfer of Control process.

# Common Boundary Agreements

## Introduction

* 1. Due to the individual nature of operations in the vicinity of OCA boundaries, some divergence from the common ICD is required. These differences and other procedures are defined in the following sections. The long term aim should be to adopt the contents of Chapter 2, *Purpose, Policy & Units of Measurement*, and Chapter 3, *Communications & Support Mechanisms*, with only variable system parameters.

## Interfaces

* 1. Reykjavik/Shanwick Interface.
		1. General.
			1. On-line message transfer will be effected by discrete links, but may eventually be superseded by the AFTN subject to the latter satisfying the required standards as to integrity and response.
			2. All messages listed in Chapter 3, para 3.2, *Message Headers, Timers and ATSU Indicators*, except RPT and TAM, will contain Data Transfer Numbers consisting of a two letter directional indicator followed by a three digit serial number. The direction indicators will be ‘RO’ for Reykjavik to Shanwick and ‘OR’ for Shanwick to Reykjavik.
			3. A TAM will be sent by each unit for every message received with ATS Field 3 syntactically correct. If a TAM is not received within 3 minutes of a message being transmitted, the message will be repeated. If, after a further 1 ½ minutes a TAM still has not been received, the message will be repeated for a second time. If, 1 ½ minutes later a TAM still has not been received, notification will be output locally for manual intervention.
			4. The systems must be capable of altering the time intervals mentioned if required. The adaptable parameters from the time of the initial transmission being:

1st repeat - 1 to 4 minutes

2nd repeat - 1 ½ to 6 minutes

Local notification - 2 to 8 minutes

* + - 1. The automatic acknowledgement and repeat of messages should be able to be suppressed.
		1. Notification of Organized Track Structure and elapsed times.
			1. The NAT messages will be transmitted by Shanwick for the day track structure, with tracks designated ‘A’ to ‘M’ inclusive (except ‘I’).
			2. Tables of elapsed times (ETAFs) for tracks infringing the Reykjavik OCA will be transmitted on the discrete line as a MIS message. See Chapter 4, *ATS Coordination Messages*, para 4.6.4, for the layout of this message. For each requested track, the output will contain the estimate elapsed times for each segment of the track in both directions at speeds of Mach 0.80, 0.82 and 0.84 for each flight level declared available for the track.
		2. Clearance messages.
			1. Automatic Data Transfer (ADT) will be effected for all flights in both directions which cross, fly along or touch 61N between 10W and 30W inclusive. Initially ADT may be restricted to eastbound flights from Reykjavik to Shanwick, and westbound flights from Shanwick to Reykjavik with full implementation at a later date. Data transfer for these flights will be in the form of CLR messages.
			2. Transmission of the CLR message in either direction will take place 60 minutes (adaptable) before 61N whether the flight has a route point coincident with 61Nor not.
			3. The first route point stated in a CLR will be the route point prior to 61N and may be a lat/long or a fix identifier in UK domestic airspace or Icelandic airspace. For flights operating wholly on an organised track, the remainder of the route will be specified by the appropriate track designator (e.g. NATA). For random flights, details of the cleared route to landfall will be transmitted, but OAC FDPS currently does not hold route details beyond 70N and/or 80W.
			4. Once CLR has been transmitted, no further CLRs will be issued for the same flight while the original flight plan remains valid.
			5. The flight level stated in the CLR will be the final level known to the originating system at the time of ADT.
		3. Repeat messages.
			1. RPT messages will be sent manually by the receiving centre when missing serial numbers are detected, or when a message received containing a serial number is found to contain text errors. OAC FDPS is capable of actioning an RPT request for messages up to 6 hours preceeding the time of input of the RPT message.
		4. Cancellation messages.
			1. A CNL message will be generated only when a flight plan is cancelled subsequent to a CLR being sent.
		5. Miscellaneous messages.
			1. The MIS message will be used to transmit plain language statements or queries between the two centres, and also the transmission of organised track elapsed times.
		6. System or line failures.
			1. Basic communication facilities between the two centres will be available in the even of system failures. The actions to be taken will be defined in the current version of the Letter of Agreement between Shanwick and Reykjavik ACC.
	1. Gander/Shanwick interface.
		1. General.
			1. On-line message transfer is currently effected by discrete links which may eventually be superseded by the AFTN/CIDIN subject to the latter satisfying the required standards as to integrity and response.
			2. All messages listed in Chapter 4, *ATS Coordination Messages* – except RPT and TAM contain Data Transfer Numbers consisting of a two letter directional indicator followed by a three digit serial number. The direction indicators are ‘GO’ for Gander to Shanwick and ‘OG’ for Shanwick to Gander.
			3. A TAM is sent by each unit for every message received with ATS Field 3 syntactically correct. If a TAM is not received within three minutes of a message being transmitted, the message will be repeated. If, after a further 1 ½ minutes a TAM still has not been received, the message will be repeated for a second time. If, 1 ½ minutes later a TAM still has not been received, notification will be output locally for manual intervention.
			4. The system must be capable of altering the time intervals mentioned if required – the variable system parameters (from the time of the initial transmission) being:

First repeat - 1 to 4 minutes

Second repeat - 1 ½ to 6 minutes

Local notification - 2 to 8 minutes

* + - 1. The automatic repetition of messages may be terminated by agreement.
		1. Notification of Organized Track Structure and elapsed times.
			1. The NAT message is transmitted by Shanwick for the day structure and by Gander for the night structure.
			2. The tracks stored by either centre shall be activated, altered or deleted – depending on operational requirements – by appropriate local action.
			3. Day tracks are designated ‘A’ to ‘M’ inclusive (except ‘I’) and Night tracks ‘N’ to ‘Z’ (except ‘O’).
			4. When requested, tables of elapsed times (ETAFs) will be transmitted on the discrete lines as a MIS message by the centre responsible for the establishment of the track structure.
			5. ETAFs can be output for Organised and Contingency Tracks and will consist of the established elapsed times for each segment of the track for flights in both directions at speeds of Mach 0.80, 0.82 and 0.84 for each Flight Level declared available on the track.
			6. Contingency tracks will be designated by two numerics commencing at ‘01’.
		2. Clearance messages.
			1. Automatic Data Transfer (ADT) will be effected for flights in both directions which cross 30W between 45 and 61N inclusive at FL060 (adaptable) or above. Data transfer for these flights will be in the form of CLR messages.
			2. Transmission of the CLR message in either direction will take place 60 minutes (adaptable) before 30W.
			3. Each system will action the content of any CLR message received, either by processing in accordance with local procedures, or by intimation of text failure to a local position.
			4. For flights operating wholly on Organised Tracks, the first position stated in the CLR will be 20W or 40W as dictated by the direction of flight with the route being specified by the appropriate track designator (e.g. NATB). In the case of Random flights, full route details from or after 20W or 40W will be transmitted. Both systems will be capable of transmitting the entire Oceanic route if this becomes an operational requirement.
			5. Once a CLR has been transmitted, no further CLRs will be issued for the same flight while the original flight plan remains valid.
			6. In order to work towards compatibility of the application of “deemed” separation standards, each unit should be aware of the special separations incorporated in each others conflict algorithm.
			7. The flight level stated in the CLR will be the final cleared level known to the originating system at the time of ADT.
		3. Repeat message.
			1. RPT messages will be sent manually by the receiving centre when missing serial numbers are detected, or when a message received containing a serial number is found to contain text errors. The RPT message will be input manually and actioned by the computer at the centre to which it was sent.
			2. Each computer is capable of actioning a RPT request for any or all of the 64 messages immediately preceding the latest message issued. The message repeated will be an exact copy of the message originally issued under the Data Transfer Number quoted in the RPT.
		4. Cancellation messages.
			1. A CNL message will be generated when re-routing necessitates the cancellation of a previously sent CLR message. This will occur when the flight’s route will now no longer traverse airspace as defined in paragraph ~~3.3.1~~.
		5. Miscellaneous messages.
			1. The "MIS" message will be used to transmit plain language statements or queries between the two centres. However, the MIS message will also be used for the transmission of NAT elapsed times incorporating the information in paragraph ~~3.2.5~~ .
	1. Gander/Reykjavik interface.
		1. Gander is responsible for the boundary. The interface is currently manual.
	2. Gander/New York interface.
		1. The interface is currently manual, however, development and testing is ongoing of an automated AIDC interface.
	3. New York/Santa Maria interface.
		1. The interface is affected through AFTN and comprises only Initial Coordination Messages (CPL and ACP) and the appropriate Application Management Messages (LAM, LRM and ASM). Notification and Negotiation Phases will be implemented at a later date.
		2. The concept of operation, message content and communication mechanisms of the above messages was adopted in accordance with Chapters 2 and 4 of the PAN ICD, except:

a) No restrictions are in use.

b) CPL sent from New York contains full route until destination.

* + 1. The ACP message is triggered manually by the controller and closes the dialogue automatically. Verbal coordination is still required for counter-proposals (Negotiation) and upon the following:
1. Crossing conditions and/or restrictions at the boundary including blocking levels.
2. Any profile change from a previously coordinated and accepted profile.
3. At the LAM time out warning after sending a CPL or an ACP.
4. When receiving an LRM in response to a CPL or an ACP.
	1. Gander/Santa Maria interface.
		1. The interface is currently manual.
	2. Shanwick/Santa Maria interface.
		1. The interface is currently manual.
	3. Bodǿ/Reykjavik interface.
		1. The interface is currently manual.

#  Relationship to ICAO AIDC Messages

## Introduction

* 1. The AIDC message set can be tailored to satisfy regional requirements. The ADS Panel OPLINKP documentation defining the AIDC data link application provides three means for achieving regional adaptation of the AIDC messages:
		1. Regions select an AIDC subset that will support their regional operational procedures.
		2. The selected messages are tailored by mandating the usage of optional components into one of three classes:

a) The optional component that must always be used;

b) The optional component that must never be used; and,

c) The optional component is truly optional.

* + 1. For interim, pre-ATN implementations, encoding rules may be specified by a region. The most frequently used encoding rules today employ ICAO ATS fields and messages. The default encoding rules are the ISO Packed Encoding rules.
		2. Using the regional tailoring procedure stated above, the NAT/APAC Core messages are related to a subset of the AIDC messages and are shown in Table 9-1.
		3. The encoding rules employed within the NAT/APAC will remain for the foreseeable future as the ICAO ATS field and message-based, character-oriented rules currently defined in the NAT/APAC AIDC Interface Control Document (ICD) (and ICAO PANS-ATM Doc 4444).

Table 9‑. PAN ICD AIDC/ICAO AIDC Relationship

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ICAO AIDC****message** | **PAN ICD AIDC message** | **ICAO AIDC message** | **PAN ICD AIDC message** | **ICAO AIDC message** | **PAN ICD AIDC message** | **PAN ICD AIDC message** |
| **Mandatory data fields** | **Optional data fields** | **Optional data fields usage** |
| Notify | ABI | Aircraft identificationDeparture AerodromeDestination AerodromeBoundary estimate data | Aircraft identificationSSR Mode and Code(where applicable)Departure AerodromeDestination AerodromeBoundary estimate dataNumber of aircraftAircraft typeWake turbulence categoryRoute | Flight rulesType of flightNumber of aircraft (if more than one in the flight)Aircraft typeWake turbulence categoryCNS equipmentRoute Amended destinationCode (SSR)Other information | Flight rulesEquipmentRouteOther informationAmended destination | Always usedAlways usedAlways usedOptional |
| Coordinate Initial | CPL | Aircraft identificationDeparture AerodromeDestination AerodromeBoundary estimate data | Aircraft identificationSSR Mode and Code(where applicable)Departure AerodromeDestination AerodromeBoundary estimate dataFlight RulesNumber of aircraftAircraft typeWake turbulence categoryEquipmentRouteOther information | Flight rulesType of flightNumber of aircraft (if more than one in the flight)Aircraft typeWake turbulence categoryCNS equipmentRoute Amended destinationCode (SSR)Other information | Flight rulesEquipmentRouteOther information | Always usedAlways usedAlways usedOptional |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ICAO AIDC****message** | **PAN ICD AIDC message** | **ICAO AIDC message** | **PAN ICD AIDC message** | **ICAO AIDC message** | **PAN ICD AIDC message** | **PAN ICD AIDC message** |
| **Mandatory data fields** | **Optional data fields** | **Optional data fields usage** |
| Coordinate InitialEstimate | EST | Aircraft identificationDeparture AerodromeDestination AerodromeBoundary estimate data | Aircraft identificationSSR Mode and Code(where applicable)Departure AerodromeDestination AerodromeBoundary estimate data | Flight rulesType of flightNumber of aircraft (if more than one in the flight)Aircraft typeWake turbulence categoryCNS equipmentRoute Amended destinationCode (SSR)Other information |  |  |
| Coordinate Initial | PAC | Aircraft identificationDeparture AerodromeDestination AerodromeBoundary estimate data | Aircraft identificationSSR Mode and Code(where applicable)Departure AerodromeDestination AerodromeBoundary estimate data | Flight rulesType of flightNumber of aircraft (if more than one in the flight)Aircraft typeWake turbulence categoryCNS equipmentRoute Amended destinationCode (SSR)Other information | Flight rulesNumber of aircraft Aircraft typeWake turbulence categoryEquipmentRoute Other information |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ICAO AIDC****message** | **PAN ICD AIDC message** | **ICAO AIDC message** | **PAN ICD AIDC message** | **ICAO AIDC message** | **PAN ICD AIDC message** | **PAN ICD AIDC message** |
| **Mandatory data fields** | **Optional data fields** | **Optional data fields usage** |
| Coordinate Negotiate | CDN | Aircraft identificationDeparture AerodromeDestination AerodromeBoundary estimate data | Aircraft identificationSSR Mode and Code(where applicable)Departure AerodromeDestination AerodromeBoundary estimate data | Flight rulesType of flightNumber of aircraft (if more than one in the flight)Aircraft typeWake turbulence categoryCNS equipmentRoute Amended destinationCode (SSR)Other information | EquipmentBoundary estimate dataRoute Other informationAmended destination | Optional |
| Coordinate Accept | ACP |  | Aircraft identificationSSR Mode and Code(where applicable)Departure AerodromeDestination Aerodrome | Aircraft identificationDeparture aerodromeDestination aerodrome |  |  |
| Coordinate Reject | REJ |  | Aircraft identificationSSR Mode and Code(where applicable)Departure AerodromeDestination Aerodrome | Aircraft identificationDeparture aerodromeDestination aerodrome |  |  |
| Coordinate Standby | N/A |  |  | Aircraft identificationDeparture aerodromeDestination aerodrome |  |  |
| Coordinate Cancel | MAC | Aircraft identificationDeparture aerodromeDestination aerodrome | Aircraft identificationSSR Mode and Code(where applicable)Departure AerodromeDestination Aerodrome | FixReason for cancellation | Boundary Estimate DataOther Information | Never usedNever used |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ICAO AIDC****message** | **PAN ICD AIDC message** | **ICAO AIDC message** | **PAN ICD AIDC message** | **ICAO AIDC message** | **PAN ICD AIDC message** | **PAN ICD AIDC message** |
| **Mandatory data fields** | **Optional data fields** | **Optional data fields usage** |
| Coordinate Update | TRU | Aircraft identificationDeparture aerodromeDestination aerodromeBoundary estimate data | Aircraft identificationSSR Mode and Code(where applicable)Departure AerodromeDestination AerodromeTrack data | Flight rulesType of flightNumber of aircraft (if more than one in the flight)Aircraft typeWake turbulence categoryCNS equipmentRoute Amended destinationCode (SSR)Other information |  |  |
| Transfer Initiate | N/A | Aircraft identificationExecutive Data (if available |  | Track Data |  |  |
| Transfer Conditions Proposal | N/A | Aircraft identificationExecutive data (if available |  | Track Data |  |  |
| Transfer Conditions Accept | N/A | Aircraft identification |  | Frequency |  |  |
| Transfer Communication Request | N/A | Aircraft identification |  | Frequency |  |  |
| Transfer Communication | N/A | Aircraft identificationExecutive data and/or Release indication (if available) |  | FrequencyTrack data |  |  |
| Transfer Communication Assume | N/A | Aircraft identification |  |  |  |  |
| Transfer ControlTransfer Proposal | TOC | Aircraft identification | Aircraft identificationSSR Mode and Code(where applicable)Departure AerodromeDestination Aerodrome | Departure AerodromeDestination AerodromeExecutive data | Departure AerodromeDestination AerodromeExecutive data | Always usedAlways usedNever used |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ICAO AIDC****message** | **PAN ICD AIDC message** | **ICAO AIDC message** | **PAN ICD AIDC message** | **ICAO AIDC message** | **PAN ICD AIDC message** | **PAN ICD AIDC message** |
| **Mandatory data fields** | **Optional data fields** | **Optional data fields usage** |
| Transfer Control AssumeTransfer Assume | AOC | Aircraft identification | Aircraft identificationSSR Mode and Code(where applicable)Departure AerodromeDestination Aerodrome | Departure AerodromeDestination Aerodrome | Departure AerodromeDestination Aerodrome | Always usedAlways used |
| General Point | N/A | Aircraft identificationDeparture aerodromeDestination aerodrome |  | Sector designator (sending)Sector designator (receiving)Flight rulesType of flightNumber of aircraft (if more than one in flight)Aircraft typeWake turbulence categoryCNS equipmentRouteTrack dataCode (SSR)Other information |  |  |
| General Executive Data | N/A | Aircraft identification |  | Executive dataFrequency |  |  |
| Track System | NAT |  | NAT track system nameNAT tracks |  | Generation timeStart timeStop timeOther information | OptionalAlways usedAlways usedOptional |
| Free Text Emergency | EMG | Facility designation or Aircraft identificationFree text | Functional address orAircraft identificationSSR Mode and Code(where applicable)Other information |  |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ICAO AIDC****message** | **PAN ICD AIDC message** | **ICAO AIDC message** | **PAN ICD AIDC message** | **ICAO AIDC message** | **PAN ICD AIDC message** | **PAN ICD AIDC message** |
| **Mandatory data fields** | **Optional data fields** | **Optional data fields usage** |
| Free Text General | MIS | Facility designation or Aircraft identificationFree text | Functional address orAircraft identificationSSR Mode and Code(where applicable)Other information |  |  |  |
| Application Accept | LAM |  |  |  |  |  |
| Application RejectApplication Error | LRM | Error code | Other informationMessage typeComponent typeError code | Error data | Error data | Optional |
| Application Status | ASM | N/A | N/A |  |  |  |
| N/A | FAN |  | Aircraft identificationSSR Mode and Code(where applicable)Departure aerodromeDestination aerodromeApplication data |  |  |  |
| N/A | FCN |  | Aircraft identificationSSR Mode and Code(where applicable)Departure aerodromeDestination aerodromeCommunication status |  |  |  |
| N/A | ADS |  | Aircraft identificationSSR Mode and Code(where applicable)Departure aerodromeDestination aerodromeADS-C data |  |  |  |

#  Interim Operational Support

## Introduction

* 1. This ICD describes the end-state messages to be used within the ~~ASIA/PAC~~ NAT/APAC regions to ensure interoperability between automated ATS systems. However, during the transition to this end state architecture, current operations must be documented and supported. This chapter is the repository of messages not found in other ICD sections which will be used to support current operations during the interim transition period.
	2. Each interim message will be described in a separate paragraph. Those ATS Providers employing an interim message contained in this chapter shall document this usage in the appropriated bilateral agreements.

## Interim messages

* 1. Estimate (EST) message.
		1. The Estimate message is contained within the Core Message set. However, its use has been constrained to those situations in which a flight will cross an FIR boundary in accordance with existing letters of agreement.
		2. An EST message may be used in any situation in which a CPL is permitted. The EST is in actuality an abbreviated CPL contingent upon prior receipt of route and ancillary information. This information could be provided by an FPL or ABI message.
		3. Those ATS Provider States employing an EST in the more general manner during the interim transition period shall document this usage in the appropriate bi-lateral agreements.
		4. The EST message format shall be as described in the Core Message set.

#  NAT/EUR ATS Interface Messages

## Introduction

* 1. The following section describes those messages used by NAT ATS systems for On-Line Data Interchange between NAT provider States adjacent to the European Region.

##  Regional interface message group

* 1. This group describes several messages used by ATS Providers to interface with European domestic systems.

|  |
| --- |
| **REGIONAL INTERFACE MESSAGES** |
| Flight Planning | DLA (Delay |
| Co-ordination | ACT (Activation) |
|  | DEP (Departure) |
|  | ACT (ACTIVATE) – Prestwick/Shannon |
|  | OCM (Oceanic Clearance) |

* 1. Flight planning messages.
		1. DLA (Delay).
			1. Purpose.
				1. Used to indicate a delay in a flight’s departure time.
			2. Message format.

ATS Field Description

3 Message type, DTSN

7 Aircraft identification

13 Departure aerodrome and time

16 Destination aerodrome

*Example*

(DLAS/0456-EIN105-EINN1400-KJFK)

* 1. Coordination messages.
		1. ACT (Activation).
			1. Purpose.
				1. Used to activate a flight in the receiving system. The ACT provides the latest information on a flight and is normally sent subsequent to an ABI.
			2. Message format.

ATS Field Description

3 Message type, DTSN

7 Aircraft identification

13 Departure aerodrome

14 Boundary estimate data

16 Destination aerodrome

22 Amendment

Field 22 will contain Field 9 to specify aircraft type and field 15 to permit transmission of the next reporting point after the boundary crossing.

*Example*

(ACTO/P487-BAW179-KJFK-ETIKI/0703F370

 -EGLL-9/B743-15/QPR)

* + 1. DEP (Departure)
			1. Purpose.
				1. Used to indicate a flight’s actual departure time.
			2. Message format.

ATS Field Description

3 Message type, DTSN

7 Aircraft identification

13 Departure aerodrome and time

16 Destination aerodrome

*Example*

(DEPS/0476-EIN105-EINN1300-KJFK)

* + 1. ACT (Activate Message [Shanwick to Shannon]).
			1. Purpose.
				1. Used to inform the receiving centre of boundary estimates for flights transiting or infringing the Shanwick/Shannon common boundary including flights transiting NOTA.
			2. Message format.

ATS fields: 3, 7, 9, 13, 14, 15, 16

*Message Content:*

|  |  |  |
| --- | --- | --- |
| ***Field Type*** | ***Contents of Field*** | ***Example*** |
| ***Start of ATS DATA*** *(open bracket)* |
| 3 | Message Type and DTSN | Message type “ACT” followed by “O/S” followed by three numerics in the range 000 to 999 | (ACT/S010 |
| ***Start of Field*** *(single hyphen)* |
| 7 | Flight Callsign | Between three and seven alphanumeric characters | -BAW250 |
| ***Oblique stroke*** |
|  | SSR Mode and Code | “A” followed by four “1” numeric characters | /A1111 |
| ***Start of Field*** *(single hyphen)* |
| 13 | Departure Airfield | Four alphabetic characters being the ICAO location indicator | -KJFK |
| ***Start of Field*** *(single hyphen)* |
| 14 | Boundary Point | Up to five alphabetic characters  *or*Geographical coordinates | -MALOT5330N01500W |
| ***Oblique stroke*** |
|  | Boundary Estimate and Flight Level | Two numerics in the range 00 to 23 followed by two numerics in the range 00 to 59 then F followed by three numerics | /0700F330 |
| ***Start of Field*** *(single hyphen)* |
| 16 | Destination Airfield | Four alphabetic characters being the ICAO location indicator | -EGLL |
| ***Start of Field*** *(single hyphen)* |
| 9 | Aircraft Type | The field ident “9/” followed directly by either: a) Between two and four characters d defining the aircraft type as per  ICAO Doc 8643 [Reference 5] *or* b) As a) above preceded by one or two  numerics giving the number of aircraft in t he flight  | -9/GLF2, -9/C12 or9/B762-9/02F16 |
| ***Oblique stroke*** |
| Wake Turbulence Category | H – HeavyM – MediumL – LightNote: If the WTC is unknown, Shanwick will default to sending /H | /H/M/L |

|  |  |  |
| --- | --- | --- |
| ***Field Type*** | ***Contents of Field*** | ***Example*** |
| ***Start of Field*** *(single hyphen)****[only if field 15 present]*** |
| 15 | Next Route Point(optional field) | The field ident “15/” followed directly by one of the following:a) Two numerics followed by “N” followed by three numerics followed by “W”b) Four numerics followed by “N” followed by five numerics followed by “W”c) Up to five alphabetic characters | -15/15N012W15/5240N01406W-15/DOLIP |
|  ***End of ATS Data*** *(close bracket)* ) |

*Example:*

 (ACTO/S575-BAW250/A1111-KJFK-MALOT/0700F330-EGLL-9/B762/H-15/DOLIP)

* + 1. OCM (OCEANIC CLEARANCE MESSAGE).
			1. Purpose.
				1. Used to inform Shannon ACC of Oceanic Clearances issued by Shanwick to any flight entering Shanwick OCA from Shannon FIR/UIR or SOTA including flights transiting the NOTA.
			2. Message format.

ATS fields 3, 7, 9, 13, 14, 15, 16, 22 (optional)

*Message Content:*

|  |  |  |
| --- | --- | --- |
| ***Field Type*** | ***Contents of Field*** | ***Example*** |
| ***Start of ATS Data (****open bracket)* |
| 3 | Message Type and DTSN | “OCM” followed by “O/S” followed by three numerics in the range of 000 to 999 | (OCMO/S539) |
| ***Start of Field*** *(single hyphen)* |
| 7 | Flight Callsign | Between three and seven alphanumeric characters | -IBE416A |
| ***Start of Field*** *(single hyphen)* |
| 9 | Aircraft Type | a) Between two and four characters defining the aircraft type as per ICAO Doc 8643 [Reference 5] *or*b) As a) above preceded by one or two numerics giving the number of aircraft in the flight | -GLF2, -C12 or -B762-02F16 |
| ***Start of Field*** *(single hyphen)* |
| 13 | Departure Airfield | Four alphabetic characters being the ICAO indicator | -EGLL |

|  |  |  |
| --- | --- | --- |
| ***Field Type*** | ***Contents of Field*** | ***Example*** |
| ***Start of Field*** *(single hyphen)* |
| 15 | Aircraft Speed | a) “M” followed by three numerics giving the Mach Number *or*b) Four numerics giving the True Airspeed in knots (not to stated standard) | -M079-0410 |
| Flight Level | “F” followed by three numerics | F310 |
| ***Space*** |
| Boundary Coordinate | Up to five alphabetic characters*or**Geographical coordinates* | LIMRI5310N01500W |
| Oblique Stroke |
| Boundary Estimate | Two numerics in the range of 00 to 23 followed by two numerics in the range of 00 to 59 | /1357 |
| ***Field Type*** | ***Contents of Field*** | ***Example*** |
|  | Subsequent Oceanic Route | The text “NAT” followed by one or two alphabetic characters orA random route defined as geographical coordinates and/or named points separated by <sp> in the format:a) Two numerics followed by “N” followed by three numerics followed by “W”b) four numerics followed by “N” followed by five numerics followed by “W”c) Between two and five alphabetic characters | NATG49N020W4832N02814WBANCS |
| ***Start of Field*** *(single hyphen)* |
| 16 | Destination Airfield | Four alphabetic characters being the ICAO indicator |  -KJFK |

|  |  |  |
| --- | --- | --- |
| ***Field Type*** | ***Contents of Field*** | ***Example*** |
| ***Start of Field*** *(single hyphen)* ***[only if Field 22 present]*** |
| 22 | Other information (operational field) | The text “ATC/<sp>” and one or more of the following fields in any order each separated by a <sp>NBT (i.e. not before time)<sp>time<sp>ATC restriction point\*NLT (i.e. not later than)<sp>time<sp> ATC restriction point\*EPC (i.e. entry point change)INT (i.e. interval)<sp>callsign<sp>+<sp> interval in minutesLCHG (i.e. level change)RTD (i.e. return to domestic)and/orRECLEARANCE <sp> one numeric in the range of 1 to 7\*ATC restriction point takes one of the following formats:a) Up to five alphabetic characters orb) Two numeric followed by “N” and underscore followed by two numeric followed by “W” | ATC/NBT 1357 49N\_10WNLT 1357 49N\_10WEPCINT BBB213 + 10LCHGRTDRECLEARANCE 2 |
| ***End of ATS Data (****close bracket)* | **)** |

*Example*

(OCMO/S400-ELY027-B743-EGLL-M084/F330 LIMRI/1348 NATG-KJFK)

 (OCMO/S475-DAL85-B762-LFMN-M082F330 LIMRI/1335 53N020W 54N030W 54N040W 53N050W YAY-KJFK-ATC/INT VIR015 + 08 RECLEARANCE 1)

 (OCMO/S478-UAL919-B744-EGLL-M085F350 MASIT/1356 NATG-KIAD-ATC/NBT 1356 MASIT INT DAL49 + 16)

 (OCMO/S919-DLH408-A343-EDDL-M083F370 DOGAL/1441 NATE-KJFK-ATC/ EPC INT WIN111 +10)

(OCMO/S928-OAL881-B762-LGAV-M080F350 SOMAX/1451 51N020W 52N030W 52N040W 50N050W YQK-KJFK-ATC/ LCHG NBT 1451 SOMAX)

Appendix A Templates for Bilateral Letter of Agreement on AIDC

At an organizational level, the implementation of AIDC to enable data transfers between automated ATS systems is accomplished under the authority and strict operational terms of a bilateral letter of agreement or memorandum of understanding on AIDC arrangements that must be established between the two ATSUs involved. Depending on the particular circumstances, the legally less sophisticated Memorandum of Understanding (MOU) format could be used for the initial implementation of AIDC until the more formalized Letter of Agreement (LOA) is put in place. The choice of legal instrument will be a decision made by the two ATSUs as they prepare the formal agreement to enable AIDC data transfer between States.

In order to provide guidance in the structure and content of bilateral arrangements, templates have been included in this appendix to assist States in preparing suitable memorandums of understandings/letters of agreement on AIDC arrangements. The templates are based upon documentation developed by Airways New Zealand in implementation evolving AIDC arrangements between Auckland Oceanic and all neighbouring States over a period of approximately 10 years commencing from the mid 1990’s. Three templates are included:

Template 1 provides a generic example of a basic Letter of Agreement

Template 2 is an example of an actual Letter of Agreement between Auckland Oceanic (New Zealand) and Brisbane ATS Centre (Australia); and

Template 3 is an example of an actual Memorandum of Understanding between Auckland Oceanic (New Zealand) and Nadi ATM Operations Centre (Fiji).

The templates are intended as guidance material only. It is important to note that although changes in the AIDC arrangements applicable to Auckland Oceanic will occur over time, Templates 2 and 3 will NOT be routinely updated. Accordingly, as the circumstances for each bilateral implementation will differ, appropriate adjustments should be made to the content of the templates to ensure that the resulting MOU or LOA is fit for the purpose intended.

**Template 1**

**Generic Letter of Agreement**

**AIDC Procedures**

1. The format of AIDC messages (*List messages used e.g. ABI, PAC, CDN, CPL, ACP*, *REJ, MAC, LAM and LRM)* are as defined by the Asia/Pacific/North Atlantic Regional AIDC Interface Control Document (ICD) as amended from time to time, unless described otherwise in this LOA.
2. List messages not supported (*e.g. “EST, TOC, AOC* messages are not supported”).
3. Acceptance of CPL or CDN message is approval of the flight’s profile and requires no further voice communication (i.e. Non-Standard Altitudes, Block Altitudes, and Deviations).
4. (*Describe other procedures applicable to the use of AIDC for this LOA. Some examples are listed below)*
	1. *Example only. If there is any doubt with regard to the final coordination data, voice coordination shall be used for confirmation.*
	2. *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.*
	3. *Example only. Each facility shall advise the other facility of any known equipment outage that affects AIDC. In the event of AIDC outage, voice communication procedures will apply.*
	4. *Example only. Truncation. Where route amendment outside the FIR is unavoidable.*
		1. *Terminate the route details at the farthest possible flight plan significant point of the flight and enter “T” immediately following this.*
		2. *Without amending the originally received details, every effort is to be made to truncate the route at a minimum of one significant point beyond the adjacent FIR to provide an entry track in that FIR.*

**AIDC Messages**

*(For each message used describe when it will be sent by each ATSU under the parameter column and use the Notes column to describe other applicable information for the message use by each ATSU. The data below provides an example of the type of information that could be incorporated.)*

|  |  |  |
| --- | --- | --- |
| **Messages** | **Parameter** | **Notes** |
| *ABI* | ***ATSU1*:**  Sends ABI approx. 80 minutes prior to boundary (73 min prior to the 50 nm expanded sector boundary).***ATSU2:*** Sends ABI approx. 87 minutes prior to boundary (80 min prior to the 50 nm expanded sector boundary).(*Note: An updated ABI will not be sent once a CPL has been sent.)* | ***ATSU1 : ATSU2****Updated ABI’s will be sent automatically if there is any change to profile. ABI is sent automatically and is transparent to the controller. ABI automatically updates the receiving unit’s flight data record.* |
| *CPL* | ***ATSU1 : ATSU2****Send CPL messages approx 37 minutes prior to the boundary (30 minutes prior to the 50 nm expanded sector boundary).* | ***ATSU1 : ATSU2****CPL messages should be sent by the transferring controller in sufficient time to allow the completion of coordination at least 30 minutes prior to the boundary or 30 minutes prior to the aircraft passing within 50nmof the FIR boundary for information transfers.* |
| *CDN* | ***ATSU1 : ATSU2****CDN messages are sent by either the transferring or receiving facility to propose a change once the coordination process has been completed, i.e., CPL sent and ACP received. CDN’s must contain all applicable profile restrictions (e.g. weather deviations, speed assignment, block altitude). If the use of a CDN does not support this requirement, then verbal coordination is required.* | ***ATSU1 : ATSU2****The APS will display a flashing “DIA” until receipt of ACP. If ACPJ not received within ten (10) minutes, controller is alerted with a message to the queue.**CDN messages are not normally used for coordination of reroutes; however, with the receiving facilities approval a CDN may be used to coordinate a reroute on a critical status aircraft such as in an emergency.* |
| *PAC* | ***ATSU1* : *ATSU2****PAC messages will normally be sent when the time criteria from the departure point to the boundary is less than that stipulated in the CPL*. | ***ATSU1 : ATSU2****Will respond to a PAC message with an ACP. PAC messages shall be verbally verified with receiving facility.* |
| *ACP* | ***ATSU1 : ATSU2*** | ***ATSU1 : ATSU2****The APS will display a flashing “DIA” until receipt of ACP. If ACP not received within ten (10) minutes, controller is alerted with a message to the queue.* |

|  |  |  |
| --- | --- | --- |
| **Messages** | **Parameter** | **Notes** |
| *TOC* | ***ATSU1 : ATSU2****Not supported. Implicit hand in/off.* | ***ATSU1 : ATSU2*** |
| *AOC* | ***ATSU1 : ATSU2****Not supported. Implicit hand in/off.* |  |
| *MAC* | ***ATSU1 : ATSU2****MAC messages are sent when a change to the route makes the other facility no longer the “next” responsible unit.* | ***ATSU1 : ATSU2****Receipt of a MAC message must not be interpreted as meaning that the flight plan has been cancelled. Voice coordination must be conducted by the transferring controller to confirm the status of the flight.* |
| *REJ* | ***ATSU1 : ATSU2****REJ messages are sent in reply to a CDN message when the request change is unacceptable* | ***ATSU1 : ATSU2****REJ messages are sent only as a response to a CDN message.* |

**Template 2**

***Example*: Auckland Oceanic – Brisbane ATS Centre**

**Letter of Agreement**

**Coordination – General**

**Transfer of**  The Transfer of Control Point (TCP) shall be either on receipt of an Acceptance **Control Point** of Control (AOC) to a Transfer of Control (TOC) or the common FIR boundary,

 whichever occurs first. The TCP shall also be the point of acceptance of primary

 guard.

All ATS units shall 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 shall coordinate any revised estimate that varies by 3 minutes or more.

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Communication** Use of communications systems coordination between adjacent units shall be in the **Systems** following order of priority:

1. ATS Interfacility Data Communication (AIDC)
2. AIDC messages and procedures are specified in the following sections;
3. ATS direct speech circuits;
4. International telephone system;
5. Any other means of communication available.

**AIDC Messages** AIDC message format will be in accordance with the Asia/Pacific/North Atlantic Regional Interface Control Document (ICD), as amended from time to time, unless described otherwise in the LOA.

Successful coordination via AIDC occurs on receipt of an ACP message in response to an EST message.

Each centre shall advise the other of any known equipment outage that affects AIDC.

**AIDC Message** The following table details the AIDC parameters and message to be used.

**Parameters**

|  |  |  |
| --- | --- | --- |
| **Message** | **Parameter** | **Notes** |
| ABI | EUROCAT: 5-60 minutes prior to COP (Note: An updated ABI will not be sent once an EST has been sent)OCS: 40 minutes prior 50nm expanded boundary | ABI is sent automatically and is transparent to controller. ABI automatically updates flight plan. |
| EST | EUROCAT: 40 minutes prior to COPOCS: 40 minutes prior 50mn expanded boundary | Any changes to EST level or estimate conditions as detailed in LOA to be notified by voice after initial coordination completed. See notes below on voice procedures. EST is required to track generation in EUROCAT. |
| ACP | EUROCAT: Sends automatic ACP on receipt of ESTOCE: 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 boundaryOCS: Sent automatically 2 minutes prior to boundary |  |
| AOC | EUROCAT: Sent automatically on controller acceptance of a TOCOCS: Sent automatically on receipt of a TOC |  |

**Coordination – General,** Continued

**AIDC Message** (continued)

**Parameters**

|  |  |  |
| --- | --- | --- |
| **Message** | **Parameter** | **Notes** |
| CDN | EUROCAT: Manually by the controller when required | * Responses to the CDN shall 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** Route amendment – routes/waypoints may be added/deleted as long as they do not **Flight Data**  change the original intent or integrity of the flight plan information.

**Record**

Truncation – where route amendment outside the FIR unavoidable:

1. Terminate the route details at the farthest possible ‘flight planned’ point of the flight outside the FIR and enter “T” immediately following this.
2. 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.
3. The minimum acceptable truncation point must be at least the first point in the adjoining FIR.
4. Every effort is to be made to truncate the route at a minimum of one point beyond the adjacent international FIR to provide an entry track in to that FIR.

Continued on next page

**Coordination – General,** Continued

**Address** Brisbane ATSC and Auckland OAC shall send automatic Next Data Authority

**Forwarding** (NDA) and Address Forwarding (CAD) for data link aircraft as per the following

**And Next Data** table:

**Authority**

|  |  |
| --- | --- |
| Brisbane ATSC | Auto NDA sent 22 minutes prior to the FIR boundaryAuto CAD sent 20 minutes prior to the FIR boundary |
| Auckland OAC | Auto NDA sent 40 minutes prior to the FIR boundaryAuto CAD sent 35 minutes prior to the FIR boundary |

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**Voice** Voice coordination is not required when AIDC messaging has been successful to **Coordination** 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 shall 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 shall 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.

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**Hemstitch** A hemstitch flight is any flight that will remain within the New Zealand FIR for **Flights**  less time than the NDA VSP (40 minutes) prior to the flight entering the

 Brisbane FIR.

 Auckland AOC shall voice coordinate any hemstitch flight.

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**Coordination – General,** Continued

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**Near Boundary** ATS units shall relay significant details of any flight which is, or intends **Operations**  operating within fifty nautical miles (50NM0 of the common FIR boundary.

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**HF Frequencies** Brisbane ATC and Auckland ATC shall 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 shall be effective from 0506300300 UTC and may be cancelled by either party with written notice.

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**Signatories**  The following signatories have ratified this Agreement:

|  |  |  |
| --- | --- | --- |
| **Authority** | **Signature** | **Date** |
| *(Name of Officer)*Oceanic Business Unit Manager Airways New Zealand |  |  |
| *(Name of Officer)*Manager, Operations Strategic Air Services LimitedFiji |  |  |
| *(Name of Officer)*Chairman, ATM Projects Committee, Airports Fiji LimitedFiji |  |  |

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**Memorandum of Understanding,** Continued

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**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).

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**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 shall be made only with the concurrence of all parties.

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**Procedures** The format of AIDC messages (ABI, EST, PAC, CDN, CPL, ACP, REJ, TOC, AOC, MAC, LAM and LRM) is defined by the Asia/Pacific/North Atlantic Regional AIDC Interface Control Document (ICD) version 2.0. The optional formats for the coordination of block levels, weather deviations and Mach Number Technique have not been implemented.

Each facility shall advise the other facility of any known equipment outage that will affect AIDC. In the even of AIDC outage, voice coordination procedures will apply.

The following table details the messaging parameters and additional information for each message.

|  |  |  |
| --- | --- | --- |
| **Message** | **Parameter** | **Notes** |
| ABINon Hem-stitching flights | **Auckland:** Sends ABI 48 minutes prior to boundary(Note: An updated ABI will no be sent once an EST has been sent) | Updated ABIs will be sent automatically if there is any change to profile. ABI is sent automatically and is transparent to the controller. ABI automatically updates the receiving units flight data record |
| EST(general)Non Hem-stitching flights | **Auckland:** Sends EST 38 minutes prior to boundary | EST is sent automatically and automatically coordinates the receiving unit’s flight data record. Any change to the EST (level or estimate) conditions as detailed in LOA are to be notified by voice after the initial coordination completed. See section below on voice procedures |
| ABI & ESTHem-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 |  |

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**Memorandum of Understanding,** Continued

|  |  |  |
| --- | --- | --- |
| **Message** | **Parameter** | **Notes** |
| ACP | **Auckland:** Sent automatically on receipt of EST**Nadi:** Sent automatically on receipt of EST or PAC | **Auckland:** The APS will display a flashing “DIA” until receipt of ACP. If ACP not received within ten (10) minutes, controller is alerted with a message to the queue |
| TOC | **Auckland:** Sent automatically 2 minutes prior to boundary | This proposes a hand-off to the receiving unit |
| AOC | **Auckland:** Sent automatically on receipt of TOC**Nadi:** Sent by the controller on acceptance of TOC  | This completes the hand-off proposal |
| MAC | **Auckland:** Sent manually when a change to the route makes Nadi no longer the “next” responsible unit | Receipt of a MAC message should not be interpreted as meaning that the flight plan has been cancelled. Voice coordination should be conducted by the receiving controller to confirm the status of the flight |

**Procedures,** Block levels, offsets, and weather deviations, or Mach Number Techniques are **Continued** not included in the current version of AIDC messaging. Voice coordination shall

 be conducted for aircraft operating under these circumstances.

If there is any doubt with regard to the final coordination conditions, voice coordination shall be used for confirmation.

Truncation – Where route amendment outside the FIR is unavoidable:

* Terminate the route details at the farthest possible ‘flight planned’ point of the flight and enter “T” immediately following this.
* Without amending the originally received details, every effort is to be made to truncate the route a minimum of one point beyond the adjacent FIR to provide an entry track in to that FIR

For any reason where changes to this MOU are advisable the requesting unit shall propose the pertinent revision. The revision should be emailed of faxed to the appropriate Manager for action. The Manager or the designated deputies shall agree by email or telephone, followed by a confirming fax message signed by all parties. Formal exchange of signed copies of the amended MOW shall take place as soon as practicable thereafter.

**Hemstitch** A Hemstitch flight is any flight that vacates FIR 1 and transits FIR 2 before re-

**Flights** enteringFIR 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:

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**Memorandum of Understanding,** Continued

* A weather deviation, or
* A level change, or
* Any change to the EST time is received or
* If there is any doubt that the receiving FIR has the correct boundary information

AIDC messages (ABI and EST) will still be sent by Auckland, but only when the aircraft flight state becomes active control. For hem stitching flights this will usually be when the aircraft enters the NZZO FIR, therefore these messages will normally be sent at less that 30 minutes prior to the TCP.

**Voice** The following is provided as a summary of occasions when voice coordination is

**Coordination** 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 can not accept the aircraft at the coordinated level

Notwithstanding the above, voice coordination shall take place for any flight that departs an airfield within the NZZO FIR and enters the NFFF FIR within 30 mins after departure.

For aircraft on fixed routes this specifically applies to:

* Aircraft departing Norfolk and entering the Nadi FIR via UBDAK or OSVAR/
* Aircraft departing Fua’amotu and entering the Nadi FIR via APASI;
* Aircraft departing Faleolo and entering the Nadi FIR via OVLAD or KETOT

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**Memorandum of Understanding,** Continued

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 shall be verbally coordinated in the usual manner.

**Notification of** Auckland OCS controllers may issue descent to aircraft entering the NZZO FIR

**Descent** from theNFFF FIR and landing at Norfolk, Tonga or Samoa without requesting

**Restrictions by** descent restrictions from Nadi provided descent is commenced after the aircraft

**Nadi** has passed the following positions. Should Nadi have any restrictions for descent,

 they will advise Auckland at least 10 mins prior to these positions:

For aircraft entering NZZO FIR via:

* UPDAK descent to commence after NOGOL
* OSVAR descent to commence after OSVAR minus 10 mins
* APASI descent to commence after ASAPI
* All other occasions, descent to commence after the aircraft has crossed the FIR boundary.