International Civil Aviation Organization

THE SECOND MEETING OF ASIA/PACIFIC ATS INTER-FACILITY DATA COMMUNICATION (AIDC) IMPLEMENTATIONTASK FORCE (APA TF/2) OF APANPIRG

Bangkok, Thailand, 16 - 18 March 2016

Agenda Item 4: Asia/Pacific AIDC implementation guidance material

DEVELOPMENT OF AIDC GUIDANCE MATERIALS

(Presented by the Singapore)

SUMMARY

This paper presents the Contribution by Singapore for Chapter 4 and 6 of the draft AIDC implementation Guidance Materials.

1. INTRODUCTION

1.1 The first meeting of this Task Force agreed to develop the guidance material based on the example of AIGD for ADS-B implementation in the Asia and Pacific Regions. The meeting made Decision 1/ 4 on development of the guidance material by an Ad Hoc Working Group.

2. DISCUSSIONS

2.1 According to the tasks assigned at the second teleconference held on 1 February 2016, Singapore provided the draft material for Chapters 4 and 6 of the GM for review by the meeting.

3. ACTION BY THE MEETING

3.1 The meeting is invited to review the Chapters 4 and 6 provided in the Attachments to this paper.

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Chapter 4 **AIDC Messages**

4.1 **Introduction**

4.1.1 This chapter describes the permitted fields and formats of AIDC messages. AIDC message fields conform to ICAO definitions contained in PANS-ATM Appendix 3 except as described below for Fields 14 and 15, as well as a "Text" field that is used in some AIDC messages.

4.1.2 ATS data in AIDC messages is enclosed between parentheses. Only one ATS message is permitted to be included in each transmission.

4.1.3 Unless specified otherwise by the ATSU, the optional elements in the AIDC message fields described in this chapter and shown in Table 4-6 should be made available in the system by the manufacturer and be user configurable.

4.2 **Message Field Requirements**

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

4.2.1 **Field 3 requirements.**

4.2.1.1 All AIDC messages should use Field 3a (Message type) only.

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

4.2.2 **Field 7 requirements.**

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

4.2.3 **Field 13 requirements**.

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

4.2.4 **Field 14 requirements**

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

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

Table 4-1. Contents of Field 14

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

	GOOFY		by bilateral agreement. Field 14a is followed by an oblique stroke "/"
Estimated time (14b)	2200	M	The estimate for the position in 14a
Level (14c)	A090 F330 F330F370	M	The coordinated level of the aircraft While 14c is mandatory, the support for the block level format is optional
Supplementary crossing data (14d)	A120 F350	Included when applicable	Use in conjunction with 14e to indicate that an aircraft may be on climb or descent at, or within tolerances of, the FIR boundary
Crossing condition (14e)	A B C	Included when applicable	(A) The aircraft may be on climb from the level specified in 14d (B) The aircraft may be on descent from the level specified in 14d (C) The aircraft is cruise climbing from the level specified in 14d. The support for the cruise climb format is optional
Mach Number	GM084 EM076 LM083	O	Used when a Mach Number speed restriction has been assigned to the aircraft by ATC.
Offset and weather deviation	W25R W100E O30L	O	When an offset or weather deviation is in effect, the position in 14a should be a position on the flight planned route, rather than the offset route

Note1. Each item of optional information in Field 14 is separated from the previous item by an oblique stroke "/";

Note2. The order that the item is included in Field 14 is the order in which it is listed in Table 4-1. For example, if an AIDC message were to include an assigned Mach Number as well as a weather deviation, the Mach Number information would precede the weather deviation information in Field 14.

4.2.4.2 Supplementary Crossing Data and Crossing Conditions in Field 14

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

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

Example:

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

4.2.4.3 Block level information in Field 14

4.2.4.3.1 Field 14 may contain information that an aircraft is operating in a block level clearance. It is permissible to include supplementary crossing data and a crossing condition with a block level, but if this occurs the supplementary information may only be a single level (i.e. it cannot be a block level).

Example:

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

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

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

4.2.4.4 Mach Number information in Field 14

4.2.4.4.1 Field 14 may contain information that an aircraft has been assigned a speed restriction (Mach Number). When included in an AIDC message, any Mach Number information should always follow directly after the level information and be separated from the level information by an oblique stroke "/".

Example:

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

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

Example:

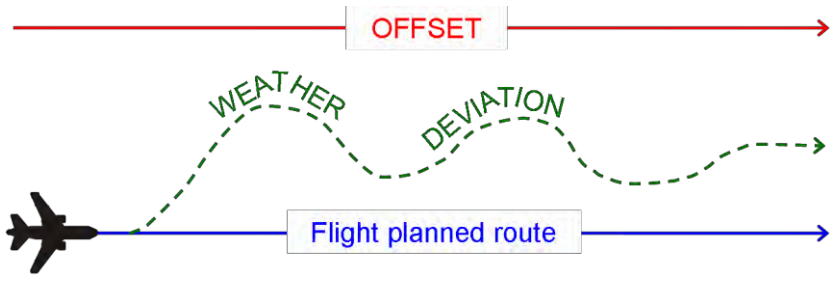
Field 14	Explanation
SPEDY/1237F310F330B/LM083 Subsequently followed by: SPEDY/1238F310	The aircraft is estimating SPEDY at 1237, assigned F310 and will cross SPEDY at or below F330, maintaining M0.83 or less. The aircraft is now estimating SPEDY at 1238, is maintaining F310 (i.e. no longer on descent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

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

4.2.4.5 Offset and Weather Deviation Information in Field 14

4.2.4.5.1 Field 14 may contain information that an aircraft is subject to either a weather deviation or offset clearance. When included in an AIDC message, any offset and weather deviation information should always be the last information in Field 14, and should be separated from preceding information by an oblique stroke "/".

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



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

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

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

Example:

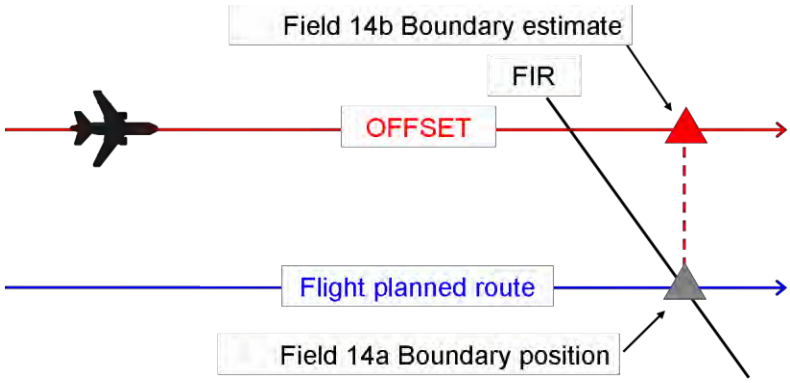
Field 14	Explanation
2830S16300E/0140F330/W20L	The aircraft is estimating 2830S16300E at 0140, maintaining F330, and has been cleared to deviate up to 20NM to the left of route.
GOOFY/2330F310/GM084/O30R	The aircraft is estimating GOOFY at 2330, maintaining F310, instructed to maintain M0.84 or greater, and has been cleared to offset 30NM to the right of route.
41N040W/0215F310F330/W25E	The aircraft is estimating 41N040W at 0215, is operating in a block of levels between F310 and F330 (inclusive), and has been cleared to deviate up to 25NM either side of route.
DAFFY/0215F310F350F370B/W100L	The aircraft is estimating DAFFY at 0215, and has been assigned a block of levels between F310 and F350 (inclusive), will cross DAFFY at or below F370, and has been cleared to deviate up to 100NM to the left of route.

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

Example:

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

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



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

4.2.5 Field 15 requirements

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

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

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

Table 4-2. Contents of Field 15

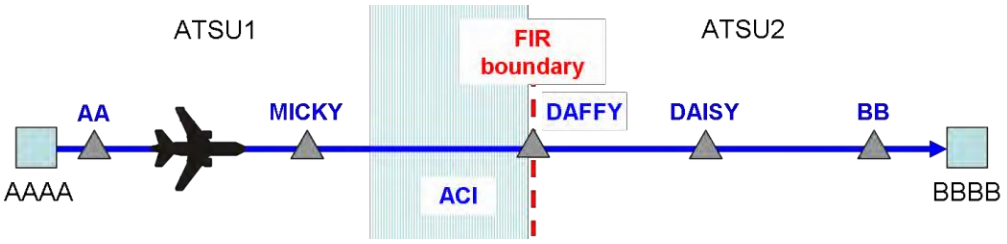
Data	**Example**	**Mandatory /Optional**	**Comment**
Speed (15a)	M084 N0488	M	(Included in a flight plan as the initial requested speed for a flight). In AIDC messaging: • if a speed has been specified in Field 14c, then the speed in Field 15a should be the same value; otherwise, • it should represent the expected speed of the aircraft at the coordination point included in Field 14a.

Level (15b)	F310	M	(Included in a flight plan as the initial requested flight level for a flight). In AIDC messaging: • if a block level has been specified in Field 14, then the level in Field 15a should be a single level within the block; otherwise, • it should be the level specified in Field 14c.
Route (15c)	• DAFFY • HNL • EGLL • 3415S16000E • 60N050W • A123, AB456 • BLI235100 • M080F350 • M084 • F370 • M084F370 • 1230 • T • DCT	M	The route (or proposed route) of flight. It may contain any or all of the following elements: • Waypoint • Navigation aid • Aerodrome • Latitude/longitude • Latitude/longitude • ATS route • Place/bearing/distance • Speed/level changes (See Note 2) • Speed restriction • Level restriction • Speed/Level restriction (See Note 2) • Time associated with a restriction. May include a suffix of "A", "B" or "L" • Truncation indicator ('T') • Direct to

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

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

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



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

4.2.5.6 **ATS Route**

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

4.2.5.7 **Latitude/Longitudes**

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

4.2.5.8 **Flight Planned Speed/Level Changes**

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

4.2.5.9 **Time/Speed/Level Restrictions**

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

4.2.5.10 **Truncation Indicator**

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

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

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

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

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

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

Examples of Field 15c

SY L521 AA	Navaid, ATS Route Note that both "SY" and "AA" are defined on airway L521
SY L521 GEROS 32S160E 3425S16300E LUNBI AA	Navaid, ATS Route, waypoint, lat/long (dd), lat/long (ddmm)
SY GEROS GEROS045100 ESKEL L521 AA	Place/bearing/distance
SY L521 GEROS/M085F370 L521 AA DCT BB	Speed/level change, DCT
SY L521 LUNBI T SY L521 GEROS 32S160E 3425S16300E T SY L521 LUNBI/M085F370 T	Truncation indicator
SY L521 GEROS/F370 L521 F370/LUNBI AA SY GEROS/2245L 32S160E ESKEL/M085F390 AA SY L521 M084F350/GEROS/1230A ESKEL/M083 L521 AA	Restrictions

4.2.6 **Field 16 Requirements**

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

4.2.7 **Field 18 Requirements**

4.2.7.1 Field 18 should contain other information from the current flight plan and is used to update the flight plan at the receiving ATSU.

4.2.7.2 When transmitting Field 18 in an AIDC message, all Field 18 indicators should be included, even if the change only affects data in an individual Field 18 indicator. However, ATS Units may agree by bilateral agreement to omit specific indicators (e.g. EET/) if required. If omitting indicators, ATS Units should have due regard to the potential effect to downstream ATS Units.

4.2.7.3 The contents of Field 18 in AIDC messages should be specified in bilateral agreements between ATS Units.

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

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

4.3 **AIDC message groups**

4.3.1 From a technical and operational perspective it is advantageous to standardize AIDC implementation to the full extent possible. This document identifies a group of messages as a "core" message set in Table 4-3, which is recommended to be supported by all ATSUs. This will aid standardization of system and procedure development.

4.3.2 It is nevertheless acknowledged that even a limited message set implementation, such as only CPL and ACP, can bring significant benefits to ATS units. Some ATSUs may, due to technical, financial, or operational reasons, have a need to gradually implement the AIDC message set or may even determine that not all messages in the core message set are required.

4.3.3 Unless specified otherwise by the ATSU, the non-core messages shown in Table 4-3 should be supported by the manufacturer in ground systems and their availability be configured by the ATS Unit as required.

4.3.4 The specific AIDC messages to be used between ATSUs should be included in bilateral agreements.

Table 4-3. AIDC Messages

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

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

4.4 **Notification messages**

4.4.1 **ABI (Advance Boundary Information).**

4.4.1.1 Purpose.

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

4.4.1.3 The transmission of the initial ABI will normally be triggered at an agreed time or position prior to the common boundary or ACI, or possibly by a change in flight state. Before coordination occurs, amendments to information contained in a previously transmitted ABI should be notified by the transmission of another ABI.

4.4.1.4 Message format.

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

Field 22 should contain as a minimum the following fields:

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

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

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

Example

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

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

-9/B744/H

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

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

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

-8/IS

-9/B752/M

-10/SDIJ5RXW/SD1

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

-18/PBN/A1L1)

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

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

-8/IS

-9/A320/M

-10/SDE1E3FGHIM2RW/LB1

-15/N0448F370 EVONN L521 ESKEL/N0448F390 L521 LUNBI DCT

-18/PBN/A1C1D1O1S2T1 REG/ZKOJI EET/YBBB0009 NZZO0121 SEL/HLAM CODE/C8178C OPR/ANZ RALT/YSNF RMK/TCAS EQUIPPED)

4.5 **Coordination messages**

4.5.1 **CPL (Current Flight Plan)**

4.5.1.1 Purpose.

4.5.1.1.1 A CPL message is used to initiate coordination for a flight.

4.5.1.1.2 The transmission of the CPL message will normally be triggered at an agreed time or position prior to the common boundary or ACI, or possibly by a change in flight state.

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

4.5.1.1.4 A coordination dialogue initiated by a CPL message may only be closed by an ACP message.

4.5.1.2 Message format.

ATS Field	Description
3	Message type
7	Aircraft identification
8	Flight rules and type of flight
9	Number, type of aircraft and wake turbulence category
10	Equipment
13	Departure aerodrome
14	Estimate data
15	Route
16	Destination aerodrome
18	Other information

Example

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

(CPL-UAL815-IS

-B773/H-SDIJ5RXW/SD1

-LFPG-54N030W/1417F350F370F330A

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

-KIAD

-PBN/A1L1 REG/N456UA SEL/KLBF)

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

(CPL-ICE680/A1437-IS

-B752/M-SWXRGIDFHY/LB1

-KSEA-6852N06414W/0418F370F390/W30E

-M079F370 6852N06414W BOPUT/0430B 6900N06000W 6900N05000W 6800N04000W 6600N03000W HEKLA

-BIKF

-PBN/A1B2B3B4B5D1L1S1 NAV/RNVD1A1 DOF/131124 REG/TFLLX SEL/DSHK RALT/CYEG BGSF)

4.5.2 **EST (Coordination Estimate)**

4.5.2.1 Purpose.

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

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

4.5.2.1.3 The only valid response to an EST message is an ACP message, which closes the coordination dialogue.

4.5.2.2 Message Format

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

Example

(EST-DLH454-EDDF-BOPUT/1248F360/LM083-KSFO)

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

4.5.3 **PAC (Preliminary Activate)**

4.5.3.1 Purpose.

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

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

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

4.5.3.1.4 A coordination dialogue initiated by a PAC message may only be closed by an ACP message.

4.5.3.2 Message Format

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

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

8	Flight rules and type of flight
9	Number, type of aircraft and wake turbulence category
10	Equipment
15	Route
18	Other information

Example

An example of an abbreviated PAC message:

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

An example of a PAC message containing all message fields:

(PAC-ATN460/A4440-FJDG-LATEP/1822F310F001A-WSAP
-8/IN
-9/B752/M
-10/ SDIRXW/S
-15/N0473F370 DCT NKW R348 LATEP/M080F350 R348 KADAP/N0489F290 P627 DABAP/N0467F370 N628 PKU R469 TAROS/M080F370 DCT PIMOK W401 KK DCT PU DCT
-18/PBN/A1B2C2D2O2 NAV/RNVD1E2A1 DOF/131212 REG/N753CX EET/YMMM0027 SEL/GSQR OPR/ATN ORGN/KLITATNX RMK/TCAS EQUIPPED)

4.5.4 **MAC (Cancellation of Notification and/or Coordination)**

4.5.4.1 Purpose.

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

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

4.5.4.2 Message Format

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

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

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

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

Example

(MAC-BCA789-EGKK-KLAX)

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

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

4.5.5 **CDN (Coordination Negotiation)**

4.5.5.1 Purpose.

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

4.5.5.1.2 An initial coordination dialogue following a CPL message is always terminated by an ACP message; otherwise an ATSU receiving a CDN message can indicate that the proposed revision is not acceptable (by replying with an REJ message) or propose an amendment to the proposed coordination by replying with a CDN message.

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

4.5.5.2 Message Format.

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

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

14	Estimate data
15	Route
18	Other Information

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

10	Equipment
Text	Amended Destination

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

Example

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

(CDN-NWA36-KBOS-EDDF

-14/54N030W/0446F370)

(CDN-ANZ135/A2462-NZAA-YBBN

-14/RIGMI/0220F360F380/W20L)

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

(CDN-QFA43/A4422-YSSY-NZAA

-10/SDE2E3GHIRYZ/LB1)

A CDN message proposing amendments to Fields 14 and 15:

(CDN-BAW32N-KMIA-EGGL

-14/37N040W/0201F360

-15/M085F360 32N050W 37N040W 42N030W 45N020W OMOKO GUNSO GAPLI UL620 GIBSO)

A CDN message proposing amendments to field 18:

(CDN-BAW242-MMMX-EGLL

-18/PBN/A1 DOF/120412 REG/GBNLI EET/KZHU0054 LPPO0546 CZQX0606 EGGX0643 49N020W0732 BEDRA0757 GUNSO0813 EGTT0833 SEL/BPCE ORGN/EGLLBAWH RALT/CYQX EIDW RMK/TCAS)

CDN messages proposing an amended destination (subject to bilateral agreement):

(CDN-KAL823-RJAA-NZCH

-15/LTO G591 AA-DEST/NZAA)

(CDN-MAPLE1-PKMJ-ZZZZ

-14/MARTI/2200F310-15/MARTI 02N168E

-DEST/0150N16745E)

4.5.5.4 The last two examples demonstrate a CDN message proposing a new route to an amended destination. The first of these examples shows a change in route and destination, with no change in Field 14 (i.e. the proposed re-route occurs after the boundary position). The second example shows a change of route with a corresponding change to Field 14. The "DEST/" included in this example refers to the proposed destination, rather than the original "ZZZZ" destination that may have been included in the flight plan. Refer to Chapter 6, *Implementation Guidance Material*, for the methodology in proposing a diversion to a new destination.

4.5.6 **ACP (Acceptance)**

4.5.6.1 Purpose.

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

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

4.5.6.2 Message Format.

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

Example

(ACP-ACA860-NZAA-KSFO)

(ACP-UAL816/A3312-YSSY-KLAX)

4.5.7 **REJ (Rejection)**

4.5.7.1 Purpose.

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

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

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

4.5.7.2 Message Format.

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

Example

(REJ-AAL780-KJFK-EGLL)

(REJ-BAW32N/A2262-KMIA-EGGL)

4.5.8 **PCM (Profile Confirmation Message)**

4.5.8.1 Purpose.

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

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

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

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

4.5.8.2 Message Format.

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

The PCM may optionally include any or all of the following fields:

8	Flight rules and type of flight
9	Number, type of aircraft and wake turbulence category
10	Equipment
15	Route
18	Other information.

Example

A PCM containing mandatory Field 14 information only:

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

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

(PCM-UAL815/A2211-YSSY-2801S16300E/2255F310-KLAX

-10/SDE3FGHIJ3J5M1M3RWXY/LB1D1)

A PCM containing all allowable fields:

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

-8/IS

-9/B744/H

-10/SDE3FGHIJ3J5M1M3RWXY/LB1D1

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

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

C1177 ROSIN/N0360F120

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

4.5.9 **PCA (Profile Confirmation Acceptance)**

4.5.9.1 Purpose.

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

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

4.5.9.2 Message Format.

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

Example

(PCA-UAL815-YSSY-KLAX)

(PCA-QFA43/A2233-YSSY-NZAA)

4.5.10 **TRU (Track Update)**

4.5.10.1 Purpose.

4.5.10.1.1 A TRU message is used to coordinate amendments to previously agreed coordination conditions, or other flight-related information, where prior coordination of the change(s) is not required.

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

4.5.10.2 Message Format.

ATS Field	Description
3	Message type

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

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

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

4.5.10.2.2.1 Requested Flight Level (RFL)

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

Example

RFL/F390

RFL/A090

RFL/F310F330

RFL/F330F310C

4.5.10.2.2.2 Present Level (PRL)

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

Example

PRL/F390

PRL/A090

4.5.10.2.2.3 Heading (HDG)

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

Example

HDG/080

4.5.10.2.2.4 Cleared Flight Level (CFL)

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

Example

CFL/F330

CFL/F310F330

CFL/F310F330F210A

CFL/F330F310C

4.5.10.2.2.5 Speed (SPD)

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

- Mach Numbers are expressed as "M" followed by 3 figures giving the true Mach Number or to the nearest .01 Mach.
- Indicated airspeeds are expressed as "I" followed by 4 figures giving the Indicated Airspeed in knots.

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

Example

SPD/M084

SPD/I0250

SPD/0

4.5.10.2.2.6 Direct to (DCT)

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

Example

DCT/MICKY

DCT/30S160E

4.5.10.2.2.7 Off track deviation (OTD)

This element is preceded by the identifier 'OTD' and contains the details of any off track clearance that has been issued to the aircraft. The format of the off track deviation is as described in Chapter 2, *Purpose, Policy and Units of Measurement*, Para 2.3.9.1; i.e.

- a single character providing advice as to whether the clearance is an offset (O) or a weather deviation (W); and
- an off track distance associated with this clearance:
- a direction, indicating left (L) or right (R) or, in the case of weather deviation, either side of track (E); and
- when including Offset information in and AIDC message, the direction "E" (either side of track) should not be used

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

Example

OTD/W20R

OTD/O30L

OTD/0

Examples

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

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

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

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

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

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

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

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

4.6 **Transfer of control messages**

4.6.1 **TOC (Transfer of Control)**

4.6.1.1 Purpose.

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

4.6.1.2 Message Format

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

Example

(TOC-TAP451-LPPT-KJFK)

(TOC-QFA135/A2217-YMML-NZCH)

4.6.2 **AOC (Acceptance of Control)**

4.6.2.1 Purpose.

4.6.2.1.1 The AOC message is transmitted in response to a received TOC message to indicate acceptance of executive control of a flight.

4.6.2.2 Message Format.

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

Example

(AOC-TAP451-LPPT-KJFK)

(AOC-QFA135/A2217-YMML-NZCH)

4.7 General information messages

4.7.1 **EMG (Emergency)**

4.7.1.1 Purpose.

4.7.1.1.1 The EMG message is used when it is considered that the contents require immediate attention by the receiving ATSU.

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

4.7.1.1.3 The following are examples of circumstances which could justify the use of an EMG message.

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

b) Messages concerning hijack or bomb warnings;

c) Messages concerning serious illness or disturbance among passengers;

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

e) Communications failure.

4.7.1.2 Message format.

ATS Field	Description
3	Message type
7	Aircraft identification (or functional address)
18	Other information (limited to RMK/)

Example

(EMG-UAL123-RMK/Free Text)

(EMG-/ASUP-RMK/Free Text)

4.7.2 **MIS (Miscellaneous)**

4.7.2.1 Purpose.

4.7.2.1.1 The MIS message is used to transmit operational information which cannot be formatted to comply with any other message type and for plain language statements.

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

4.7.2.2 Message format.

ATS Field	Description
3	Message type
7	Aircraft identification (or functional address)
18	Other information (limited to RMK/)

Examples

(MIS-NWA456-RMK/Free Text)

(MIS-/ASUP-RMK/Free Text)

4.8 **Application management messages**

4.8.1 **LAM (Logical Acknowledgement Message)**

4.8.1.1 Purpose.

4.8.1.1.1 The LAM is transmitted in response to each AIDC message (except for another LAM or LRM) that has been received, and found free of syntax and semantic errors.

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

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

4.8.1.2 Message Format.

ATS Field	Description
3	Message type

Example

(LAM)

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

4.8.2 **LRM (Logical Rejection Message)**

4.8.2.1 Purpose.

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

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

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

4.8.2.1.4 Receipt of an LRM may require local corrective action.

4.8.2.2 Message Format.

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

4.8.2.2.1 Field 18 is used to convey technical information, and will only use the RMK/ sub-field. This text will comprise an error code, supporting text and the message field number in which the error occurred (where applicable).

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

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

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

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

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

4.8.2.2.5 The <invalid text> will contain the error text corresponding to the error code extracted from Table 5-1 (not including any of ‘explanatory text’ that may have been included in Table 5-1). If

the specific error can be identified, it may optionally be appended to the Table 5-1 error text. The invalid text field can contain up to 256 characters, and may contain an oblique stroke "/".

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

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

Example

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

OR

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

(See Note following paragraph 4.8.2.2.4)

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

OR

(LRM-RMK/17/16/)

(See Note following paragraph 4.8.2.2.5)

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

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

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

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

4.8.3 ASM (Application Status Monitor)

4.8.3.1 Purpose.

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

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

4.8.3.2 Message Format.

ATS Field	Description
3	Message type

Example

(ASM)

4.8.4 **FAN (FANS Application Message)**

4.8.4.1 Purpose.

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

4.8.4.2 Message Format.

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

4.8.4.2.1 Application data is a free text field used in the FAN message to permit the transfer of FANS-1/A logon information from one ATSU to another. This field contains a number of elements which are described below. Each element consists of an "identifier" and a value which are separated by a "/" character. The abbreviation used for the identifier corresponds to the associated ICAO abbreviation (where one exists), otherwise the three character MTI (Message Type Identifier) contained in the logon is used (refer to ARINC 622 for a listing of various MTIs)

4.8.4.2.2 The order of the elements within the FAN message is the order that they are listed below, with consecutive elements being separated by a single <space> character. Although some elements within the Application data field may be "optional", they should be included if the corresponding data is available (i.e. if the ATSU transmitting the FAN message has this information available, either from a logon or a FAN message). This is for the benefit of downstream ATSUs that may use the information within these optional elements. If the data is not available for an optional element, that element is not to be included in the FAN message.

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

4.8.4.2.4 Standard message identifier (SMI)

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

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

Example

SMI/FMD

4.8.4.2.5 Aircraft identification

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

Example

FMH/MAS123

4.8.4.2.6 Aircraft registration

4.8.4.2.6.1 This mandatory element is preceded by the identifier ‘REG’ and contains the registration details of the aircraft – including the hyphen if applicable – as it was received in either the most recently received logon or FAN message. While a hyphen is not permitted in the registration in other AIDC messages, it is necessary in the FAN message in order to allow data link messages to be correctly addressed to the aircraft. Any “padding” in the registration contained in the AFN logon (e.g. preceding periods “.”) must **not** be included in the FAN message.

Example

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

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

4.8.4.2.7 Aircraft Address (ICAO 24 bit code)

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

Example

CODE/ABC123

4.8.4.2.8 Aircraft position information

4.8.4.2.8.1 This optional element is preceded by the identifier ‘FPO’ and contains the position of the aircraft as determined by the ATSU at the time of transmission of the FAN message (if this information is available). The position of the aircraft is expressed as a latitude/longitude in either dd[NS]ddd[EW] or ddmm[NS]dddmm[EW] format. The position that may have been provided by the aircraft in a previous logon should not be included in the FAN message, because it is most likely no longer accurate

Example

FPO/23S150E

FPO/0823N11025E

4.8.4.2.9 ATS Application and Version Number

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

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

Example

FCO/ATC01 FCO/ADS01

FCO/ADS01

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

Example

(FAN-ACA870-CYUL-LFPG

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

(FAN-UAL951-EBBR-KIAD

-SMI/FML FMH/UAL951 REG/N123UA CODE/A254B3 FCO/ADS01)

(FAN-ANZ123/A2213-NZAA-KLAX

-SMI/FML FMH/ANZ123 REG/ZK-NJP FCO/ADS01)

(FAN-SIA221-WSSS-YSSY

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

4.8.4.2.11 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 is being transmitted to permit the next ATS unit to establish a CPDLC connection, it should not be sent until after an appropriate CPDLC Next Data Authority message (NDA) has been transmitted to the aircraft, either by allowing a reasonable time for delivery of the NDA message or waiting until a successful MAS (MAS/S) message has been received in response to the transmission of the NDA message.

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

4.8.5 **FCN (FANS Completion Notification)**

4.8.5.1 Purpose.

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

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

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

4.8.5.2 Message Format.

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

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

4.8.5.2.2 CPDLC Connection Status identifier (CPD)

4.8.5.2.2.1 This mandatory element is preceded by the identifier "CPD" and contains a single integer value which is used to provide information concerning an aircraft's CPDLC Connection

status. The value to be included in the CPDLC Connection Status field is determined from the following table.

Table 4-4. CPDLC Connection Status

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

Example

CPD/0

4.8.5.2.3 Frequency identifier (FREQ)

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

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

Table 4-5. Frequency Identifier

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

Example

FREQ/117.975

Example of FCN message

FCN messages transmitted by the receiving ATSU:

The CPDLC Connection request for SIA221 was unsuccessful

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

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

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

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

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

FCN message transmitted by the transferring ATSU:

The CPDLC Connection with ICE615 has been terminated

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

4.9 **Surveillance Data Transfer Service Messages**

4.9.1 **ADS (Surveillance ADS-C)**

4.9.1.1 Purpose.

4.9.1.1.1 The ADS message is used to transfer information contained in an ADS-C report from one ATSU to another.

4.9.1.2 Message Format.

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

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

4.9.1.2.2 Any hyphen in the registration of the aircraft in the ACARS ADS-C report is included in the ADS message. Unlike the FAN message, any "padding" in the registration contained in the ACARS ADS-C report (e.g. preceding periods ".") MUST be included in the ADS message.

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

4.9.1.2.4 The specific text to be included in the AIDC ADS message is described in Chapter 6, *Implementation Guidance Material*.

Example

(ADS-ANZ90/A2233-RJAA-NZAA

-ADS/.ZK-OKC030007FF946B6F6DC8FC044B9D0DFC013B80DA88FC0A64F9E4438B4
AC8FC000E34D0EDC00010140F3E86)

(ADS-ANZ90/A2233-RJAA-NZAA

-ADS/0)

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

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

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

Chapter 6 HARMONIZATION FRAMEWORK FOR AIDC IMPLEMENTATION

6.1 Introduction

6.1.1 This chapter describes the steps that should be taken to harmonize AIDC implementation between ATS units. As the successful transmission and reception of AIDC messages are dependent on various external factors, the need to harmonize implementation plans and timelines if AIDC implementation is to be successful.

6.1.2 AIDC messages can be transmitted through existing AFTN networks or by the use of dedicated data channels between ATS units. There may be a need to upgrade existing infrastructure to cater for sufficient bandwidth for handling AIDC messages.

6.1.3 The framework details and template will be described in greater details in the next section

6.2 Harmonization Framework

The various items that will require harmonization between ATS units are listed below. These are the minimum required and individual ATS units may choose to include additional items as required. A coordinated approach to implementing AIDC is crucial to allow ATS units to improve on coordination efficiency and remove associated errors that could arise with manual voice coordination.

4.2.1 Bilateral agreements

4.2.1.1 TBN

4.2.2 ATC procedures

4.2.2.1 TBN

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4.2.3 ATS Routes

4.2.3.1 TBN

4.2.4 AIDC version

4.2.4.1 TBN

4.2.5 AIDC messages

4.2.5.1 TBN

4.2.6 Infrastructure

4.2.6.1 TBN

6.2 TEMPLATE OF HARMONIZATION FRAMEWORK FOR AIDC IMPLEMENTATION

Harmonization Framework for AIDC Implementation between ACC1 and ACC2			
No.	**Harmonization items**	**Description**	**Remarks**
1	Bilateral agreements	- Date of implementation to be stated in bilateral agreement between ATS units - AIDC messages and parameters to be implemented - ATS routes /coordination points to be determined - Agreed fallback procedures in the event of unsuccessful message exchanges - AIDC suspension conditions - data link for AIDC messaging (eg AFTN, dedicated line, etc)	Any other unique agreement details to be included based on the requirements of ATS units.
2	ATC Procedures	- AIDC message parameters and activation conditions - Fallback procedures	
3	ATS routes	- ATS routes - Coordination points	

4	AIDC version	-AIDC version to be used by ATS unit	
5	AIDC messages	-AIDC messages to be exchanged	
6	Infrastructure	-Infrastructure required - Alternate/backup links in the event of failure of primary transmission channel	