# User Guide for the Envoy Data Link

**SLC Doc Number UG-15000**

**Revision A**


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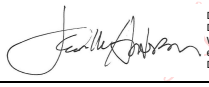
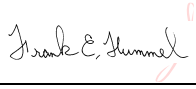
| Preparer: |  | Digitally signed by Jenelle Anderson<br>DN: cn=Jenelle Anderson, o=Technical Writer, ou=Engineering, email=jenellea@spectralux.com, c=US<br>Date: 2020.04.01 11:52:20 -07'00' |
| Engineer: |  | Digitally signed by Frank E. Hummel<br>DN: cn=Frank E. Hummel, o=Director of Engineering, ou=Engineering, email=frankh@spectralux.com, c=US<br>Date: 2020.04.01 12:56:22 -07'00' |
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# CHANGE RECORD

| PARAGRAPH | DESCRIPTION OF CHANGE | APPROVAL/ DATE | REV |
|---|---|---|---|
| All | Initial Release | Jenelle Anderson July 31, 2019 | - |
| All | Updated with engineering feedback for terminology, implemented feeatured; deferred features are hidden. See ECO 15403 | Jenelle Anderson April 1, 2020 | A |

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# 1 Introduction

This document is a functional description of the Spectralux Envoy Data Link All-In-One and contains common procedural scenarios and field-level help for all pages of a full-featured Envoy configuration, including all COMM modes and maintenance pages accessible by the aircrew.

## 1.1 Audience

This document is intended for aircrew training and is meant to be used in conjunction with other training material, such as Computer Based Training (CBT).

This document assumes that the aircrew audience is knowledgeable in the use of data link systems specific to the airspace and aircraft.

## 1.2 Overview

The Spectralux Envoy data link system offers best-in-class multi-frequency communications, giving aircraft and aircrews the capability to send and receive ATS messages via Controller Pilot Data Link Communications (CPDLC) and/or Aircraft Communications Addressing and Reporting Systems (ACARS). The Envoy has its own internal VHF Data Radio (VDR) which provides auto-tuning of VHF frequencies for VDL Modes A/2 operation. The Envoy internal VDR is a data radio only and will not provide VHF voice capability.

The Envoy also acts as a Communications Management Unit (CMU) providing a connection to external SATCOM systems while in VHF NO COMM areas, ensuring uninterrupted data link functionality.

FANS 1/A+ functionality supports Automatic Dependent Surveillance - Contracts (ADS-C), which provides for surveillance of flights while within VHF and SATCOM coverage areas. This capability continues to provide surveillance in regions where ground-based radar is not available.

The Envoy provides a visual display of message transactions and relieves pilot workload by providing predictive formatting and construction of downlink messages and responses to ground-based instructions from air traffic services (ATS), Aeronautical Operational Control (AOC), and other end systems over Very-High Frequency Digital Link (VDL) Mode A/2 and SATCOM networks.

The robust design uses message elements and preformatted responses to streamline message exchanges and automate transaction processes. Support of standard message elements minimizes the risk of input errors and misunderstandings, facilitating effective communications for the aircrew. The aircrew can request and review clearance data, and ground systems can conduct conformance monitoring via event driven automated reporting.

### 1.2.1 Compliance

Envoy provides CPDLC compliance with both Aeronautical Telecommunication Network (ATN) and Future Air Navigation System (FANS) 1/A+ specification, along with a flexible ACARS solution to satisfy the most demanding requirements of airline flight operations and maintenance departments.

The Envoy fully supports equipage mandates for data link capabilities, including:

SES for DLS Mandate (Link2000) for EATMN
FANS 1/A+ Mandate for NAT HLA
FANS en route service in the US

### 1.2.2 Reference Documents

| Document ID | Title |
|---|---|
| ARINC 618 | Air/Ground Character-Oriented Protocol Specification |
| ARINC 620-9 | Datalink Ground Systems Standard and Interface Specification (DGSS/IS) |
| ARINC 622 | ATS Data Link Applications Over ACARS Air/Ground Network |
| ARINC 623-3 | Character-Oriented Air Traffic Service (ATS) Applications |
| EUROCAE ED-85A | Data Link Application System Document (DLASD) for the “Departure Clearance” Data Link-Service |
| EUROCAE ED-89A | Data Link Application System Document (DLASD) for the “ATIS” Data-Link Service |
| EUROCAE ED-106A | Data Link Application System Document (DLASD) for the “Oceanic Clearance” Data-Link Service |
| INST-15000-1 | Installation Manual for the Envoy Data Link |

## 1.3 Envoy CMU Features

The primary function of the Envoy is to offer a two-way data link system by which the pilot can send and receive AOC, ATC, ATS, CPDLC, and customized messaging to/from controllers, operations, and maintenance without the use of voice communications, relieving broadcast network overload and miscommunications.

The CPDLC and ACARS capabilities built into the Envoy system facilitate construction and routing of Downlink Messages (DM) requests and Uplink Messages (UM) responses thus providing communication to and from controllers.

Message alerts appear on the Envoy visual display and light the appropriate ATC, ACARS, or FAIL annunciator on the Envoy faceplate. Message notification is a configuration option that can be integrated with cockpit-installed aural alerting and other devices in the cockpit.

A full QWERTY keyboard, 6 function keys and 12 LSKs provide free text as well as intuitive shortcuts to support the aircrew to create, review, print, or download details of individual transactions, log files, test results, or flight plan data. Configuration options control the Envoy display lighting, keyboard backlighting, color scheme, menu selections, default values, and preferred frequencies based on airline preference.

The Envoy ACARS default menu structure and text colors described in Section 5 can be replaced or augmented with an airline’s custom menu structure and color scheme; this includes AOC messages.

Default ACARS features include:

- Request one time or recurring D-ATIS and WX reports
- Request clearances (departure, arrival, oceanic, deviations)
- Automatically send flight status (OOOI) and event-triggered reports
- Send AOC messages to operations
- Optional digital clock readout on every page of the ACARS menu

The maintenance interface provides system configuration, status information for bus feeds, flight logs, fault logs, and signal strengths of available nearby VHF stations.

Automated features in the Envoy Maintenance:

- Send flight ops and flight maintenance data
    - Fault Log records
    - Flight Log records
    - Automated test

Manage ADS contract reporting

- View status of aircraft and aircraft sensors
  - System Config
  - Engine Data
  - Doors
  - Flaps
  - Air/Gnd
  - Parking Brake

The Envoy can host up to three (3) additional devices, including SATCOM, FMS, and DFDAU and can perform as a SATCOM dialer or request or relay voice contact settings to other aircraft. Depending on which features are enabled, the main menu may display the Envoy top level menu (described in Section 2.1) or the host menu with direct access to hosted devices.


**Figure 1-1 Envoy Main Menu (left), Envoy Configured with 3 Hosted Devices (right)**

Factory configurations offer any combination of one or more of the following COMM protocols:

FANS 1/A+ (CPDLC and ADS-C)
ATN B1 CPDLC
ACARS

The Envoy Part Number, described in Section 1.4, reflects the enabled features.

The following sections describe Envoy features in detail. For operation of the Envoy display, see Section 2.

### 1.3.1 ATC (CPDLC)

ATC functionality uses FANS 1/A+ or ATN B1 CPDLC or both. CPDLC resolves the shortcomings of voice communication, such as voice channel congestion, misunderstanding due to bad voice quality and/or misinterpretation, and corruption of the signal due to simultaneous transmissions. CPDLC offers:

- Preferred/more direct oceanic routing
- Fewer delays on the ground while awaiting clearance
- Fully automated position reporting
- Digital data link communication with ATC

Although both ATN and FANS CPDLC provide data link capabilities between the aircrew and air traffic controllers, a given airspace uses only one CPDLC mode; consequently, the FANS and ATN applications do not operate simultaneously.

For more information about logging on to a CPDLC session, see Section 3.1.

#### 1.3.1.1 ATN B1 CPDLC

ATN B1 messaging is available throughout Europe. See Appendix C for VDR ATN B1 in Europe.

Aircrew requests, instructions, responses, and network acknowledgements i.e. Uplink and Downlink messaging can be transmitted in microseconds, alleviating radio frequency congestion in the European airspace.

The Envoy offers robust connectivity via a proprietary VHF Digital Link (VDL) Mode 2 station management algorithm to ensure that the strongest station is used for ATN B1 CPDLC communication. Performance requirements for ATN B1 necessitate the use of VDL Mode 2 only.

#### 1.3.1.2 FANS 1/A+ CPDLC

FANS 1/A+ is widely used in the Americas, Pan-Asia, and many parts of Europe. FANS 1/A+ CPDLC prefers VHF Mode 2 and can operate over SATCOM. FANS messaging is not available over VHF Mode A.

FANS also supports routing Air Traffic Services (ATS) messages, such as:

- ADS-C reporting
- D-ATIS/TWIP Weather
- Departure/Oceanic Clearances

### 1.3.2 Log Files

The Envoy tracks message transactions and event-based reports such as Out-Off-On-In (OOOI) events, and maintains log files for ATC, ACARS, and flight information for the current flight and previous flights.

### 1.3.3 ACARS

Aircraft Communications Addressing and Reporting Systems (ACARS) provides messaging capabilities to support data link communications for:

- Air Traffic Control (ATC) messages, such as:
  - Departure Clearance
  - Oceanic Clearance
  - Pushback Clearance
  - Taxi Clearance
- Aeronautical Operational Control (AOC), or company-specific reports, such as OOOI (Out-Off-On-In) data
- Airline Administrative Control (AAC), such as weather information uplinks (D-ATIS, TWIP)

The Envoy has a default menu and page structure for user-defined messages, described in Section 2.1 of this document.

### 1.3.4 ADS Contracts (ADS-C)

The Envoy is equipped with an Automatic Dependent Surveillance Function (ADSF) to provide automated reports with dynamic aircraft information such as latitude, longitude, altitude, time, identification, waypoint information, track or heading, airspeed, wind speed, wind direction, static air temperature, and other elements of navigational intent for surveillance and/or route conformance monitoring based on ADS-C request(s) from ground-based end system applications

(ADS applications) that are compatible with the Aeronautical Telecommunications Network (ATN) concept.

The ADS system has three contract modes of operation: periodic contract mode, event contract mode, and demand contract mode. Each of these modes may be active simultaneously; the Envoy supports up to five active ADS-C reports.

The Envoy is designed to support Reduced Lateral Separation Minima within the North Atlantic, where flights are separated by ½-degree latitude.

The ADS-C requests by ATSUs identify modulus (reporting cycle, typically every 5 minutes), which types of information is to be sent, along with conditions, such as frequency. Some types of information are included in every report, while other types are provided every 3rd or 4th report.

The aircraft can also send unsolicited ADS-C emergency reports. The Envoy has conditional logic that can detect irregular aircraft movement based on configured aircraft sensors exceeding predefined thresholds, and will then automatically downlink an abnormal position report at emergency rate (1 minute intervals) using Aircraft Communications Addressing and Reporting System (ACARS).

### 1.3.5 Hosted Devices (SAT, ARINC 739)

The Envoy can be configured to emulate other devices, such as one or more ARINC 739 Multipurpose Control and Display Units (MCDUs). Hosted devices can be accessed by pressing the MENU function key, and then pressing the appropriate LSK for the device, as shown in the two views of the MAIN MENU in Figure 1-1.

This document focuses on the ENVOY. Refer to airline company documentation for using hosted devices.

### 1.3.6 ARINC 741/739 Satellite Communication (SATCOM)

Connections made to an ARINC 741 compliant SDU data channel support both FANS 1/A+ CPDLC messages and ACARS messages over a SATCOM connection. In addition, the Envoy can also support SDU dialer functions.

The Envoy essentially is a Communications Management Unit (CMU) supporting ACARS communication over VDL Mode A/1 and SATCOM. Values for expiration times vary by media (VDL A/2 or SATCOM) for uplinks, downlinks, technical acknowledgements, and validation and routing of ACARS message sequencing.

### 1.3.7 Flight Plan Management and Navigation

The Envoy can be configured with a Flight Management Computer (FMC) and EFIS to load, track, and modify the active route and report waypoints, transition points, and segments. The Envoy maintains its own copy of the flight plan and transmits route data between ATC and the FMC.

### 1.3.8 Printer Capability

The aircrew can securely send and print AOC and ATC messages and message logs.

If a cockpit printer is connected, the Envoy can monitor printer status. If the status of a configured printer changes, an advisory message displays in the scratchpad and is available on the System Monitor page. System Test in the Maintenance menu also offers printer test results.

The Envoy handles ACARS print uplink and printer status downlink messages automatically. Aircrew can print CPDLC and ACARS messages and message logs for general reference. Printable pages display a **PRINT** or **PRINT LOG** action.

### 1.3.9 Maintenance

Envoy's maintenance menu provides aircrew with dynamic data, including:

- Aircraft status, flight log, fault log, and test results can be printed for general records
- Monitoring and status
    - Configured discretes
    - Flight log
    - Signal strength, frequency, and identifier for nearby VHF ground stations
- System configuration data, including current VDR function
- Aircraft ICAO ID
- Operating software and versions
- Fault log and fault status
- Station Table showing current and available VHF stations by frequency and signal strength

#### 1.3.9.1 System Test

While on ground, aircrew can run and print results for Envoy system tests:

- Link Test
- Setting UTC time
- Test Envoy annunciators and display

#### 1.3.9.2 Maintenance Mode

Maintenance mode is password protected. While on the ground, maintenance personnel with password access can:

- Load application and database updates
- View and troubleshoot data busses and labels
- Change/invert bus speeds
- Change/invert discrete outputs and inputs.
- Check received data (SSM/SDI values)

For additional information, see the Envoy Installation Guide or Component Maintenance Manual.

## 1.4 Configuration Options for Envoy

The factory built-in functionality of features and data systems are reflected in the Envoy configuration, which can be viewed on the

UNIT CONFIG 1/3 pages described in Section 0.

# 2 Operation of Envoy

Envoy's CPDLC message processing uses standard flight data and free text message elements and includes validation to ensure message composition of downlinks is robust and valid. The intuitive user interface has message assurance response (message acknowledgement) and message latency monitoring.

In short, Envoy supports ATSU interoperability for aircraft in any airspace as shown in Figure 2-1, Section 1.1.2.4 of Doc 10037, Global Operational Data Link (GOLD) Manual, First Edition, 2017.

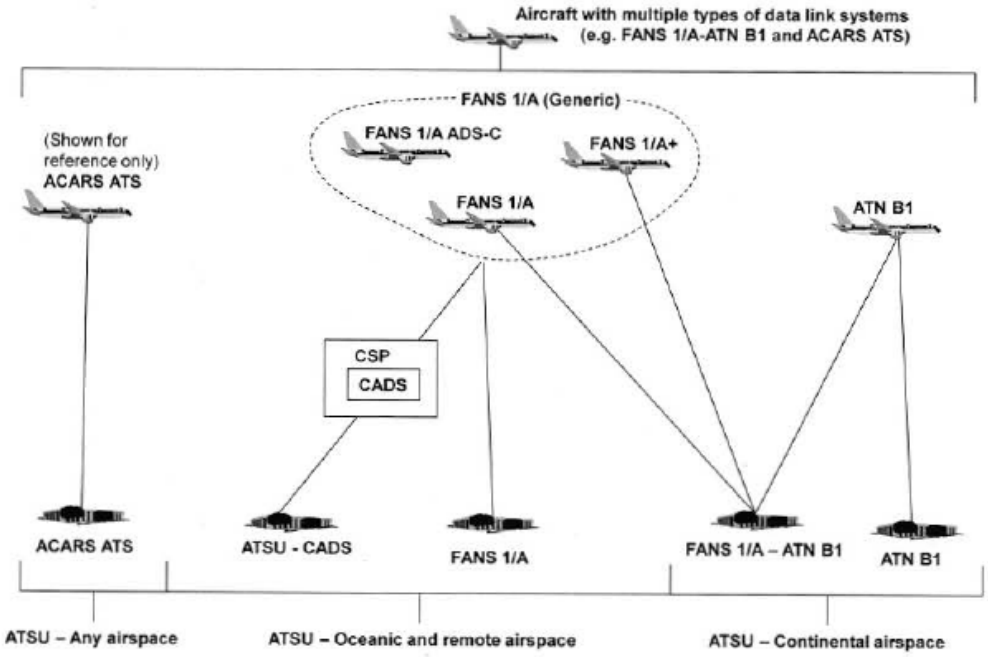



**Figure 2-1 Air Traffic Services and Aircraft Interoperable Connectivity**

## 2.1 Envoy Menu Tree

The Envoy Main Menu has three main branches:

- ATC menu (Section 3.5) provides CPDLC functionality for ATN B1 and FANS 1/A+
- ACARS menu (Section 5) Spectralux provides a default menu of flight operations pages)
- MAINT menu (Section 6) displays flight and system/airplane data


**Figure 2-2 Envoy Main Menu**

The menu tree layout in Figure 2-3 shows the available user interface configurations and maintenance :

**Table 2-1 Legend for Envoy Menu Tree Diagram**

| Color | Page type | Description |
|---|---|---|
| | ATC pages (violet) | CPDLC pages available when logged into FANS or ATN B1. If the Envoy is not configured with FANS or ATN B1 functionality, ATC (LSK L2) is not available on the ENVOY Main Menu page |
| | FANS only pages (goldenrod) | Available when logged onto FANS 1/A+, used to compose FANS 1/A+ CPDLC messages (as described in Appendix B) |
| | ATN only pages (rust) | Available only when logged onto ATN B1, used to compose ATN B1 CPDLC messages (a subset of messages in Appendix B) |
| | ACARS pages (blue) | Available only if ACARS is a configured feature, ACARS pages may send ATS messages to an available ATSU or company-based information to the ground service for the airline. |
| | MAINTENANCE pages (green) | All Envoy configurations have a Maintenance menu that displays read-only data such as airplane status, configured discretes, in-range ATS stations for the current COMM, OOOI report data, and a fault log for connected system devices. |
| | MAINT MODE pages (gray) | Password protected and not intended for aircrew use. |

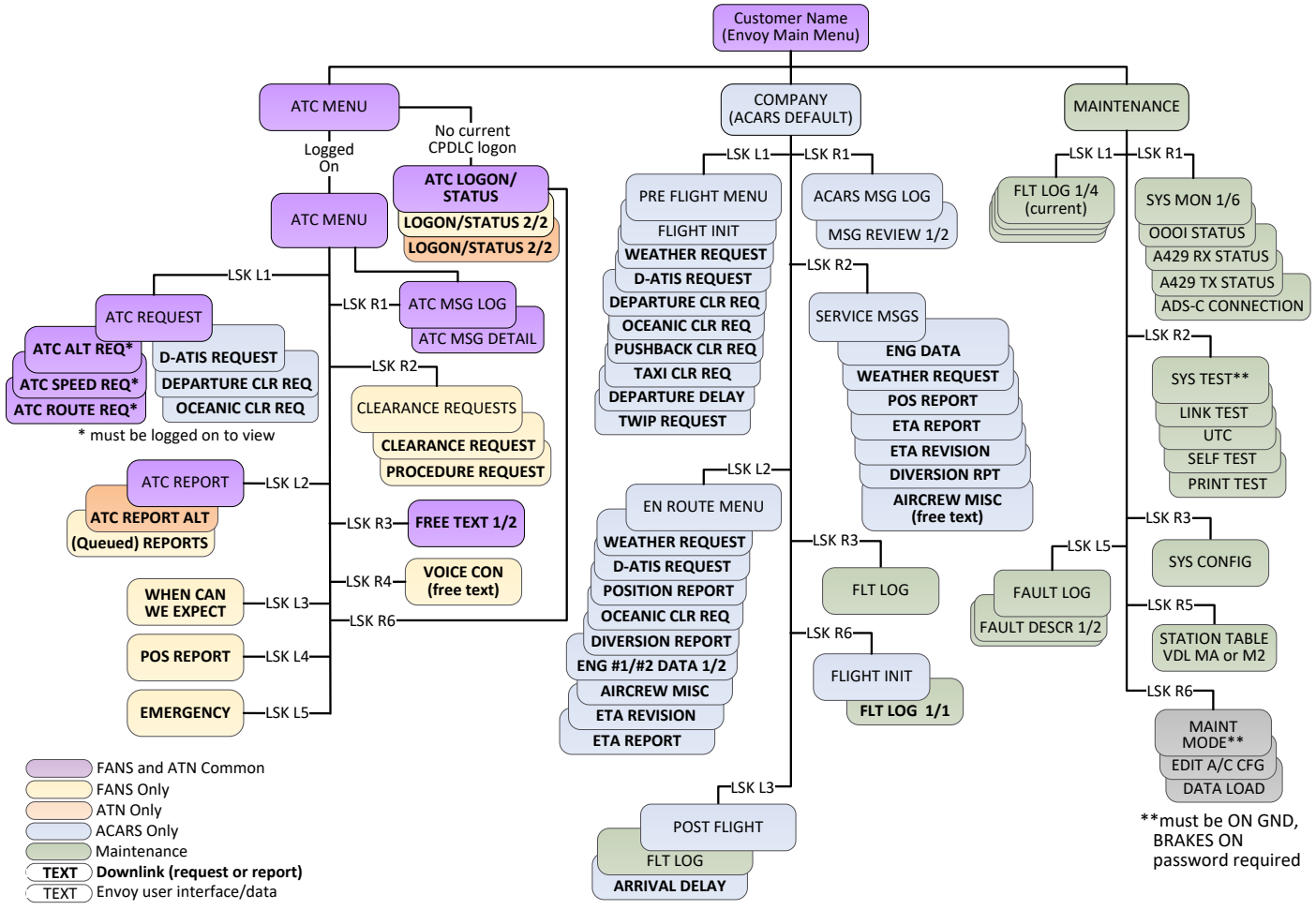



**Figure 2-3 Envoy Menu Tree**

## 2.2 Envoy CDU Interface

The display unit has a QWERTY keyboard and additional human interface features such as:

- Visual annunciators
- Aural alert support
- Sensors that automatically adjust display brightness
- An intuitive LSK structure
- Multipurpose function keys are shortcuts for viewing new messages and notifications
- Built-in logic checking to validate input data, enabling LSK actions only when mandatory data has been entered
- Built- in verification of constructed messages before sending
- Event triggers for downlinks
- Automatic queueing of event-triggered reports based on message content

### 2.2.1 Display Conventions

The Envoy display uses common avionics colors and interface behaviors to facilitate aircrew interaction. The default color scheme used in this document may be customized to suit customer preferences.


**Figure 2-4 Envoy Display Colors and Data Conventions**

The text format/color for ENTRY TYPES shown in Figure 2-4 are defined in Table 2-2. Individual installations may customize the content, color, and default values for AOC messages.

**Table 2-2 Data Conventions**

| Item | Color | Description |
|---|---|---|
| □□□□□□ | Green | Mandatory data is represented with boxes that indicate the maximum character count for an input parameter. Enter data to the scratchpad via the keyboard and then press the associated **LSK** to upselect the value (write the value into the field). |
| - - -<br>- - - - NM<br>[ ] | Green | Optional data is indicated by dashes that represent the maximum character count for the input parameter or by a value inclosed in brackets. The data field may include a unit identifier to indicate the input value must be expressed in a specific unit. If an input field has no specified unit, Envoy accepts multiple unit measures, such as FL, FT, or M (meters) for altitude/flight level; KTS or M(ach) for airspeed; or KG, LB for FOB. |
| KTS | Green | The EXCLUSIVITY label in this example pertains to mutually exclusive fields on a given page. On some screens, if one field is specified, mutually exclusive fields become unavailable or disabled by removing the field indicators (□□ or - - -). To use a disabled field, clear the value in the associated exclusive input field. For an example, see |
| - - | Green | A read-only value that is currently not available. |
| <blank> | Green | A default value for an input field that has a selection list. |
| ↓ (down arrow) | White | A select list displays the default value with a down arrow. The list can be cycled through by successive presses of the associated **LSK.** |
| LARGE FONT | Green | Page titles, menu items, read-only data, and data input are in large font, text for open messages in message logs. |

| Item | Color | Description |
|---|---|---|
| SMALL FONT | White | Descriptive labels above or adjacent to data input fields. |
| LARGE FONT | White | Text for an open message (UM or DM). |
| SMALL FONT | Green | Text for a closed or message. |
| ---------- | White | The visual delimiter above **LSK L6** and **LSK R6** separating input fields from page navigation and action prompts. |
| <RETURN | Green | Return to parent page or menu. |
| ACTION> | Blue | Default color for endpoint actions that transmit data to a ground station, such as LOGON, SEND, READBACK, WILCO, STANDBY, and ACCEPT, is blue.<br>Default color for endpoint actions that send data to other onboard devices, such as SEND TO FMC, VERIFY, SAVE (to Envoy memory), PRINT or PRINT LOG (to configured cockpit printer), or REFRESH, is green.<br>Transmit and save endpoint actions typically display only after required data has been input and/or format has been verified. |
| FUNC> | Green | |

## 2.2.2 LightSense

LightSense™ autonomously monitors ambient lighting and adjusts display brightness accordingly. During daylight operations, display and keyboard lighting increases to enhance visibility. During nighttime operations and dusk/dawn transitions, LightSense decreases brightness to avoid undue distraction.

LightSense has a manual override capability, via the **BRT** function key described in Section 2.2.5.

## 2.2.3 QWERTY Keyboard

The QWERTY keyboard can be used to enter or edit data. The following keys enable the aircrew to edit, copy, or delete data that is downselected to the scratchpad or to set the input to a negative value.

| | |
|---|---|
| DEL | If pressed when scratchpad is empty, the word DELETE appears in the scratchpad, and pressing an LSK resets the corresponding field to its default value, or deletes the corresponding message log entry. |
| CLR | Clear one character from the scratchpad, or press and hold for 2 seconds to clear the scratchpad contents |
| +/– | Set a numeric value to a negative, or to reverse the value of a negative to a positive.<br>Used in conjunction with the **BRT** function key to brighten/dim the display and keyboard lighting. |

## 2.2.4 Line Select Keys (LSKs)

Twelve (12) line select keys (LSKs) to the left and right of the display correspond to input fields, toggles, selection lists, or actions denoted by either a carat (< or >) or a down arrow (↓). Pressing an LSK:

Cycles through the available values of a selection list
Downselects the content of the respective input field to the (empty) scratchpad
Upselects the content in the scratchpad to the respective input field
Changes the page or performs the action

For free text, the left LSK either upselects the line of text, or if the scratchpad is empty, downselects the content, which can then be deleted, edited, or copied (upselected to another LSK).

## 2.2.5 Function Keys

The function keys located across the top of the Envoy provide quick access to common tasks.

| | |
|---|---|
| ATC | If not logged on, displays the LOGON/STATUS menu<br>If logged on, displays the ATC MENU (ATN or FANS)<br>If pressed when the ATC annunciator is lit:<br>• For one new message, displays the new ATC UPLINK message<br>• For multiple NEW messages, displays the ATC MSG LOG, with open messages at top<br>If pressed for more than five seconds, it sets the ADS-C Emergency Mode |
| ACARS | This multipurpose function key:<br>• If pressed when the ACARS annunciator is lit:<br>o For one new message, displays the new ACARS UPLINK message<br>o For multiple NEW messages, displays the ACARS MSG LOG, with open messages at top<br>• If pressed when ACARS annunciator is not lit, displays the ACARS MENU, described in Section 5 |
| MENU | This multipurpose function key (shown in Figure 1-1):<br>• Displays the top-level main menu of the Envoy(ATC, ACARS, and MAINT)<br>• If the Envoy is configured to host other systems, such as SATCOM, provides rapid access to those hosted screens |
| BRT | This is a manual override to LightSense auto-adjustment of Envoy display. Manual mode remains in effect until the Envoy is rebooted<br>• On the keyboard, press +/- once to set + (brighter), twice to set– (dimmer) in the scratchpad and then press BRT to incrementally increase or decrease the brightness of the display, keyboard, and annunciators |
| PREV<br>NEXT | Press to cycle backward (PREV) or forward (NEXT) through multi-page menus, reports, or logs. PREV is a shortcut to the last page of a very long report, such as FAULT LOG or FLT LOG |

## 2.2.6 Scratchpad

The bottom line of the Envoy display is the scratchpad, a line that shows uplink, alert, and/or advisory messages and input from the QWERTY keyboard. Using LSKs, free text content can be downselected to the scratchpad for editing or upselected to an input field.

## 2.2.7 Alerts and Advisory Messages

The scratchpad displays Alerts and Advisory Messages when they arrive. If an Alert or Advisory Message is written to the scratchpad during manual keyboard entry, the Envoy retains the page and previously entered data that had been manually set by the aircrew.

Pressing any function key, LSK, or QWERTY key clears the alert or advisory message from the scratchpad and restores the manually input characters.

#### 2.2.7.1 Alerts

An alerting message is an uplink or a system state/fault that activates visual annunciators and an aural alert. If multiple messages accrue, the messages stack in the scratchpad in top-down prioritized order according to type of information and fault severity.

Alert messages accrue in the respective message log and can be viewed by going to the respective log file. For more information, see:

- ATC MSG LOG
- ACARS MSG LOG
- FLIGHT LOG
- FAULT LOG

Alert text is often dynamically generated; however, some common predefined alerts include:

- ADS-C EMER MODE (DIS/EN)ABLED
- ENTER FLIGHT NUMBER
- NO COMM
- NO RADIO
- PRESS LSK TO DISARM
- SATCOM INOP
- VHF(SATCOM) (UN)AVAILABLE

#### 2.2.7.2 Advisories

An advisory is typically a data entry error or a low priority state change to a peripheral device. Advisory messages do not trigger an annunciator and do not get saved to a message log.

Advisory text is also dynamically generated; some common predefined advisory messages are:

| | |
|---|---|
| 24 CHARACTERS MAX | Input exceeds field size. Review data prior to upselecting to an input field. |
| ACARS NOT ENABLED | Displays when the ACARS function key is pressed on an Envoy that is not configured with ACARS. |
| ATC NOT ENABLED | Displays when the ATC function key is pressed on an Envoy that is not configured with ATN or FANS. |
| BRT NEEDS +/- ON SCRATCH | Displays when attempting to adjust the brightness when it is already 100% |
| CANNOT DISABLE BOTH | Page has more than one field that can be disabled, one must be enabled. |
| CANNOT DISPLAY ROUTE | |
| CANNOT EDIT SELECT LIST | Input is limited to predefined list |
| CPDLC ESTABLISHED | ATSU has processed and accepted a LOGON request |
| CPDLC TERMINATED | Current CPDLC session has been terminated by either aircrew or ATSU. Clearing this message extinguishes the ATC annunciator and sets the CPDLC FAIL output discrete to INACTIVE. |
| INCORRECT PASSWORD | |
| INVALID PAGE | |
| LSK NOT ACTIVE | User pressed an LSK which has no function or which is a read-only value. |
| MAXIMUM RPTS QUEUED | Displays when attempting to queue more than 10 automated ATC downlink reports. |
| MSG CONSTRUCTION FAILED | |
| NO ACTIVE CPDLC SESSION | An attempt to select a CPDLC page from the ATC MENU when not logged into a CPDLC session. |
| NO BLOCK WITH POS/TIME | |
| PERFORM CPDLC LOGON | |
| PRESS LSK TO DISARM | Notification to disable automatic reporting for the selected ATC downlink report |
| PRINTER (UN)AVAILABLE | Advisory message about change in printer status. |
| PRINTING (FAIL) | Notification about an attempt to print a report |

| | |
|---|---|
| REPORT SENT | |
| ROUTE NOT LOADABLE | |
| SENDING SATCOM LINK TEST | Maintenance test function |
| SENDING VHF LINK TEST | Maintenance test function |
| TEST NOT AVAILABLE | A necessary peripheral device for conducting the test is unavailable. |

### 2.2.8 Data Formatting and Data Validation

The Envoy autopopulates fields with autopopulated data from connected cockpit devices. Pages that construct downlink messages use intuitive formatting and validation for input data, such as:

- For CPDLC messages, an airport identifier is 4 characters (ICAO format)
- An endpoint action does not display until required data has been provided
- An input field or endpoint action does not display if the aircraft is not in the expected/required OOOI state

The Envoy intuitively formats units for input values as part of message composition. For CPDLC message construction, multiple elements can be combined in a downlink message and the constructed message is presented for the aircrew to verify prior to sending.

For examples, see Section 3.4 Typical Message Composition.

The preference for metric or English units is a configuration item, but it can be overridden by explicitly specifying a unit identifier, for example:

| | |
|---|---|
| FOB (*100) | Fuel on board is either LB or KG, depending on configuration options and A429 data feeds. If an explicit unit indicator (LB or KG) is input, the Envoy handles the-transition to the configured unit, as necessary.<br>**Note:** For certain pages, such as FANS POS Report or Emergency ADS, remaining fuel is represented by time HH:MM, obtained from bus feed. |
| SPEED | • N single numeric character between 6 and 9, inclusive, is formatted as .61M to .90M (Mach).<br>• NN 2 numeric characters between 61 and 92, inclusive, is formatted as .61M to .92M (Mach).<br>• NNN 3 numeric characters between 070 and 380, inclusive, in increments of 10 with no decimal (.) is formatted as KTS.<br>• [0].NN an optional 0 numeric followed by a decimal point and 1 or 2 numeric characters in ranges 6 to 9 or 61 to 92, is formatted as .61M to .92M.<br>Examples:<br>• 7, .7, and 70 are automatically interpreted as 0.70M (Mach).<br>• 3 numeric characters with no decimal is automatically interpreted as KTS; i.e., 300 is 300 KTS. |

CPDLC input fields accept all ICAO approved formats, for example:

| | |
|---|---|
| Flight Level/Altitude | A 3 digit value is interpreted as Flight Level: 350=FL350=35000FT or 20000FT=FL200<br>A 4 digit value is interpreted as FT by default: 3000 (4 digits) =3000FT, unless<br>Entering M after a numeric is interpreted as meters: 900M 2499M.<br>**Note:** A429 data feed ALT is read as pressure altitude. |
| Speed | 5, .5, and 50 are automatically adjusted to 0.50M (Mach)<br>3 digits with no decimal (.) is automatically interpreted as KTS; i.e., 300=300 KTS |
| Facility ID | Facility ID or Airport ID is the four-character ICAO code. See Appendix F, ATSU Call Sign. |
| Offset distance | NM or KM, depending on configuration setting. If a specific unit identifier is included, the Envoy automatically converts an input to the required/configured unit. |

AOC/ACARS input fields accept ICAO and IATA formats:

<table>
<tr><td>Facility ID</td><td>For certain AOC position reports, the 3-character IATA code is required, for other input fields, a 4-character ICAO field is required. See Appendix F for 3 and 4 character equivalents.</td></tr>
<tr><td>POS (position)</td><td>The Envoy recognizes multiple formats for geographical position:<ul><li>Airport ID (ICAO, 4 alpha characters)</li><li>Waypoint, 5 alpha, such as BALIX</li><li>FIX (4 or 5 alphanumeric characters)</li><li>NAVAID (3 to 5 numeric or 3 alpha followed by NB)</li><li>LAT/LON (FANS only). 4 numeric followed by single alpha. Examples:<ul><li>5275N = N 52 00/W 075 00</li><li>5020S = S 50 00/E 020 00</li><li>5020E = N 50 00/E 020 00</li></ul></li><li>LAT/LON (7 char: DDYDDDZ degrees: 53N054W)</li><li>LAT/LON (11 char DDNNYDDDNNZ, degrees and minutes: 5305N05405W</li></ul>Where:
<table>
<tr><td>DD</td><td>NN</td><td>Y</td><td>DDD</td><td>NN</td><td>Z</td></tr>
<tr><td>00-90 degrees</td><td>00-59 minutes</td><td>N (north) or S (south)</td><td>0000180 degrees</td><td>00-59 minutes</td><td>E (east) or W (west)</td></tr>
<tr><td colspan="6">When the first DD reads 90 Degrees, the following NN must be zero minutes. When DDD reads 180 degrees, the following NN must be zero minutes.</td></tr>
</table>
</td></tr>
</table>

## 2.3 Startup – Boot Sequence

The Envoy continuously monitors system health. Alerts, advisory messages, and uplink messages trigger visual annunciators on the Envoy faceplate and aural and visual alerts in the cockpit.

At power-up, the system checks aircraft sensors and hosted devices via Power-on Built-In Tests (PBIT) to ensure full system functionality. The annunciators (ATC, ACARS, FAIL) on left side of display illuminate briefly while the system data is loading. During this time, the **Loading…** animation is a visual indicator that the system is verifying the configuration data.


**Figure 2-5 Envoy Annunciators Illuminated**

Allow 10 seconds for the PBITs to run.

### 2.3.1 Fault and Error Checking

A fault that is severe enough to affect the Envoy functional performance illuminates the FAIL indicator on the faceplate and on the cockpit display. Faults for the active flight are available to pilots in the FAULT LOG described in Section 6.2.

Fault data is persisted and can be viewed in detail by maintenance crew.

Severity 1 errors display in amber text and the FAIL annunciator illuminates. The example in Figure 2-6 is a load error that requires factory repair:

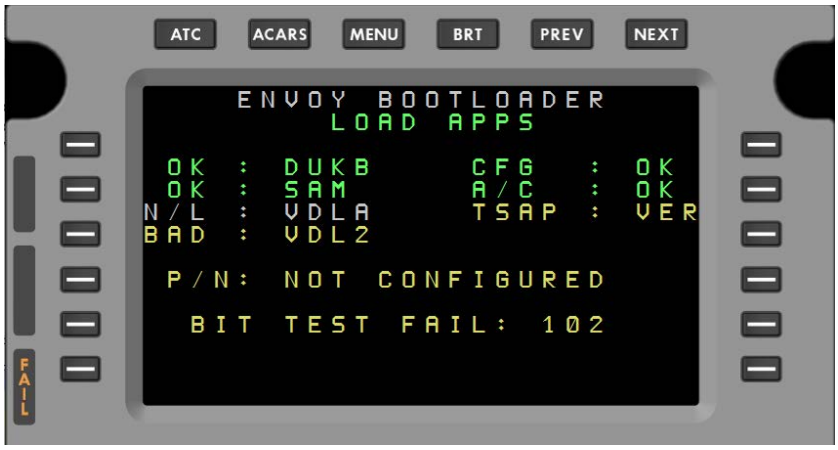



**Figure 2-6 Load Error**

## 2.4 System Initialization

On startup, the Envoy loads and verifies aircraft data and configuration information from the Personality Module:

- aircraft tail number
- TSAP database
- AOC customizations for ACARS pages and messages
- unit preferences (metric or English)
- color scheme

Bus-fed data from FMC, ADC, DFDAU or other linked devices include:

- UTC time
- Aircraft status
- Flight information

Airplane ID, status, and time are automatically populated on all affected Envoy pages and pages that require a manual refresh include a REFRESH action, typically at LSK 5.

For ACARS, flight data included with typical messages needs to be verified or correctly entered on the Flight Initialization page.

Log files and reports are available for viewing and can be downloaded to the AOC:

- Message logs – ATC MSG LOG, ACARS MSG LOG

### 2.4.1 System Status

System monitor and system configuration data can be viewed or downloaded (see Section 6.3).

## 2.5 Network Connectivity and COMM Media

The Envoy uses Data Link Service Provider (DSP) information and details from the last COMM session to establish data link communication. At system start up, the Envoy scans for the last

established VHF frequency, and upon connection, the scratchpad displays an advisory message, VHF ESTABLISHED, as shown in Figure 2-7 Establishing a COMM Link at Start Up.


**Figure 2-7 Establishing a COMM Link at Start Up**

The availability of a VHF data link determines which messaging protocol is available for CPDLC logon.

**Table 2-3 Link Media**

| Messaging Protocol | Link Media Supported |
|---|---|
| ATN B1 CPDLC | VDL Mode 2 required. (No function over VDL Mode 0/A or SATCOM) |
| FANS 1/A+ CPDLC, ADS-C | VDL Mode 2, VDL Mode 0/A, or SATCOM |
| ACARS | VDL Mode 2, VDL Mode 0/A, or SATCOM |

### 2.5.1 VHF Multi-Frequency Support

The Envoy tracks up to 20 in-range ground stations to provide optimal VHF connectivity. The Envoy supports multi-frequency operation based on signal strength, configured preferences, and the flight plan. Sophisticated algorithms track the signal strength of available/preferred ground stations, based on departure/destination airports for the current flight, configuration settings, and provider network (SITA or ARINC) in the current COMM mode. Available/preferred stations display in the Station Table; the current station is indicated with an asterisk. For additional detail, see Section 6.6

On startup, if the previous frequency or ground station is unavailable, or if a connected ground station fails to respond to a downlink after several attempts, the Envoy seeks other VHF ground stations, scanning company-configured lists of VHF Mode 2 and Mode A frequencies in order to establish an active COMM link.

VDL Mode 2 uses the Common Signaling Channel (CSC) frequency and Ground Station Information Frame (GSIF) to balance COMM traffic loads. If the Envoy is directed to an alternate frequency, the Envoy automatically re-tunes and connects to the alternate frequency.

If VHF COMM is not responding to an ACARS downlink, the Envoy automatically shifts from VHF to SATCOM, if equipped, to transmit the message. In SATCOM mode, the Envoy continues to search for VHF ground stations.

All of this is transparent to the aircrew.

# 3 CPDLC Operations

CPDLC messages for both FANS and ATN can be viewed as two-way conversations that comprise a ground control instruction (uplink message, or UM) from an ATSU or a pilot request (downlink message, or DM) and required responses to close the communication transaction.

A transaction may comprise up to 5 elements (uplink or downlink messages and responses) and may queue one or more reports based on event, time, or repeat interval settings specified in the original message.

The Envoy provides robust support of CPDLC message exchange with requests, predictive responses, report management, message validation, and preformatted free text messages to simplify pilot workload. Report management includes one-time, event-driven, or continuous interval reporting that can be easily viewed and edited from the queued report listing.

CPDLC message exchanges are captured in a message log that displays the dynamic transition from NEW to SENDING, and then to OPEN when an automated ground network system (AGNS) acknowledgement is received, and finally CLOSED when the response and acknowledgement have been met. All messages in the Envoy message logs are identified by type (U=uplink, D=downlink), timestamp, and message summary, and aircrew has the option of removing closed messages from the log, printing individual messages or the printing the entire message log, as desired.

## 3.1 Log On

The Envoy uses Data Link Initiation Capability (DLIC) to register the aircraft with an ATSU and to initiate data link communications. An ATC logon must be initialized manually by the aircrew:

- At or after departure
- When entering an airspace that has data link service from an airspace that does not
- When entering an airspace that has a different data link service (FANS to ATN or ATN to FANS)
- Following a failed data link transition to the next data authority (NDA)
- As instructed by an ATSU

An ATC LOGON registers the aircraft on the data link service network and associates the aircraft with flight plan data (such as departure and arrival airports), which facilitates automatic handoffs to ATSUs on the route. The logon request provides also provides the ATSU with information about the data link applications supported by the aircraft (ATN CPDLC, FANS CPDLC, ADS-C, SATCOM) and version numbers for those applications

An ATSU can set up an ADS-C connection (i.e., for a single demand contract) without establishing a logon session.

There are two logon sequences, AFN (FANS) and CM (ATN). The following subsections detail the CM logon and ATN CPDLC.

### 3.1.1 Aircrew LOGON Request

There are three parts to activating a CPDLC session:

- VHF connection must be available, as shown at **LSK R5** (DLK STATUS: AVAIL).
  - Pilot must input a valid ATSU ID at **LSK L1** by pressing **LSK R6** (LOGON TO)
- The ATSU responds with a connection request, and the Envoy automatically confirms the CPDLC connection

If the ATSU ID in the LOGON TO field (LSK L1) exists in the TSAP database, then the Envoy automatically displays the ATC Menu for ATN; if the ATSU ID is not in the TSAP database, the Envoy displays the ATC Menu for FANS.

1. When the aircrew completes the procedure to logon, the Envoy sends an AFN CONTACT message to a specified ATSU.
2. The ATSU responds with an AFN ACKNOWLEDGEMENT message.
3. AFN Logon is complete.

### 3.1.2 ATSU Connection Request

1. The ATSU sends a CONNECTION REQUEST message to the Envoy.
2. The Envoy responds automatically with a CONNECTION CONFIRM message.
3. The first CPDLC connection is established; this ATSU is the Current Data Authority (or the Active Centre); this connection is an Active connection.
4. CPDLC messages may now be exchanged between the Envoy and the Current Data Authority (CDA).

**Note** When the aircrew initiates a logon request, some ATSUs immediately establish a CPDLC connection, whereas others may wait until the flight is about to enter their airspace before sending the CONNECTION REQUEST. The Envoy displays a CONNECTING status during this time.

### 3.1.3 CDA Assigns Next Data Authority

1. The Current Data Authority (CDA) informs the Next Data Authority (NDA) by sending the NDA message over the DSP ground network.
2. The CDA also sends an AFN CONTACT ADVISORY message to the Envoy, providing information for a CPDLC connection with the Next Data Authority (NDA).
3. The Envoy responds with an AFN RESPONSE message to the CDA, then sends an AFN CONTACT message to the NDA.
4. The NDA responds to the ENVOY with an AFN ACKNOWLEDGEMENT message.
5. The Envoy sends an AFN COMPLETE message to the CDA; advising the CDA that the AFN Logon to the NDA has completed.

### 3.1.4 NDA Requests a Second CPDLC Connection

1. The NDA sends a CONNECTION REQUEST.
2. The Envoy responds with a CONNECTION CONFIRM message.
3. At this point there are two CPDLC connections established: the Active CPDLC connection with the CDA and the Inactive CPDLC connection with the NDA.
4. CPDLC messages can only be exchanged with the CDA.

### 3.1.5 Mode Transitions

An oceanic clearance typically involves an ATN to FANS (or FANS to ATN) transition. The CDA sends a handoff to NDA uplink). On WILCO, the Envoy automatically responds and COMM is terminated. NDA contact unit name and frequency is saved.

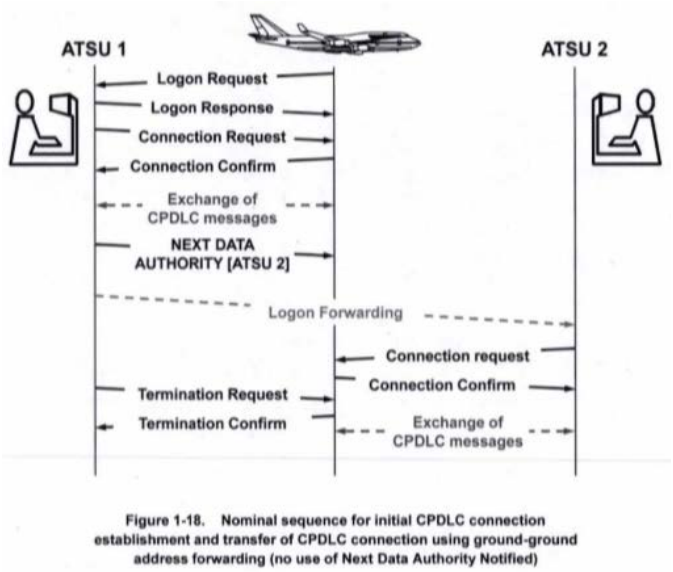



**Figure 3-1 Nominal Messaging Sequence for CPDLC Transfer**

The aircrew can initiate a CPDLC session.

From the ATC menu, press **LSK R6** (LOGON/STATUS). The ATC LOGON/STATUS 1/2 page should autopopulate with the flight data and aircraft data. The aircrew must provide the ATC facility ID they want to connect to.

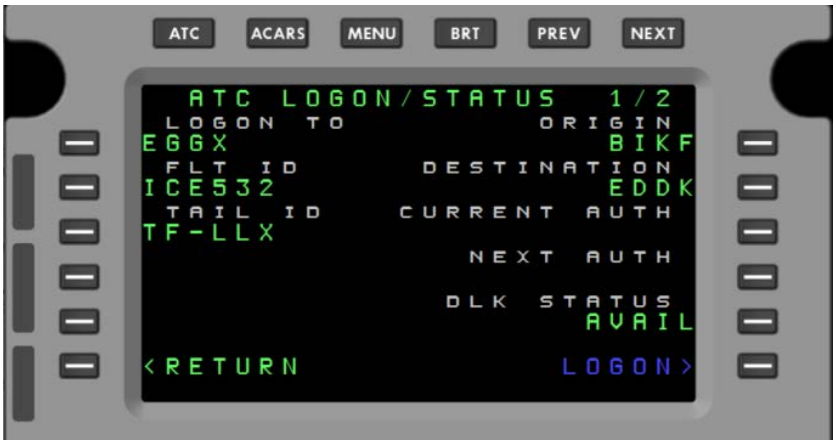



**Figure 3-2 ATC LOGON/STATUS 1/2 with ATSU, Enabling LOGON Prompt (LSK R6)**

The Envoy can autopopulate all required inputs except for the ATSU ID. The aircrew must manually input the ATSU ID in the LOGON TO field for initial connection. If unavailable from FMC or other peripheral devices, required fields must be manually entered.

**Table 3-1 LOGON/STATUS 1/2 Fields**

| LSK | LABEL | Description |
|---|---|---|
| L1 | LOGON TO | Required. ATSU facility ID. Must be input by aircrew (4 to 8 characters). |
| L2 | FLIGHT ID | Required. Call Sign, 7 characters max. comprising Agency Code (Airline ID), Flight Number, and, optionally, single character Operational Suffix. |
| L3 | TAIL ID | Required. Autopopulated from configuration. |
| R1 | ORIGIN | Optional. Autopopulated with departure airport from FMC; or can be manually entered. |
| R2 | DESTINATION | Optional. Autopopulated or manually entered. Arrival airport from FMC, 4 characters. |
| R3 | CURRENT AUTH | Read only. Autopopulated when CPDLC session is established. |
| R4 | NEXT AUTH | Read only. Autopopulated from CDA |

| LSK | LABEL | Description |
|---|---|---|
| R5 | DLK STATUS | Read-only. Data Link Status. (AVAIL(able) is required for logon). See details in Table 3-2 below. |
| R6 | LOGON | Visible when required fields have been entered.<br>If the message times out before the ATSU sends a connection request, this field with RESEND instead of LOGON at **LSK R6**. |

The LOGON/STATUS 2/2 page displays different information, depending on which COMM is available (FANS or ATN) in the airspace (see Figure 3-3).

ATC COMM can be enabled or disabled (ON/OFF), which affects whether the Envoy can communicate with the ground. This setting is then reflected in the read-only DLK STATUS field at **LSK R5**.

If the ATSU facility ID that the aircrew provides exists in the TSAP database, the Envoy logs into the ATN COMM, which is the preferred COMM.

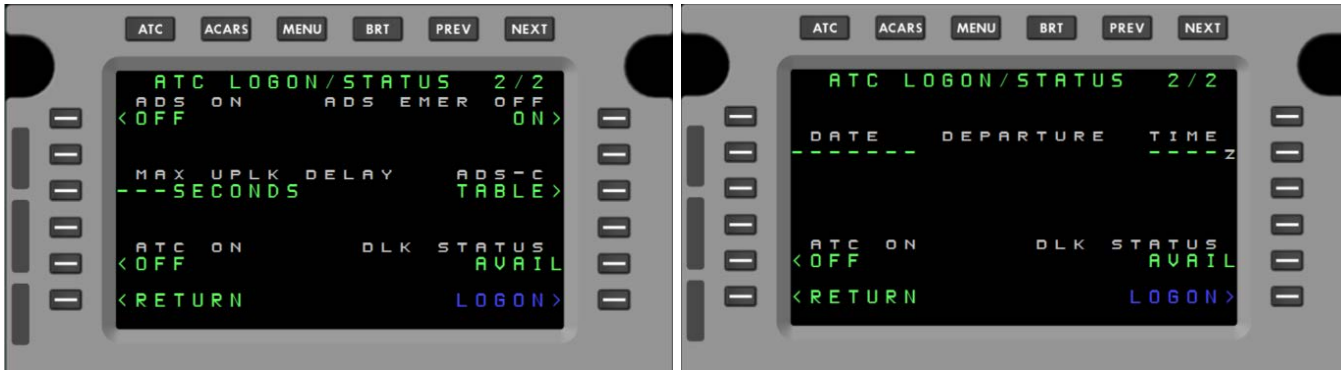



**Figure 3-3 LOGON/STATUS 2/2 FANS (left), ATN (right)**

**Table 3-2 LOGON/STATUS 2/2 Fields**

| LSK | LABEL | Description |
|---|---|---|
| L1 | ADS <state> | FANS only. Header displays the current state of ADS reporting:<br>• ADS ACT = at least one contract is active<br>• ADS ARM = ADS is active, but no active contracts<br>• ADS OFF = ADS is off)<br>Pressing **LSK L1** when the header reads ADS ACT sets the field to OFF, immediately cancels any existing ADS contracts, and disables ATC facilities from establishing a new ADS contract. |
| L2/R2 | DATE/TIME | ATN only. ETD/EOBT, DEPARTURE status, including date and time. Format: DDMMMYY (13NOV18) and HHMM (0417). If one field is supplied, the other one is required. |
| L3 | MAX UPLK DELAY | FANS only. Timeout for uplink messages. The current data authority (CDA) typically provides this value upon establishing a CPDLC session. The typical standard is a 10-minute delay, or 6000 seconds. This value must be manually entered.<br>When set, the Envoy automatically rejects any uplink message whose arrival timestamp exceeds the specified number of seconds (from generated timestamp) and sends a request to resend the CPDLC message or to contact by voice.<br>The MAX UPLK DELAY setting is automatically erased with each ATSU transition and upon flight completion. |
| L5 | ATC ON | Header displays the current state: ON (default) or OFF.<br>When ON displays, a CPDLC session can be initiated<br>Pressing **LSK L5** to set to ATC OFF terminates the active COMM session and aborts all open messages<br>Setting to OFF when no active session exists sets DLK STATUS (**LSK R5**) to INHIBITED. |

| LSK | LABEL | Description | |
|---|---|---|---|
| R1 | ADS EMER OFF | FANS only. Header displays current emergency state OFF (default) or ON<br>Selecting ON activates emergency broadcast mode (1-minute intervals).<br>Other ways to activate emergency broadcast mode:<br>• Press the ATC function key for 5 seconds or longer to activate ADS Emergency, even when not connected to a ground facility.<br>• Send a MAYDAY MAYDAY MAYDAY or PAN PAN PAN free text downlink | |
| R3 | ADS-C TABLE | FANS only. Link to the active ADS contracts page, (SYS) MONITOR 6/6 described in Section 6.3 | |
| R5 | DLK STATUS | Data link status: AVAIL/UNAVAIL/NO COMM/FAILED is set by system. | |
| | | AVAIL | ATN B1 and/or FANS 1/A CPDLC data link available over VDL Mode 2 or SATCOM |
| | | UNAVAIL | No media connection available for the current CPDLC application (ATN B1 or FANS 1/A) |
| | | NO COMM | No media available for any data link functions including ACARS |
| | | FAILED | Abnormal Termination of active CPDLC session (FANS 1/A or ATN B1) |
| | | INHIBITED | ATC COMM has been manually set to OFF at LSK L5 on this page. Aircrew must reenable by setting ATC to ON. |
| R6 | LOGON (or RESEND) | Visible when required items are supplied and after the ENVOY has established a data link with the specified ATSU. If the ATSU has not sent a connection request before the logon message times out, the LOGON/STATUS pages redisplay with RESEND instead of LOGON at **LSK R6**. | |

When the ATSU responds to a LOGON request, the scratchpad displays CPDLC ESTABLISHED.

# 3.2 Logoff

## 3.2.1 Aircrew Initiated Logoff

The aircrew can logoff a COMM session and inhibit ADS-C contracts.

### To log off a current CPDLC session

1. Press ATC function key to display ATC MENU.
2. Press **LSK R6** (LOGON/STATUS) to display ATC LOGON/STATUS.
3. Press **NEXT** function key.
4. On ATC LOGON/STATUS 2/2, press **LSK L5** (ATC COMM) to toggle OFF.

The DLK STATUS updates to INHIBIT.

The scratchpad displays an advisory message: TERMINATED; this advisory message is not saved to a message log.

If an NDA has been set up, the Envoy automatically saves and displays the ATSU ID for the next logon sequence.

## 3.2.2 ATSU Initiated Logoff

The CDA may initiate a logoff by sending either of these uplinks:

- Contact Next Data Authority
- Terminate All Services

### Contact Next Data Authority Uplink

When the current data authority uplinks a CONTACT NEXT DATA AUTHORITY:

- If in the same DSP (FANS or ATN), the Envoy is automatically aborts any open messages with the CDA and transitions the session to the CDA
- If the transition involves changing DSP (i.e., from FANS to ATN, or ATN to FANS), any open message transactions are aborted, the scratchpad displays an advisory message: TERMINATED, and the aircrew must conduct a logon procedure. The Envoy displays the NDA ATSU ID in the LOGON TO field.

**Terminate All Services Uplink**

When the current data authority uplinks a TERMINATE ALL SERVICES:

- In FANS, any open message transactions and queued reports are aborted and the CPDLC session is terminated immediately
- In ATN, a WILCO response to either uplink message terminates the CPDLC session.

The scratchpad displays an advisory message: TERMINATED; this advisory message is not saved to a message log.

## 3.3 Lost Connection

If the connection to the CDA is lost, all open/pending messages are aborted, and the aircrew will need to logon again.

## 3.4 Typical Message Composition

This section identifies the transaction dialog for aircrew-initiated requests and ground-station-initiated instructions and requests, which may include queued reports based on event triggers.

The Envoy recognizes message structure and intuitively constructs downlink message prompts from keywords. For example, the Envoy intuitively predicts required input fields for a downlink response and constructs responses in accordance with ICAO GOLD, RTCA FANS, and ATN interoperability requirements.

If an uplink message contains a report request, the Envoy formats a response that queues an event-driven report to automatically downlink when the when the criteria are met. The Envoy can track up to 10 queued reports.

Free text entered in the scratchpad that exceeds 24 characters per line automatically advances to fill the available lines for an input.

Multi-element messages can accept up to ten pages of free text or up to 16 lines (4 pages) of input in a single message.

The following sample messaging sequences demonstrate typical uplink and downlink elements in common transaction dialogs:

- 
- DM (Downlink Message) with Unit Assignment, Selection List, Verify Message Construction
- DM (Downlink Message) Intuitive Units (Speed Request), Message Log
- UM (Uplink Message) Instructions That Require Aircrew Response

### 3.4.1 DM (Downlink Message) with Unit Assignment, Selection List, Verify Message Construction

This example represents a solicited (aircrew initiated) transaction that demonstrates:

- Intuitive formatting of aircrew input for altitude (flight level)
- An optional selection list (DUE TO)
- An optional input field that accepts *either* TIME *or* WAYPOINT—available only in a FANS connection
- VERIFY page showing message construction, optional free text appended, typical of DM
- Automated ground network acknowledgement

This sequence applies to both ATN B1 and FANS 1/A+.


Step 1. Initial Page Access

On ATC MENU, press **LSK L1** (REQUEST), and then press **LSK L1** (ALTITUDE).


Step 2. Message Composition

On ATC ALT REQ, enter ALTITUDE such as:

- 350 (100 to 700 in increments of 500ft)
- FL370
- 37 (30 to 95 in increments of 500ft)
- FL37

3700 (1000ft to 70000ft in increments of 500ft)
1000M to 21335M in increments of 1 meter

Press **LSK L1** to upselect the input.

Optionally, press **LSK R1** to select a reason from the selection list:

- WEATHER
- PERFORMANCE

Optionally* enter step waypoint identifier or a time (Zulu), and then press **LSK L3** to upselect the value, for example:

- BALIX (POS = Waypoint ID)
- 123 = (TIME=0123z)

* This option is only available in FANS

When all required data has been entered, VERIFY action appears at **LSK R6**.

Press **LSK R6** (VERIFY).


Step 3. Verify and comment

The VERIFY ALT REQUEST page allows the aircrew to add an optional FREE TEXT at **LSK L3** (and **LSK L4**) to clarify or justify a request.

Envoy verifies that the DM is within the ATS limits (less than or equal to 2000 ft (+/-130 ft) above or below current altitude and is odd/even depending on east/west heading) before displaying the SEND action at **LSK R6**.

Aircrew can press **LSK L6** (RETURN) to revise the DM request.


Step 4. Sending/Open/Closed Status

Press **LSK R6** (SEND).

The ATC MSG LOG displays the dynamic status of the message, transitioning from SENDING to SENT, and then to CLOSE when the ATC sends an uplink instruction in response to a request.

In this example, the ALT REQUEST downlink is closed by a CLIMB TO uplink from ATC.

## 3.4.2 DM (Downlink Message) Intuitive Units (Speed Request), Message Log

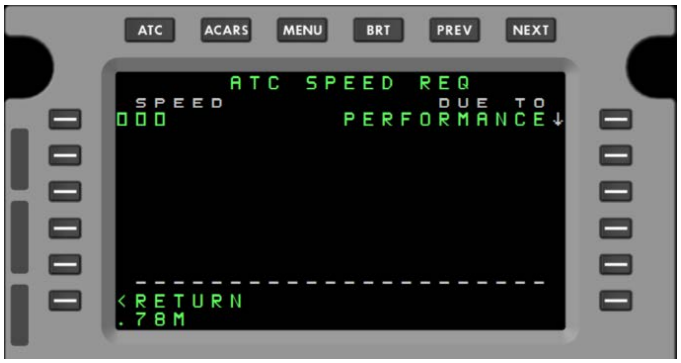
This example demonstrates:

- Envoy intuitively formats the input for a required field (SPEED)
- The optional selection list (DUE TO)
- Message construction, prompt to verify, optional free text when sending a downlink message
- Response status (NEW, OPEN, ACCEPTED) in message log
- Viewing/printing specific message from message log

This sequence applies to both ATN B1 and FANS 1/A+.


Step 1. Initial Page Access

On ATC MENU, press **LSK L1** (REQUEST), and then on the ATC REQUEST menu, press **LSK L2** (SPEED).




## Step 2. Message Composition

On ATC SPEED REQ, enter speed, such as:

- 60 (50 to 99 in increments of 1)
- 350 (100 to 400 KTS in increments of 1)
- 7 (5 to 9 in increments of 1)
- .78M

100 KTS 100 to 400 in increments of 1) (IAS)

Press **LSK L1** to upselect the input at the scratchpad. Optionally select a DUE TO reason by pressing **LSK R1**:

- <blank> (default)
- WEATHER
- PERFORMANCE

When required field(s) are filled, VERIFY appears at **LSK R6**.


## Step 3. Verify and comment

Press **LSK R6**.

The VERIFY SPEED REQUEST shows the constructed message with the formatted Mach value.

Optionally press **LSK L3** to add a free text justification for the speed request.

Press **LSK R6** to send the request.


## Step 4. Sending/Open/Closed Status

Upon send, the ATC MSG LOG displays D (downlink), timestamp ID and status, which transitions from SENDING to OPEN when automated ground network acknowledgement (AGNS) is received.


Step 5. View Message Detail

An INCREASE SPEED uplink from the ground station appears as NEW, closes the REQ SPEED downlink, and transitions to ACCEPTED upon a WILCO response from aircrew.

## 3.4.3 UM (Uplink Message) Instructions That Require Aircrew Response

The Envoy supports building a required response, such as a confirmation, by including all elements from the UM as input fields (possibly prefilled) at the end of each ATC uplink message (UM) detail page. This facilitates constructing a well-formed response.

### 3.4.3.1 Downlink Responses (no verification)

For UM instructions that require an action response of STANDBY, ROGER, AFFIRM, NEGATIVE, WILCO or UNABLE, the responses display at LSK L4, L5 and R5 on the message. These responses do not require verification.

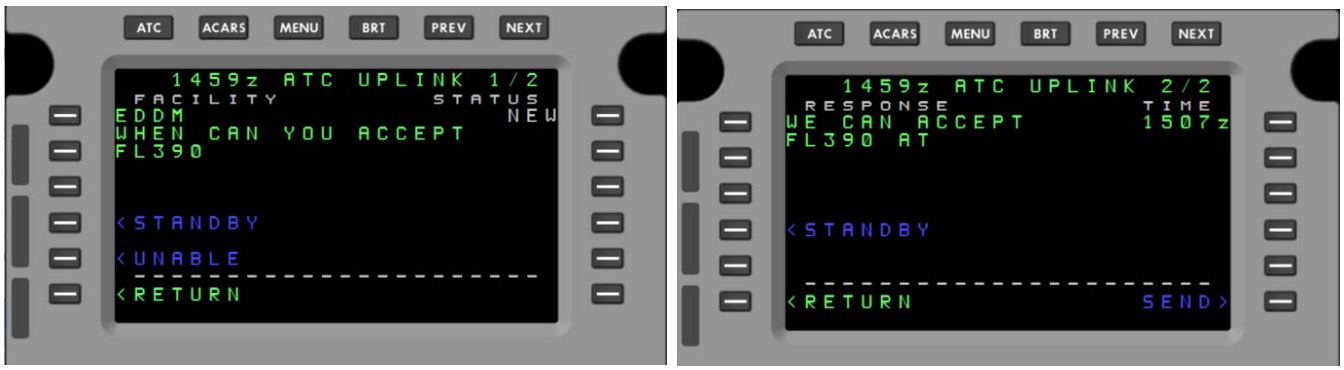



**Figure 3-4 Common Responses to Uplinks**

If the aircrew presses LSK L5 (UNABLE) on either page, a response is immediately constructed and sent, without an input (in this example, time). If the aircrew provides a valid time (at LSK R1 on page 2), the SEND action appears at **LSK R6**. By pressing LSK R6, the response downlink is sent, and the ATC MSG LOG displays the original uplink message as closed. The message response is visible only in the message detail view.

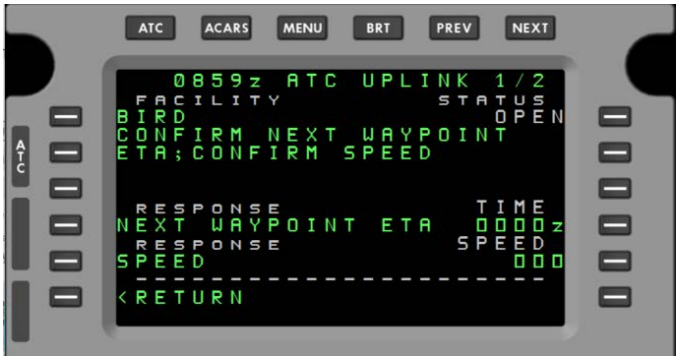
### 3.4.3.2 Single Element Instructions that Require Verification

Uplinks that require confirmation display an actionable response (UNABLE, WILCO, STANDBY). For an uplink that requires one or more inputs, the interface includes a VERIFY action that present the constructed downlink response and an optional FREE TEXT field to append to the downlink response to provide explanatory context.

### 3.4.3.3 Multi-element Instructions that Require Verification

For multi-element uplinks that require input and verification prior to sending a response, the uplink detail page displays required downlink input fields at right side LSKs, enabling the aircrew to create a response with minimum effort. The required field(s) may be a selection list with a default value already selected. Actionable responses (UNABLE, WILCO, STANDBY) may be on the second page of the uplink detail page. For an uplink that requires one or more inputs, the interface includes a VERIFY action that present the constructed downlink response and an optional FREE TEXT field to append to the downlink response to provide explanatory context.

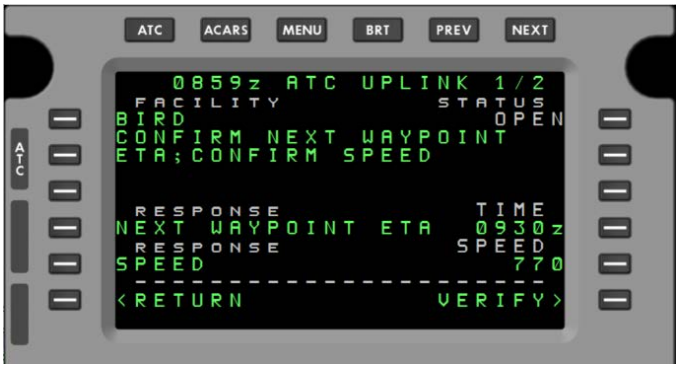
This example shows mandatory time and speed inputs and the VERIFY prompt for a multi-element FANS response.




Step 1. Initial Page Access

ATC annunciator illuminates on receipt of an ATC uplink.

When the aircrew presses the ATC function key, the message detail displays, with the required inputs at **LSK R4** and **LSK R5**.




Step 2. Response Composition

When the mandatory field values (at **LSK R4** and **LSK R5** in this sample) have been entered and are within required ranges, the VERIFY action prompt appears at **LSK R6**.

Press **LSK R6** to view the constructed response message.


Step 3. Verify and comment

The VERIFY RESPONSE page shows the constructed message with the formatted input values.

Most VERIFY RESPONSE pages have a free text field for appending additional information. Typically, free text can be 1 to 3 lines of text. Press **LSK L3** to add context or justification for the DM.

Press **LSK R6** to send the request. Free text is appended as an element to the multi-element response.


Step 4. Sending/Open/Closed Status

Upon pressing send, the ATC MSG LOG updates to show both messages as closed, with identifiers:

- U (for uplink) or D ( for downlink)
- Timestamp
- Partial description of the message(s) in this dialog

With no open ATC messages, the ATC annunciator extinguishes.

For additional detail about UM and DM messages and the types of message response attributes (AFFIRM, WILCO, UNABLE, etc.), see Appendix C and Appendix D.

# 3.5 ATC Menu

On the Envoy Main Menu, press **LSK L2** (ATC) to open the ATC MENU page for either FANS or ATN.

The following sections describe the ATC menu structure in the Envoy Menu Tree. When CPDLC logon is established, the top-level ATC MENU can be accessed by pressing the ATC function key.

The menu selections available on this page vary depending on whether a FANS 1/A+ or ATN B1 connection.

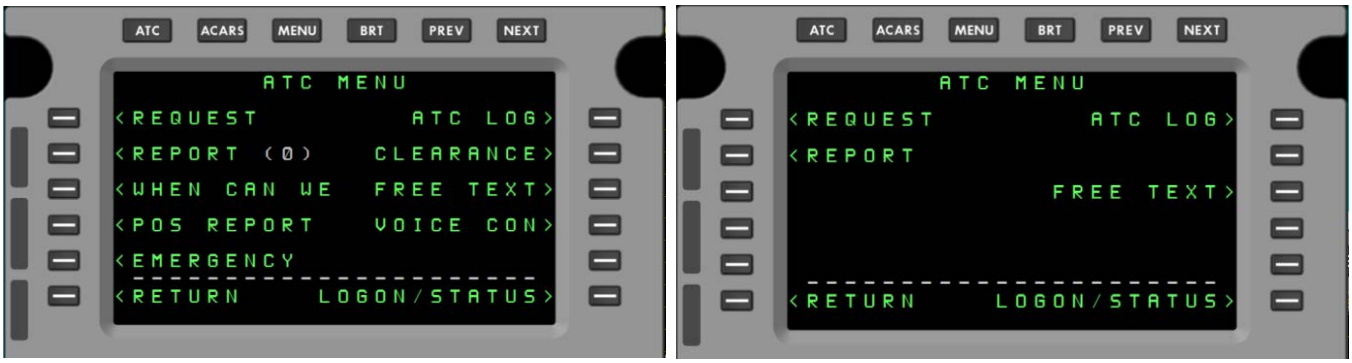



**Figure 3-5 ATC MENU (FANS 1/A+, left, and ATN B1, right)**

Table 3-3 shows the menu options available in the ATC menu.

**Table 3-3 ATC Menu**

| LSK | Label | Section | Description |
|---|---|---|---|
| L1 | REQUEST | 3.5.1 | Navigate to CPDLC message requests for FANS and ATN |
| L2 | REPORT | 3.5.2 | Display on-demand DM Reports for FANS and ATN. The ATC Menu for FANS includes a count of existing reports |
| L3 | WHEN CAN WE | 3.5.3 | Compose downlink. FANS 1/A+ only |
| L4 | POS REPORT | 3.5.4 | Create a report. FANS 1/A+ only |
| L5 | EMERGENCY | 3.5.5 | Emergency, Divert, Descend, or Offset |
| L6 | RETURN | 3.1 | Navigate back to previous page |
| R1 | ATC LOG | 3.5.6 | Display activity log of CPDLC and ATS messages |
| R2 | CLEARANCE | 3.5.7 | DM Requests. FANS 1/A+ only, and only if ACARS is enabled |
| R3 | FREE TEXT | 3.5.7 | Common CPDLC message access |
| R4 | VOICE CON | 3.5.9 | Voice Contact |

### 3.5.1 ATC Request Menu – FANS 1/A+ and ATN B1 CPDLC Common

The ATC Request menu is common to FANS and ATN for constructing downlink messages.


**Figure 3-6 ATC Request Menu**

If not logged onto a CPDLC session, attempts to access ALTITUDE, SPEED, or ROUTE MOD displays this advisory message in the scratchpad:

- NO ACTIVE CPDLC SESSION

The ATC REQUEST MENU also has access to ATS requests if ACARS is configured on the Envoy.

**Table 3-4 ATC REQUEST Menu**

| LSK | Label | Section | Description |
|---|---|---|---|
| L1 | ALTITUDE | 3.5.1.1 | Open CPDLC Altitude Request |
| L2 | SPEED | 3.5.1.2 | Open CPDLC Speed Request |
| L3 | ROUTE MOD | 3.5.1.3 | Open CPDLC Route Request |
| ATS Messages—available from ACARS menu | | | |
| R1 | D-ATIS | 5.4.1.3 | Airport weather requests |
| R2 | DEPARTURE | 5.4.1.4 | Departure clearance request |
| R3 | OCEANIC | 5.4.1.5 | Oceanic clearance request |

### 3.5.1.1 ATC ALT REQ

Use this page to construct an altitude request. Access to this page requires an active CPDLC session.


**Figure 3-7 ATC ALT REQ**

Envoy formats a request and prompts aircrew to VERIFY the request prior to sending the downlink.

**Table 3-5 ATC ALT REQ Fields**

| LSK | Label | Short Description |
|---|---|---|
| L1 | ALTITUDE | Required. Acceptable input:<br>• Flight level: FL350 or block level (FL350/FL370) or 3 numeric characters between 030 and 600, in 100 ft. increments<br>• Altitude: 4 or 5 numeric characters between 0000 and 70000 in 100 ft increments<br>• Altitude: 4 or 5 numeric characters between 0000 and 25000 followed by M for 1 meter increments |
| L3 | STEP AT POS OR TIME | Optional. FANS only (not available in ATN)<br>• POS format: BALIX (Waypoint ID) for additional POS formats, see Section 2.2.8<br>• TIME format: 0220z |
| R1 | DUE TO | Optional. Selection list:<br>• <blank> (default)<br>• WEATHER<br>• PERF |
| R6 | SEND | When required data is entered, VERIFY prompt appears.<br>After verification, add optional free text to justify the request. |

### 3.5.1.2 ATC SPEED REQ

Use this page to construct a speed request. Access to this page requires an active CPDLC session.

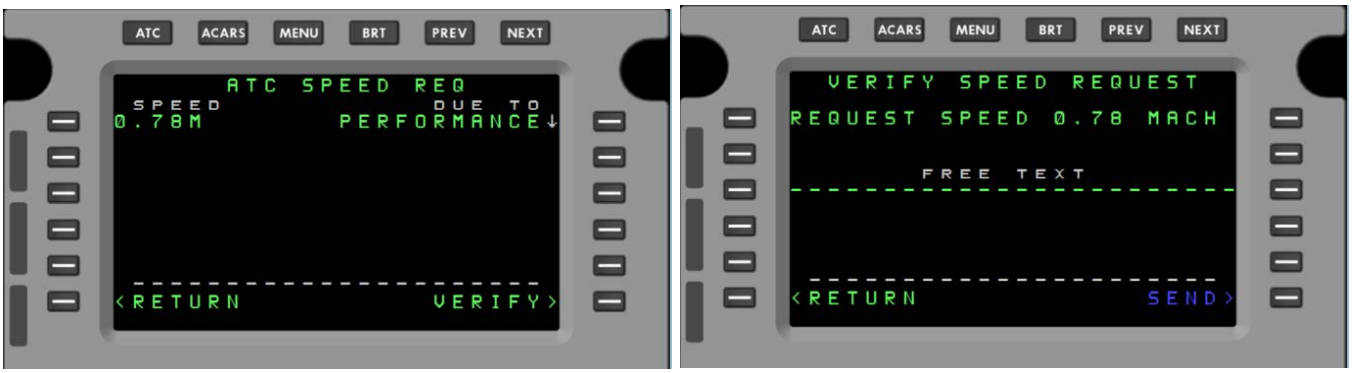



**Figure 3-8 ATC SPEED REQ**

Envoy formats a request and prompts aircrew to VERIFY the request prior to sending the downlink.

**Table 3-6 ATC SPEED REQ Fields**

| LSK | Label | Short Description |
|---|---|---|
| L1 | SPEED | Required. Acceptable input:<br>• MACH: 0.78, .78, 78, .78M or 0.78M formats are acceptable<br>• KTS after a numeric<br>• 3 numeric characters without decimal are interpreted as KTS |
| R1 | DUE TO | Optional. Selection list:<br>• <blank> (default)<br>• WEATHER<br>• PERF |
| L6 | RETURN | Open the parent ATC REQUEST MENU |
| R6 | VERIFY | When required data is entered, VERIFY prompt appears. Pressing **LSK R6** (VERIFY) displays the constructed DM with an optional FREE TEXT |
| L3 | FREE TEXT | Optionally, press **LSK L3** and enter up to 24 characters of explanatory text to justify the request. |
| R6 | SEND | When the verified message complete, press **LSK R6** to send the DM. |

Upon sending, the message, the ATC MSG LOG displays the datestamp and message ID awaiting acknowledgement from the ATSU.

### 3.5.1.3 ATC ROUTE REQ

Use this page to construct lateral and route change requests. Access to this page requires an active CPDLC session. This page contains mutually exclusive input fields. The FANS route request accepts additional parameters, as shown in the two views of the page in Figure 3-9 below.

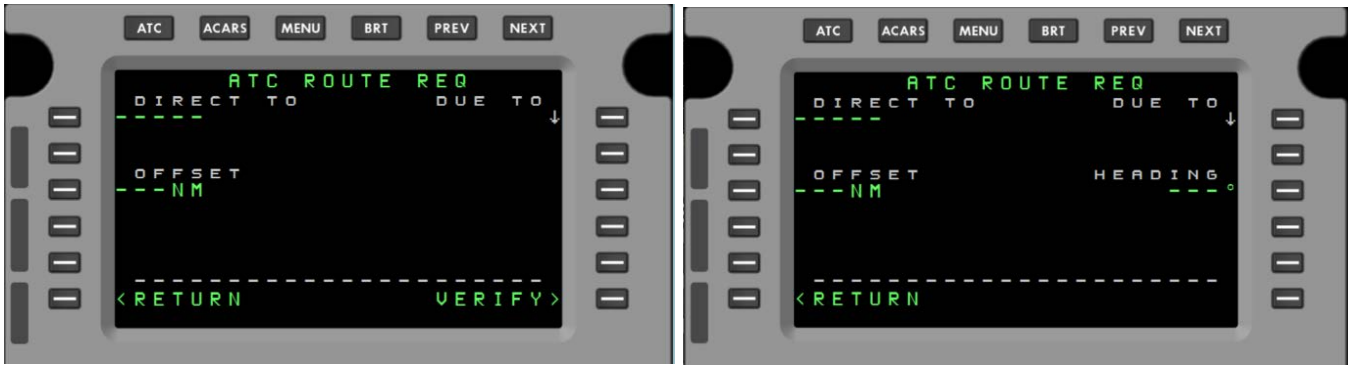



**Figure 3-9 ATC ROUTE REQ ATN (left) and FANS (right)**

This page contains mutually exclusive inputs. When any one of the following parameters is entered, the other two parameters are disabled:

- DIRECT TO
- OFFSET
- HEADING (FANS only)

The optional Selection list DUE TO can be used with any of these three mutually exclusive inputs.

This page generates a downlink that displays on a VERIFY page for aircrew review prior to sending.

**Table 3-7 ATC ROUTE REQ Fields**

| LSK | Label | Description |
|---|---|---|
| L1 | DIRECT TO | Required or disabled. Acceptable input:<br>• FIX (4 or 5 alphanumeric characters)<br>• NAVAID (3 to 5 numeric or alphanumeric, 3 alpha followed by NB)<br>• LAT/LON FANS only. Examples:<br>o 5275N = N 52 00/W 075 00<br>o 5020S = S 50 00/E 020 00<br>o 5020E = N 50 00/E 020 00<br>• Airport ID (4 alpha characters) |
| L3 | OFFSET | Required or disabled. LNN or RNN, left or right, where NN is 1 to 99 NM, inclusive |
| R1 | DUE TO | Optional. Selection list used to justify any of the other three parameters:<br>• <blank> (default)<br>• WEATHER<br>• PERF |
| R3 | HEADING | FANS only. Required or disabled. Degrees format:<br>• Degrees magnetic (default)<br>• Degrees true (a numeric followed by T) |
| R6 | VERIFY | When required data is entered, VERIFY prompt appears.<br>VERIFICATION PAGE has an optional free text field to add a statement to justify the request. |

This page formats a request that must be verified before it is sent. See the common verification procedure described in Sec 3.4.3.2.

### 3.5.1.4 D-ATIS REQUEST

The D-ATIS REQ is available in an active FANS CPDLC session when ACARS is a configured feature.

For usage, see Section 5.4.1.3 D-ATIS Request

#### 3.5.1.5 DEPARTURE CLR REQ

This clearance request is available in an active FANS CPDLC session when ACARS is a configured feature. This page constructs a formatted downlink that displays on a VERIFY page for aircrew review and approval prior to sending the downlink.

For usage, see ACARS Section 5.4.1.4 Departure Clearance Request

#### 3.5.1.6 OCEANIC CLR REQ

This ACARS clearance request is available in an active CPDLC session when ACARS is a configured feature. This page constructs a formatted downlink that displays on a VERIFY page for aircrew review and approval prior to sending the downlink.

See ACARS Section 5.4.1.5 Oceanic Clearance Request

### 3.5.2 ATC REPORT Menu

The Envoy provides an interface that enables aircrew to view, modify, and even disarm (dismiss) event driven reports. The ATC REPORT menu is a queue of active reports that are scheduled to be automatically or manually sent when triggered by a specific event. are queued to be downlinked based on a single- or multi-element uplink instruction that contains “REPORT”:

- REPORT BACK ON ROUTE
- REPORT LEAVING [level]
- REPORT LEVEL [level]
- REPORT PASSING [position]
- REPORT PRESENT LEVEL
- REPORT REACHING BLOCK [level] TO [level]
- REPORT REMAINING FUEL AND SOULS ON BOARD

A REPORT uplink can be received concatenated with another ATSU instruction, such as:

- CONFIRM ASSIGNED ROUTE REPORT PASSING SAGOP

The response for such reports is constructed as a downlink response that the aircrew can set to ARMED (automatic) or MAN (manual).The Envoy manages ARMED reports, automatically sending the downlink response whenever the trigger criteria are met.

When responding to an uplink instruction that has a REPORT, the aircrew can designate whether the report is armed or manual. The aircrew can disarm (dismiss) or otherwise edit a queued report from the report detail page or within the detail view of the armed (queued) report:

The content of the ATC REPORT menu depends on whether the active CPDLC session is FANS or ATN:

- The ATN REPORT menu has a single selection for creating a downlink report, Altitude, further described in ATC REPORT ALT.

- The FANS REPORT menu is a list of queued automated and/or manual reports that have been armed in response to an uplink message, configured event, and/or triggers. For any uplink instruction or request that expects a report, the downlink response includes a prompt for the aircrew to schedule the report.

The aircrew can edit a queued FANS report by pressing the corresponding LSK to open the report detail.

All ATC reports that have been sent can be viewed in the ATC MSG LOG. All queued reports are in the ATC REPORT Menu.

When the aircraft is on ground, all ATC reports are automatically cleared after 10 minutes of being IN.

**Note** One-time and event-triggered reports, such as OOOI reports and ADS-C reports (FANS only), differ from these CPDLC reports. OOOI reports are described in Section 4.1 and ADS reports are described in Section 6.3.5.

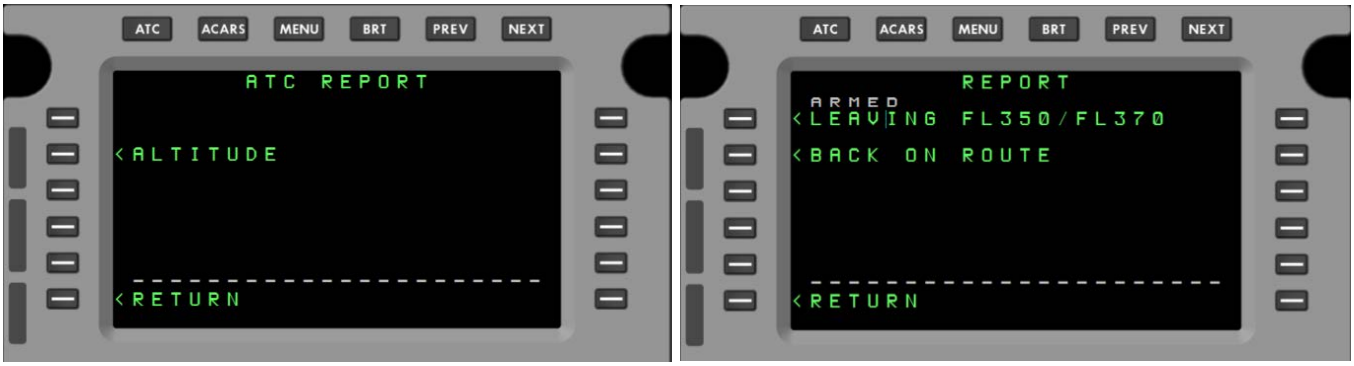



**Figure 3-10 ATC REPORT Menu for ATN (left) and FANS (right)**

The Envoy processes these reports for ATN and FANS, as described in Table 3-8 and Table 3-9:

**Table 3-8 ATC REPORT (ATN)**

| Report Title | Section | Description |
|---|---|---|
| ATC REPORT ALT | 3.5.2.1 | Present/preferred levels |

The following table summarizes the automated reports available in FANS:

**Table 3-9 (ATC) REPORTS (FANS)**

| Report Title | Section | Default DM | Queued Report Options |
|---|---|---|---|
| LEAVING [level] | 3.5.2.2 | Response page Selection list:<br>• ARM RPT (default)<br>• MAN RPT<br>ARMED and MAN reports are queued to the REPORT list when a WILCO response is sent. | ARMED reports can be disarmed (set to MANUAL) from the REPORT list by pressing the associated LSK twice (PRESS LSK TO DISARM notification message).<br><br>Queued reports that are MANUAL can be edited but not re-ARMED Disarmed reports can be removed by pressing the DEL key and then pressing the associated LSK. BACK ON ROUTE and CLEAR OF WEATHER must be manually armed. |
| CLIMBING TO [level] | 0 | | |
| DESCENDING TO [level] | 3.5.2.6 | | |
| PASSING [position] | -- | | |
| REACHING BLOCK [level] TO [level] | 3.5.2.4 | | |
| MAINTAINING [level] | 3.5.2.3 | | |
| BACK ON ROUTE | -- | Response page Selection list:<br>• <blank> (default)<br>• MANUAL<br>These queued reports can be edited from the REPORT list by pressing the associated LSK and modifying the UM response. | |
| [remainingFuel] OF FUEL REMAINING AND [remainingSouls] SOULS ON BOARD | 3.5.5 | | |
| CLEAR OF WEATHER | -- | | |

### 3.5.2.1 ATC REPORT ALT

This page is available only during an active ATN CPDLC session. The Envoy automatically detects a valid flight level and displays the VERIFY action prompt. The aircrew can verify the resulting downlink prior to sending.

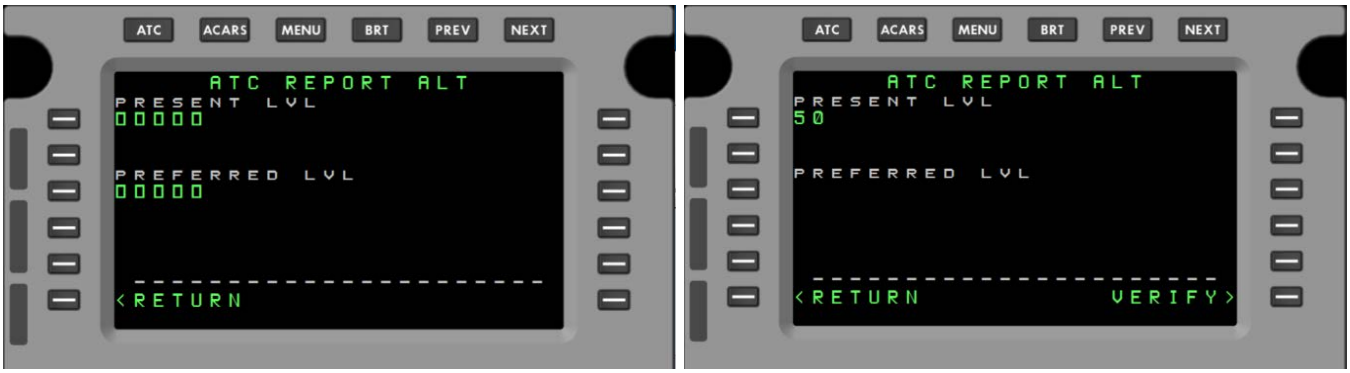



**Figure 3-11 ATC REPORT ALT**

The ATC REPORT ALT page for ATN B1 contains mutually exclusive fields and constructs a downlink report containing either present flight level or preferred flight level, disabling the other input field.

**Table 3-10 ATC REPORT ALT Fields**

| LSK | Label | Short Description |
|---|---|---|
| L1 | PRESENT LVL | Acceptable input for either field (the other field is disabled when:<br>• Flight level (FL350) or block level (FL350/FL370)<br>• Numeric: 5, 50, 20000FT, 255M are translated to FL500, FL200, or FL255 |
| L3 | PREFERRED LVL | |
| R6 | VERIFY | When a valid flight level or block level is entered in one field, the other field is disabled and the VERIFY prompt appears for aircrew to verify the constructed downlink response.<br>After verification, an optional free text field is available to provide context for the report. |

### 3.5.2.2 FANS REPORT: LEAVING

If a multi-element uplink contains a REPORT LEAVING element, the Envoy automatically displays the standard STANDBY, UNABLE or WILCO for the first instruction and a selection list for the REPORT LEAVING. The example below is an uplink CLIMB TO instruction with a REPORT LEAVING element.

When the aircrew presses **LSK R5** (WILCO), the Envoy constructs a response and queues an ARMED report with an event trigger of +130 ft of FL330 for 10 seconds.


**Figure 3-12 REPORT LEAVING DM Response**

The Aircrew has the option to set the report to MANUAL (Selection list at LSK R4) before pressing **LSK R5** (WILCO).

The LEAVING REPORT is queued in the REPORT MENU and is automatically downlinked when the aircraft is more than 130 feet outside of the indicated flight level (FL330 in Figure 3-13). If set to MAN RPT, the aircrew must send a free text message (DM28).

**Table 3-11 FANS Response to Multi-Element UM with REPORT LEAVING**

| LSK | Label | Short Description |
|---|---|---|
| L4 | STANDBY | Envoy sends a downlink (STANDBY) and pauses this response. If no action is taken by the aircrew Envoy activates the annunciator (light or sound) for a response. |
| L5 | UNABLE | Envoy sends a downlink (UNABLE) and closes this message transaction |
| R4 | ARM RPT | Selection list, ARM RPT<default> or MAN.<br>If set to ARM RPT, the report is automatically downlinked when the aircraft exceeds the specified flight level by 130 ft. |
| R5 | WILCO | Envoy sends a downlink and queues the LEAVING FL330 report in the REPORT. |

Aircrew has the option to set the report to MANUAL before pressing **LSK R5** (WILCO).

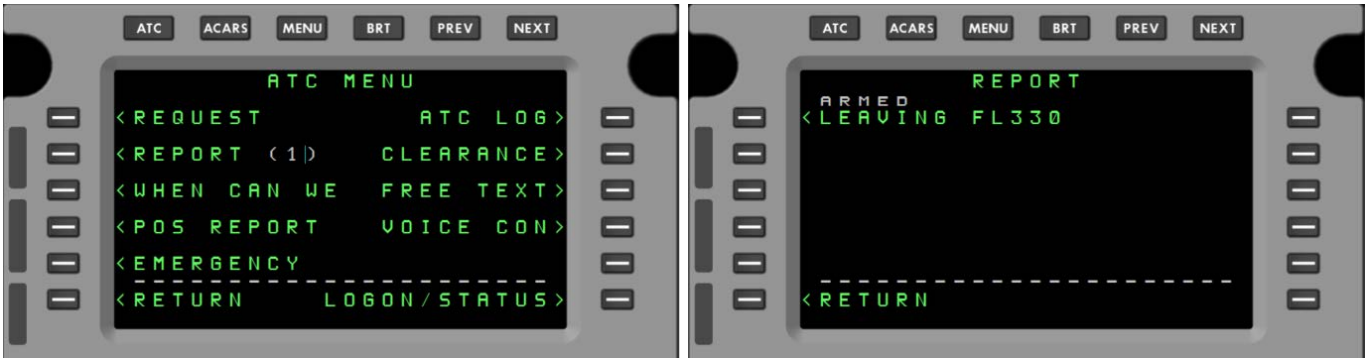



**Figure 3-13 ATC Menu (left) and FANS Menu (right) with (1) Queued Report**

### 3.5.2.3 FANS REPORT: MAINTAINING

When an uplink instruction includes a REPORT MAINTAINING element, if the aircrew response is WILCO, Envoy constructs a response message and automatically queues a report that has an event trigger of +/-130 ft outside the specified flight level for 30 seconds.

Aircrew has the option to set the report to MANUAL before pressing WILCO.

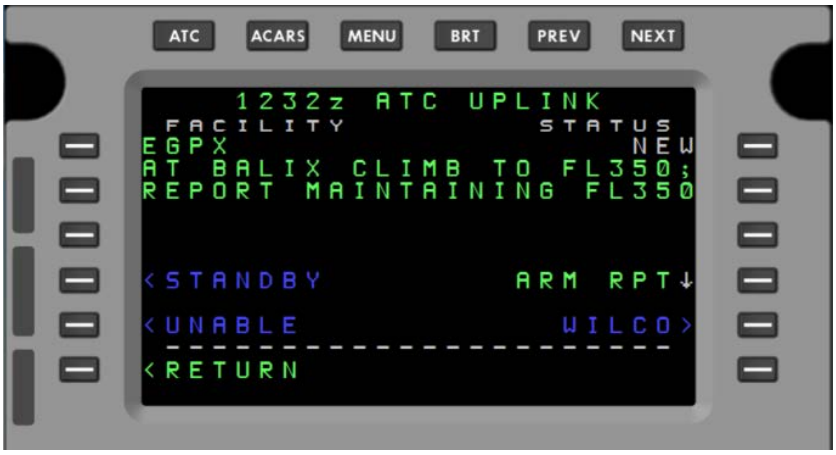



**Figure 3-14 REPORT MAINTAINING Response**

### 3.5.2.4 FANS REPORT: REACHING BLOCK

When an uplink instruction includes a REPORT LEAVING element, if the aircrew response is WILCO, Envoy constructs a response message and automatically queues a report that has an event trigger of +/-130 ft of the specified flight level for 10 seconds.

Aircrew has the option to set the report to MANUAL (Selection list at LSK R4) before pressing WILCO.


**Figure 3-15 REPORT REACHING BLOCK**

### 3.5.2.5 FANS REPORT: CLIMBING TO

When an uplink instruction includes a REPORT CLIMBING TO element, Envoy constructs a response message that automatically includes an armed DM report with an event trigger of 130 ft above the current aircraft flight level for 10 seconds or more if WILCO is the selected response.

Aircrew has the option to set the report to MANUAL before pressing WILCO. For more about ARMED and DISARMED reports, see Table 3-9 (ATC) REPORTS (FANS. The Aircrew has the option to set the report to MANUAL (Selection list at LSK R4) before pressing WILCO.

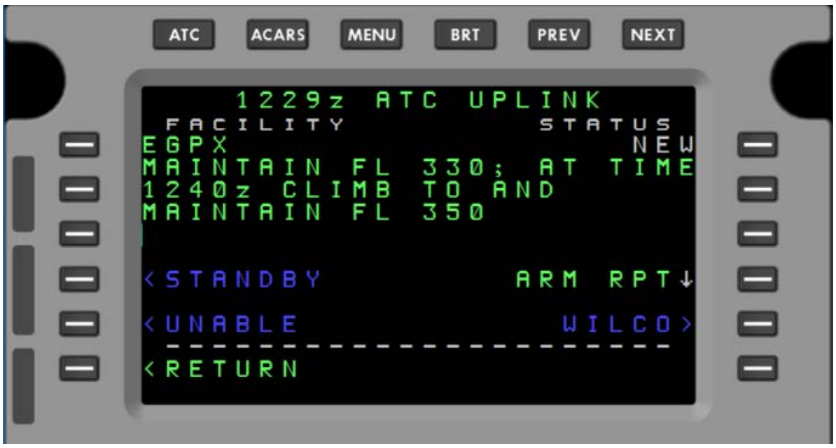



**Figure 3-16 REPORT CLIMBING TO DM Response Page**

### 3.5.2.6 FANS REPORT: DESCENDING TO

When an uplink instruction includes a REPORT DESCENDING TO element, Envoy constructs a response message that automatically includes an armed DM report with an event trigger of +/-130 ft outside the specified flight level for 30 seconds if WILCO is the selected response.

Aircrew has the option to set the report to MANUAL (Selection list at LSK R4) before pressing WILCO.

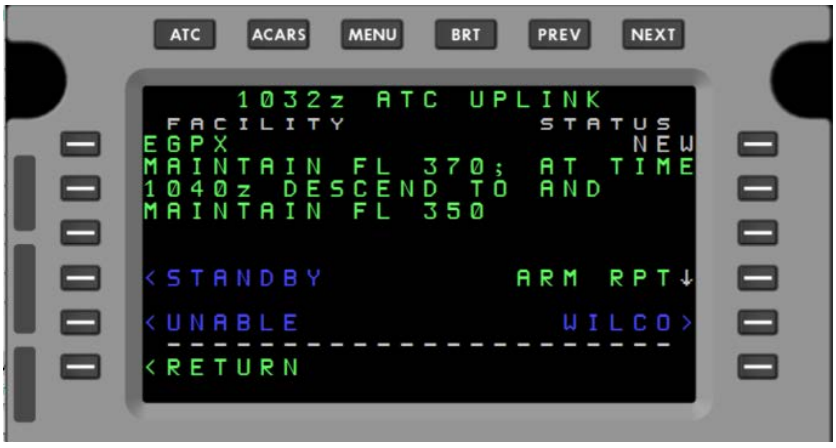



**Figure 3-17 DESCENDING TO Response Page**

For more about information about ARMED and DISARMED reports, see Table 3-9 (ATC) REPORTS (FANS

### 3.5.3 WHEN CAN WE EXPECT

This page can be used to obtain a closure response to a FANS pending downlink request, such as a clearance request.


**Figure 3-18 WHEN CAN WE EXPECT Request Page**

Access to this page requires an active FANS 1/A+ CPDLC session. This page generates a downlink that displays on a VERIFY page for aircrew review prior to sending.

This page contains three mutually exclusive input fields, one of which is required:

- If an ALTITUDE is entered, ROUTE and SPEED are disabled
- If a ROUTE is entered, ALTITUDE and SPEED are disabled
- If a SPEED is entered, ALTITUDE and ROUTE are disabled

**Table 3-12 WHEN CAN WE EXPECT Fields**

| LSK | Label | Description |
|---|---|---|
| L1 | ALTITUDE | Required or disabled. Selection list:<br>• <blank> default<br>• HIGHER LEVEL<br>• LOWER LEVEL |
| L3 | ROUTE | Required or disabled. Selection list:<br>• <blank> default<br>• BACK ON ROUTE |
| R1 | SPEED | Required or disabled. Acceptable values:<br>• MACH: 0.78, .78, 78 formats are acceptable<br>• KTS after a numeric or 3 numeric characters without decimal are KTS |
| R6 | VERIFY | When required data is entered, VERIFY prompt appears.<br>VERIFICATION PAGE has an optional free text field to add statement to justify the request. |

## 3.5.4 POS REPORT Message – FANS 1/A+


**Figure 3-19 POS REPORT**

A pilot-initiated position report contains current location data, up to two next fix IDs, and ETAs, as detailed in Table 3-13.

**Table 3-13 POS REPORT Fields**

| LSK | Label | Description |
|---|---|---|
| -- | ALT | Required read-only bus-fed A429 Pressure Altitude. |
| L1 | POS | Required. Current fix position 4 or 5 alpha characters. |
| L2 | NEXT | Optional. Next fix position. 4 or 5 alpha characters. |
| L3 | NEXT+1 | Optional. Next fix position plus one. 4 or 5 alpha characters. |
| L4 | SPEED | Optional. Autopopulated or manually input. M or KTS. |
| L5 | TEMP | Optional. Autopopulated or manually input. Degrees Celsius. |
| R1 | ATA | Required. Actual time of arrival or time at current position. |
| R2 | NEXT ETA | Optional. Manually input. Estimated Time of Arrival at next POS waypoint. |
| R3 | DEST ETA | Optional. Manually input. Estimated Time of Arrival at destination. |
| R4 | REMAINING FUEL | Optional. Manually input. Remaining fuel input by Time in HH:MM. |
| R5 | WIND | Optional. Autopopulated or manually input. Direction (degrees)/Speed (kts). |

See also Section 5.4.2.3 ACARS Position Report

## 3.5.5 EMERGENCY (MAYDAY) Message – FANS 1/A+

Use the EMERGENCY page to send an urgent emergency request to change route. This page can be used to build many types of emergency requests and contains mutually exclusive fields.

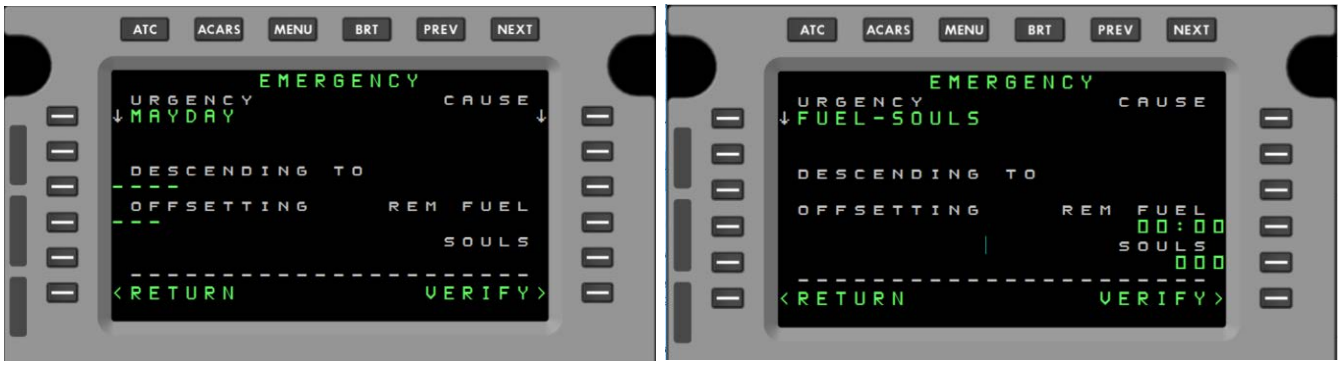



**Figure 3-20 EMERGENCY—two of several possible views**

Mutually exclusive fields are detailed in two possible views in Figure 3-20, and further described in Table 3-14 EMERGENCY Fields.

**Table 3-14 EMERGENCY Fields**

| LSK | Label | Description |
|---|---|---|
| L1 | URGENCY | Required. Selection list:<br>• MAYDAY (default)—if selected, LSK R4 and R5 are disabled<br>• PAN PAN PAN—if selected, LSK R4 and R5 are disabled<br>• FUEL-SOULS – if selected, LSK L3, L4, L5, R1 are disabled |
| L3 | DESCENDING TO | Optional. Flight level or altitude. Unavailable if URGENCY set to FUEL-SOULS |
| L4 | OFFSETTING | Optional. 0 to 99 L or R of current flight path. Unavailable if URGENCY set to FUEL-SOULS |
| R1 | CAUSE | Selection list. Available only if MAYDAY or PAN PAN PAN is selected at LSK L1<br>• <blank> (default)<br>• ENGINE<br>• CAB PRESS<br>• FIRE<br>• HIJACK |
| R4 | REMAINING FUEL | Optional. Time in HH:MM. Autopopulated or manually input. Available only if URGENCY is set to FUEL-SOULS at LSK L1 |
| R5 | SOULS | Optional. Number of people on board (0 to 999). Available only if URGENCY is set to FUEL-SOULS at LSK L1 |
| R6 | VERIFY | Available only when all required fields have been entered. |

**Note** URGENCY selections MAYDAY and FUEL SOULS construct a downlink with a HIGH LEVEL OF ALERT.
PAN PAN PAN constructs a downlink with an URGENT LEVEL OF ALERT.

Emergency Messages:

- HH:MM OF FUEL REMAINING AND --- SOULS ON BOARD
- MAYDAY MAYDAY MAYDAY DESCENDING TO FL350
- PAN PAN PAN OFFSETTING 99R (99KM right of current flight path)

## 3.5.6 ATC MSG LOG

This information is common to FANS 1/A+ and ATN B1.

The ATC MSG LOG captures ATC and ATS uplink and downlink messages for the current flight in chronological order. The log file does not retain normal responses to controller uplinks; however, it does save responses if there is a delay in aircrew downlink or if the message is aborted.

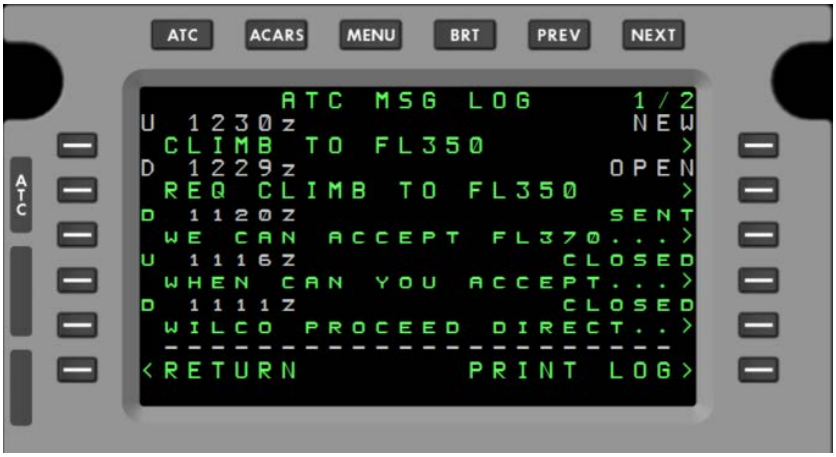



**Figure 3-21 ATC MSG LOG**

The message log or an individual message detail can be printed. Closed or sent messages can be selectively deleted. Aircrew can delete ATC MSG LOG entries with the following status:

- CLOSED
- SENT
- ABORTED
- ACCEPTED
- REJECTED

**To delete an entry**

- Press the DEL key (DELETE appears in the scratchpad) and then press the LSK (**R1** to **R5**) for the respective message.

When the aircraft status is ON GROUND, and the ORIGIN or destination is no longer valid, the ATC MSG LOG clears automatically.

### 3.5.6.1 ATC MSG DETAIL

By selecting an individual message, the aircrew can view the complete formatted message, the facility, the status, and if applicable, the message response. An uplink message can have up to 10 pages in the detail view.


**Figure 3-22 ATC MESSAGE LOG DETAIL**

A message detail can be printed at any time. If an uplink message requires a response, the Envoy automatically formats the data items that must be included in the downlink response as input fields that align with LSKs on the right.

## 3.5.7 CLEARANCE REQUESTS – FANS 1/A+

CLEARANCE REQUESTS menu at **LSK R2** of the ATC menu provides access to pages for requesting a procedure or clearance for departure, approach, or arrival.


**Figure 3-23 CLEARANCE REQUESTS MENU**

This menu provide access to:

- CLEARANCE REQUEST requests for departure, approach, or arrival clearances
- PROCEDURE REQUEST requests for departure, approach, or arrival procedures

### 3.5.7.1 CLEARANCE REQUEST

This clearance request sends an ATS CLEARANCE REQUEST with optional free text explanation.


**Figure 3-24 FANS CLEARANCE REQUEST**

The CLEARANCE REQUEST can be sent with no input parameters. The aircrew can include optional free text to justify the clearance request.

| LSK | Label | Description |
|---|---|---|
| L2 | FREE TEXT | A free text request for a clearance. |
| L6 | RETURN | Return to CLEARANCE REQUESTS menu |
| R6 | VERIFY | Enabled when required inputs are complete |

### 3.5.7.2 PROCEDURE REQUEST

Use the PROCEDURE REQUEST page to construct and send a FANS DM request for a named departure, approach, or arrival procedure from the current data authority.


**Figure 3-25 FANS PROCEDURE REQUEST**

**Table 3-15 PROCEDURE REQUEST Fields**

| LSK | Label | Description |
|---|---|---|
| L1 | TYPE | Required. Selection list:<br>• Blank (default)<br>• Departure<br>• Approach<br>• Arrival |
| L3 | TRANSITION | Optional. A published identifier on the current route |
| R1 | NAME | Required. Name of the procedure |
| R6 | VERIFY | Enabled when required inputs are complete |

## 3.5.8 FREE TEXT 1/2

The FREE TEXT page accepts up to 256 characters (11 lines, or 2+ pages) input for a downlink to Air Traffic Services. This page is available in ATN, FANS, and in the ACARS flight menus.


**Figure 3-26 FREE TEXT**

When entering data, the Envoy automatically advances to the next line when a line is filled. When the max number of characters has been entered, an advisory message displays in the scratchpad.

To edit, copy or delete content that has already been typed, press the respective **LSK (L1** to **L5)** for a line of text, and reenter or edit/copy content in the scratchpad.

Use PREV and NEXT function keys to review multi-page message content before pressing **LSK R5** (SEND). This page does not verify the content prior to sending.

## 3.5.9 ATC VOICE CONTACT Message – FANS 1/A+

Use this page to:

- Request the current ATSU make voice contact at a given frequency or telephone number
- Relay information from another aircraft that cannot communicate directly with an ATSU


**Figure 3-27 REQUEST VOICE CONTACT**

This page contains mutually exclusive fields, and prompts aircrew to VERIFY the request prior to sending the downlink.

- For VOICE, this page generates downlink containg the call sign of the call sign and frequency.
- For RELAY, this page generates a downlink message containing the free text message.

**Table 3-16 REQUEST VOICE CONTACT Fields**

| LSK | Label | Description | |
|---|---|---|---|
| L1 | CONTACT TYPE | Required. Selection list:<br>• VOICE<br>• RELAY | |
| L2 | RELAY CALL SIGN | Required if CONTACT TYPE is RELAY<br>Disabled if CONTACT TYPE is VOICE | |
| L3 | RELAYED TEXT | Required if CONTACT TYPE is RELAY, up to 72 characters<br>Disabled if CONTACT TYPE is VOICE | |
| R1 | FREQ | Disabled if CONTACT TYPE is RELAY<br>Required if CONTACT TYPE is VOICE<br>Type of connection is determined by the input: | |
| | | Frequency Range | COMM Type |
| | | 2850 – 28000 | HF |
| | | 117000 – 138000 | VHF |
| | | 225000 – 399975 | UHF |
| | | 12 digits (phone number) | SAT (dialer) |
| R6 | VERIFY | Enabled when required inputs are complete | |

## 3.5.10 Cancel EMERGENCY, Cancel ADS

In FANS COMM, the Envoy provides the interface to cancel ADS emergency mode, if it has been turned on via a MAYDAY MAYDAY or PAN PAN PAN free text downlink message.

The ATC LOGON/STATUS 2/2 page provides the interface to cancel ADS EMERGENCY mode and to view or cancel established ADS-C contracts.

For more information, see:

- Section 4.1 ADS-C
- Section 4.2 ADS Emergency

## 3.5.11 Flight Plan Transactions and Monitoring

The Envoy fully supports forwarding cleared flight plans and cleared route modifications from ATC to the FMC, saving the aircrew from manually inputting route data. The Envoy can retrieve active route information and send to the current data authority (CDA). The Envoy tracks active route information from the EFIS and FMC, populating feasible FANS route mod requests and status reports for ADS-C downlinks.

This example shows how an ATC uplink message that contains flight plan data is processed by the Envoy.


Step 1. Uplink Message Receipt

The Envoy receives a ROUTE CLEARANCE uplink and the ATC annunciator illuminates.

Press the ATC function key.

The ROUTE CLEARANCE page displays the message detail.

If FMC is available, SEND TO FMC displays at LSK R6.


Step 2. Negative Response from FMC

If there's an error in the format, the Envoy responds with an error notification in the scratchpad.

The aircrew will need to enter the route change manually.


## Step 3. Positive Response from FMC

Press LSK R6 (SEND TO FMC)

If no error message displays, the ROUTE CLEARANCE request displays a WILCO response at LSK R4.

Press LSK R4. This generates an ACCEPTED response and logs the CLEARED TO uplink in the ATC MSG LOG with a message ID (timestamp) and a status of ACCEPTED.

The ATSU typically replies with a CONFIRM ASSIGNED ROUTE.

The aircrew need only press LSK R4 (WILCO) and the downlink message ASSIGNED ROUTE CLEARANCE is logged as sent.


## Step 4. Message Log Status

Press LSK R6 (SEND TO FMC)

The ATC MSG LOG displays the message ID (timestamp) as ACCEPTED.

## Step 5. Manually enter route information.

If the FMC is unavailable, or if ACARS is not enabled, route data must be manually entered in cockpit device(s).
To use FANS and ADS-C flight tracking capabilities, verify that the Envoy has an accurate flight plan. Aircrew may manually add or update the active flight plan to the Envoy via FMC RTE CAPTURE pages by upselecting waypoints using LSK R1 through LSK R6.
When finished, press **LSK R6** (SAVE).

# 4 Automatic Dependent Surveillance (ADS)

Automatic Dependent Surveillance (ADS) operation is a configuration option for aircraft and facilities that use two-way ADS messaging:

- ADSF - The airborne application
- ADSG - The ground-based peer (within the Air Traffic Services (ATS) provider system)

The Envoy supports up to five (5) simultaneous ADS contracts with one or more ADSGs. Each contract specifies the downlink detail and frequency of reports. Most of this is transparent to the aircrew. The aircrew has the ability to cancel all contracts and to selectively cancel an ADS contract with a specific ATSU.

The Envoy interface gives the aircrew the ability to:

- Enable or disable ADS
- Put ADS into (and out of) Emergency Mode
- Inhibit an ADSG from sending ADS requests

When ADS-C is active, aircrew are advised to avoid using non-ATC waypoints (such as Abeam waypoints or Pilot Defined Waypoints) to preclude sending ADS updates that are not part of the filed flight plan.

## 4.1 ADS-C

The Envoy has built in support for ADS event contracts. Upon receiving a FANS CPDLC logon request, an ATSG has the option to establish an ADS-C contract with an aircraft to receive ADS-C reports on a regular basis. The report content and modulus, or downlink cycle is based on the ADS-C uplink generated by the ADSU. Actual data reported may vary based on Envoy configuration options.

An ATSU may request multiple simultaneous ADS contracts to obtain periodic, event-driven, or on-demand data from a given aircraft.

**Note** In FANS, an ATSG can request ATC reports that are based on event triggers, route constraints, and/or time intervals. For more information, see the FANS reports queue, described in Section 3.5.2.

### Periodic contract

An ATSU sets:

- The time interval for an ADS-C report
- The optional groups to include and the modulus, which the frequency that group is included in a periodic report (for example, a modulus of five indicates that the optional group would be included with every fifth periodic report sent).

### On Demand Contract

An on demand contract allows an ATSU to request a single ADS-C periodic report. A demand contract does not cancel or modify any other ADS contracts that may be in effect with the aircraft.

### Emergency Contract

The ADS-C application also supports emergency alerting. An ADS-C emergency report is a periodic report that is tagged as an “emergency” report, allowing the emergency situation to be highlighted to ATC.

An ADS-C emergency can be triggered by the aircrew in a number of ways:

- Manually, by selecting the ADS-C emergency function;
- Indirectly, by triggering another type of emergency alerting system (e.g. transmission of a CPDLC position report or selection of an SSR emergency code); and
- Covertly (The availability of that functionality may vary between aircraft types).

Once an ADS-C emergency has been triggered, under normal circumstances the avionics will continue to transmit ADS-C emergency periodic reports until the aircrew de-selects the ADS-C emergency function.

### Event Contract

An event contract allows an ATSU to request an ADS-C report whenever a specific event occurs. An ATSU can establish only one event contract with an aircraft at any one time. However, the event contract can contain multiple event types, including:

- Waypoint change event (WCE)
- Level range deviation event (LRDE)
- Lateral deviation event (LDE)
- Vertical rate change event (VRE)

An event contract remains in effect until the ATSU cancels it or until the event(s) used to trigger the report occurs. The waypoint change event contract triggers a report for all waypoint changes. All other event contracts will trigger a report on the first occurrence only and then the ATSU needs to request a new event contract.

### Groups

The aircraft system sends specific aircraft data in different groups of an ADS-C report. Each group contains different types of data. An ADS-C event report contains only some of the groups, which are fixed. The ADS-C periodic report can contain any of the ADS-C groups, which the ATSU specifies in the contract request. The ADS-C report groups consist of:

- Basic group
- Flight identification group
- Earth reference group
- Air reference group
- Airframe identification group
- Meteorological group
- Predicted route group

Table 4-1 provides examples for each ADS contract type:

**Table 4-1 ADS-C Contract Types**

| Type | Example(s) |
|---|---|
| Periodic | Automatically send a position report every 14 minutes. |
| Emergency | Automatically send a position report every 1 minute. |
| Demand | Interrogation of the aircraft for specific information; i.e., what is the aircrew current position? |
| Event | Events can trigger a report to be automatically downlinked. Typical events are:<br>• Waypoint change event – downlinked when the active waypoint is changed.<br>• Level range deviation event (LRDE) – downlinked when the aircraft flight level deviates outside of the tolerance defined in the contract.<br>• Lateral deviation event (LDE) – downlinked when the aircraft lateral deviation from the defined path exceeds the defined tolerance.<br>• Excessive rate of descent or climb. |

## 4.2 ADS Emergency

Aircrew has the option to send an ADS-C emergency message without a facility having a contract.

There are several ways to activate ADS Emergency Mode:

- Press and hold the **ATC** function key for 5 seconds or more to initiate the ADS Emergency Mode.
- The keywords MAYDAY MAYDAY MAYDAY or PAN PAN PAN in any free text message.
- For devices logged onto FANS 1/A+:
  - EMERGENCY page is a preformatted message at LSK L5 on the ATC main menu. See Section 3.5.5
  - ADS-C Emergency mode can be activated or deactivated from the FANS ATC LOGON/STATUS 2/2 page.

When logged into a FANS CPDLC session, the ADS EMERGENCY can be enabled/disabled from the ATC LOGON/STATUS 2/2.

From the ATC menu:

- Press the ATC function key.
- Press **LSK R6**, then press **NEXT** to open the ATC LOGON/STATUS 2/2 page.
- To cancel emergency mode, on the ATC LOGON/STATUS 2/2 page, press **LSK R1** to toggle ADS EMER to OFF.
- To cancel ALL ADS contracts, press LSK L1 to toggle ADS to OFF.
- To cancel an ADS-C contract with a specific ground station, press **LSK R3** to open MONITOR 6/6, which shows the active ADS contracts. To view the details of a given ADS contract, click the respective LSK. See Section 6.3.5 for additional information


**Figure 4-1 ADS Emergency (OFF/ON) Toggle at LSK R1**

| LSK | Label | Description |
|---|---|---|
| L1 | ADS ON (OFF) | Status of ADS reporting. Toggle to turn ADS reporting off (on) |
| R1 | ADS EMER OFF (ON) | Status of ADS emergency mode. Toggle to turn ADS emergency mode on (off). |
| R3 | ADS-C (TABLE) | Opens MAINTENANCE page (MONITOR 6/6) showing active ADS-C contracts. To view an established reporting contract, press the respective LSK.<br>The ADS-C CENTER page shows what types and frequency of data are being reported and the timestamp for the last downlink to the ground station in the title.<br>On the ADS-C CENTER page, press LSK R6 to cancel the reports and to inhibit the ground station from sending additional ADS-C requests. |

# 5 ACARS Operations

The Envoy has standard ACARS messaging, which includes associated ATC messages, in a menu tree structure that supports all phases of flight.

This section describes the default menu structure, page layouts, and field-level inputs for the standard ACARS menu tree and message set shown in Figure 2-3. Airlines may specify up to 72 custom 2-page screens for ACARS messages.

Many pages contain autopopulated data; although the aircrew can edit these fields, the bus feed overwrites any manual input. Some unit values may be hardcoded according to configuration options or ARINC 618/620/622 specifications.

The ACARS menu can be accessed by pressing the **ACARS** function key at the top of the Envoy display or by pressing **LSK R2** on the Envoy Main Menu.

| **Note** | If an Envoy is not configured with ACARS, pressing the ACARS function key or LSK R2 on the main menu displays a FUNCTIONALITY NOT AVAILABLE message in the scratchpad. |
|---|---|

The Envoy manages message transaction sequences and default settings for ATC, ADS, and AOC messages, including these reporting intervals:

| | |
|---|---|
| SINGLE EVENT | Aircraft parameter value(s) from one or more A429 data busses that change state or exceed a threshold for a specified duration. For example, the state of a door (open/closed) flap (or brake (on/off) can trigger an OOOI event, or 10 minutes after the OOOI state is IN, the ACARS message log will be cleared. |
| MULTIPLE EVENTS | Multiple events can be cascaded to produce sophisticated event triggers that rely on a series of conditions to be true before a message is downlinked to operations or maintenance. |
| CONTINUOUS INTERVAL EVENTS | Time- and event-based thresholds, such as exceeding an altitude threshold, can be defined as triggers; for example exceeding FL320 for more than 2 minutes can trigger a position report message to be sent at 15-minute intervals while the aircraft is above the threshold altitude. |

These event triggers are inherent in many ATC requests, such as weather and position reports.

## 5.1 ACARS Configurations

The Envoy supports IATA and ICAO standard formats for ARINC messages, as summarized in Appendix E

The standard ACARS menu structure, page layout, and defaults described in this section may have been customized. Check the with the airline company for a given aircraft configuration. Configurable ACARS settings include:

- Page title
- Message/report labels in the ACARS MSG LOG
- Event triggers and intervals for automated and preformatted messages
- Font colors (in standard white, yellow, red, magenta, cyan or any custom color) and font size (small or large) for display text (labels, system-supplied data, input values, action labels,
- Prompt character (carat (< or >, default) or asterisk (*)
- Time display (HH:MM) centered between LSK L6 and R6 for all ACARS pages
- Selection list values (up to 16 per selection list)
- Default values for mandatory and optional input fields

ACARS does not require a logon session.

## 5.2 Receiving an ACARS Message

When an ACARS uplink is received, the ACARS annunciator illuminates.

Pressing the ACARS function key when the annunciator is lit displays the latest ACARS message, or, if multiple open ACARS messages exist, displays the ACARS MSG LOG.

The aircrew can modify or terminate interval reports by editing the detailed message on the ACARS MSG REVIEW page.

## 5.3 Sending an ACARS Message

In ACARS, required flight data (departure arrival airport, flight ID) need only be entered once and the Envoy maintains that data for the duration of the current flight. The aircrew sets flight information on the Flight Init page, where the data is then prepopulated in ACARS messages and reports.

Input fields on ACARS pages may be autopopulated from bus feeds. If bus-fed data is unavailable, the aircrew can manually enter a value; however, manually input data will be overwritten by the bus feed.

Sent/accepted/logged messages can be deleted from the ACARS message log.

## 5.4 ACARS Menu

The Envoy standard ACARS menu and message set includes AOC and ATC requests and reports in a menu tree structure that supports all phases of flight.


**Figure 5-1 ACARS Menu**

| LSK | Label | Section | Description |
|---|---|---|---|
| L1 | PRE FLIGHT | 5.4.1 | Menu of typical requests for pre-flight operations |
| L2 | EN ROUTE | 5.4.2 | Menu of typical messages and reports for en route operations |
| L3 | POST FLIGHT | 5.4.3 | Menu of typical messages and reports for post-flight operations |
| R1 | ACARS MSG LOG | 5.4.4 | Display activity log of messages with operations |
| R2 | SERVICE MSGS | 5.4.5 | Menu of typical messages between operations and aircrew |
| R3 | FLIGHT LOG | 5.4.6 | Open Maintenance view of current and three previous flights |
| R4 | FLIGHT INIT | 5.4.7 | Set flight information for ACARS messaging |

### 5.4.1 The PRE FLIGHT MENU

The PRE FLIGHT MENU 1/2 and 2/2 pages link to flight initialization settings, common weather reporting, and clearance requests.

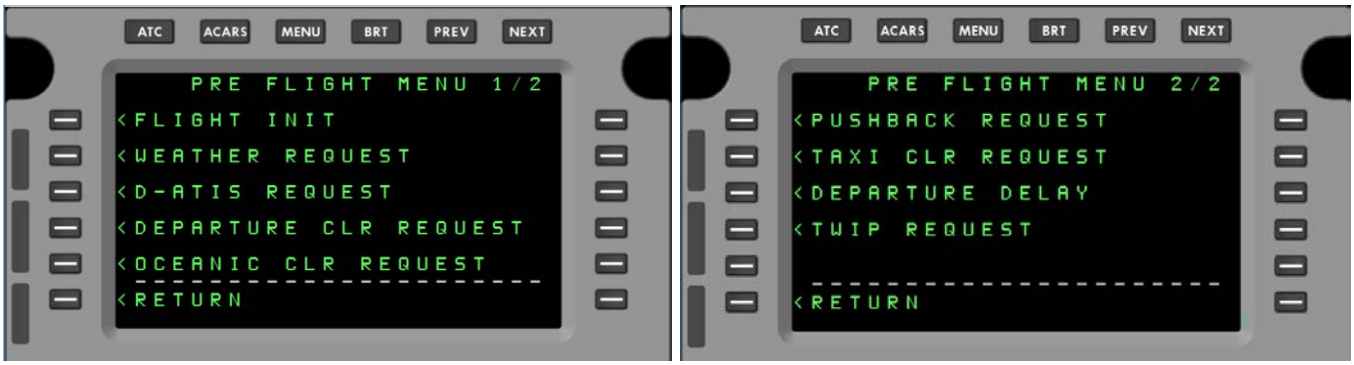



**Figure 5-2 Pre Flight Menu 1/2 and 2/2**

PRE FLIGHT MENU pages include:

- Flight Initialization
- 
- Weather Request
- D-ATIS Request
- Departure Clearance Request
- Oceanic Clearance Request
- Pushback Clearance Request
- Taxi Clearance Request
- Departure Delay Request
- Terminal Weather Request (TWIP)

### 5.4.1.1 Flight Initialization

The FLIGHT INIT page is used to set details about the aircraft, flight, and captain/first officer. Data on this page populates read-only fields on other ACARS pages.


**Figure 5-3 FLIGHT INIT**

**Table 5-1 FLIGHT INIT Fields**

| LSK | LABEL | FUNCTION or DESCRIPTION |
|---|---|---|
| L1 | CALL SIGN | Required. Autopopulated or manually input. |
| L2 | FLIGHT NO | Required. Autopopulated or manually input. |
| L3 | FOB*100 | Optional. Fuel on board is autopopulated or can be manually entered. Units, KG or LB, is an Envoy configuration option. |
| L4 | CAPT EID | Optional. Captain and First Officer Employee ID. These identifiers are included in ICAO and IATA auto-generated messages and reports. |
| L5 | FO EID | |
| R1 | ORIGIN | Required. Autopopulated ICAO code for departure airport; may be manually input. |
| R2 | DESTINATION | Required. Autopopulated ICAO code for arrival airport; may be manually input. |
| R3 | LANDING | Optional. Selection list. Aircrew member (CAPT or FO) conducting landing operation. |
| R4 | LANDING CAT | Optional. Selection list: <blank> (default), 1, 2, or 3 |
| R5 | TAKEOFF | Optional. Selection list. Aircrew member (CAPT or FO) conducting take off operation. |
| R6 | FLT LOG | Opens the FLIGHT LOG described in Section 6.1. |

### 5.4.1.2 Weather Request

Use the WEATHER REQUEST page to create recurrent weather reports for up to four ATSU stations. This request is available from ACARS Pre Flight, En Route, and Service Messages menus; it is also available from the ATC REQUEST menu if both ACARS and one or more CPDLC COMM interfaces is installed.

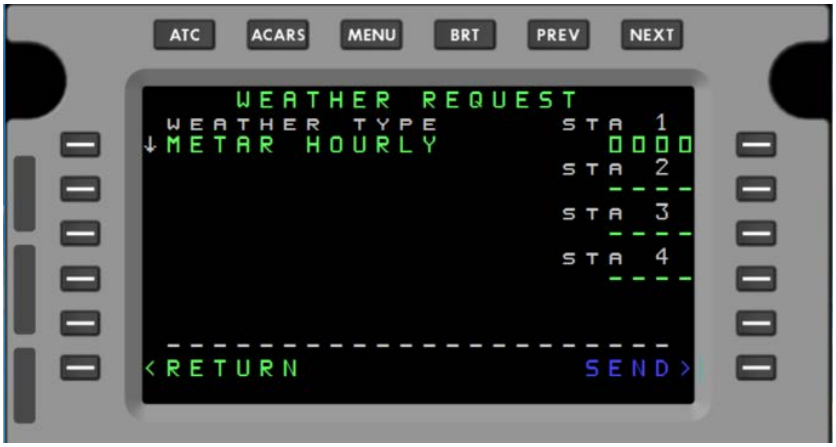



**Figure 5-4 WEATHER REQUEST**

**Table 5-2 WEATHER REQUST Fields**

| LSK | LABEL | FUNCTION or DESCRIPTION |
|---|---|---|
| L1 | WEATHER TYPE | Selection list for type of weather request for all selected stations:<br>• <blank> (default)<br>• TERMINAL FCST<br>• METAR/TERM FCST<br>• SIGMET |
| R1, R2, R3, R4 | STA | Station IDs to receive weather data from—up to 4 stations can be specified; at least one station must be specified.<br>For SIGMET, enter appropriate FIR (Flight Information Region) in this field |
| R6 | SEND | When required data is entered, the SEND prompt is available |
| L6 | RETURN | Return to previous page |

### 5.4.1.3 D-ATIS Request

The D-ATIS REQUEST is available from ACARS PRE FLIGHT and EN ROUTE menus and, if the Envoy has at least one CPDLC COMM feature enabled, from the ATC REQUEST menu.


**Figure 5-5 D-ATIS REQUEST**

**Table 5-3 D-ATIS REQUEST Fields**

| LSK | LABEL | FUNCTION or DESCRIPTION |
|---|---|---|
| L1 | ORIG/DEST | Required. Selection list:<br>• ORIGIN (default)<br>• EN ROUTE<br>• DEST<br>• DEST AUTO-UPDATE<br>• TERMINATE AUTO(-UPDATE) |
| R1 | AIRPORT | Required. ICAO Airport identifier |
| R6 | SEND | Send formatted message to AOC |
| L6 | RETURN | Return to previous page |

### 5.4.1.4 Departure Clearance Request

The DEPARTURE CLR REQ is available from ACARS PRE FLIGHT menu and, if logged into a CPDLC session, from the ATC REQUEST menu.

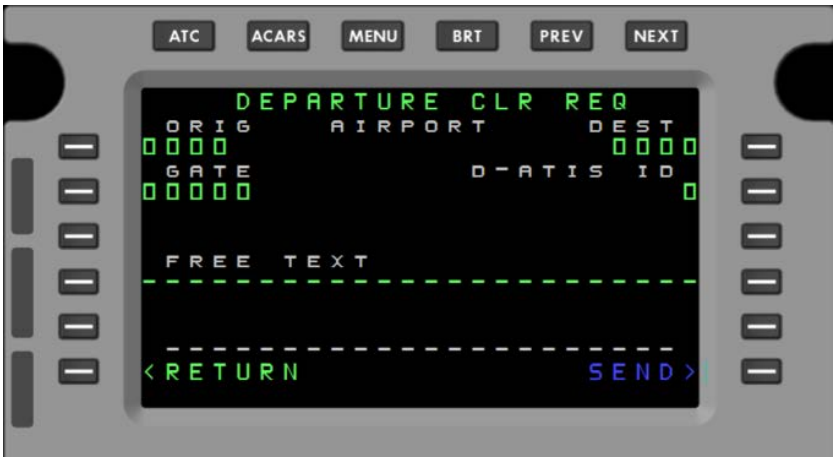



**Figure 5-6 DEPARTURE CLR REQ**

The DEPARTURE CLEARANCE REQUEST obtains most of the inputs from bus-fed data; if autopopulated data is unavailable, it can be manually entered.

**Table 5-4 DEPARTURE CLR REQ Fields**

| LSK | LABEL | FUNCTION or DESCRIPTION |
|---|---|---|
| L1 | ORIG | Required. Autopopulated. Departure airport. To edit, use Flight Initialization, Section 5.4.1.1 |
| L2 | GATE | Required. Identifier of the location of the aircraft at the airport during the pre-flight phase, 1 to 5 characters. |
| R1 | DEST | Required. Autopopulated. Destination airport. To edit, use Flight Initialization, Section 5.4.1.1 |
| R2 | D-ATIS ID | Required. The letter representing the ORIG airport D-ATIS recording the aircrew last heard. |
| L3 | FREE TEXT | Optional field of up to 24 characters to clarify this request. |
| R6 | SEND | Appears when required input has been provided. Press LSK R6 (SEND) to transmit the downlink message. |
| L6 | RETURN | Return to previous page. |

### 5.4.1.5 Oceanic Clearance Request

Available from ACARS PRE FLIGHT and ACARS EN ROUTE menus, and, if a CPDLC COMM session is active, from the ATC REQUEST menu. When required data has been entered, the SEND action is available at **LSK R6**.

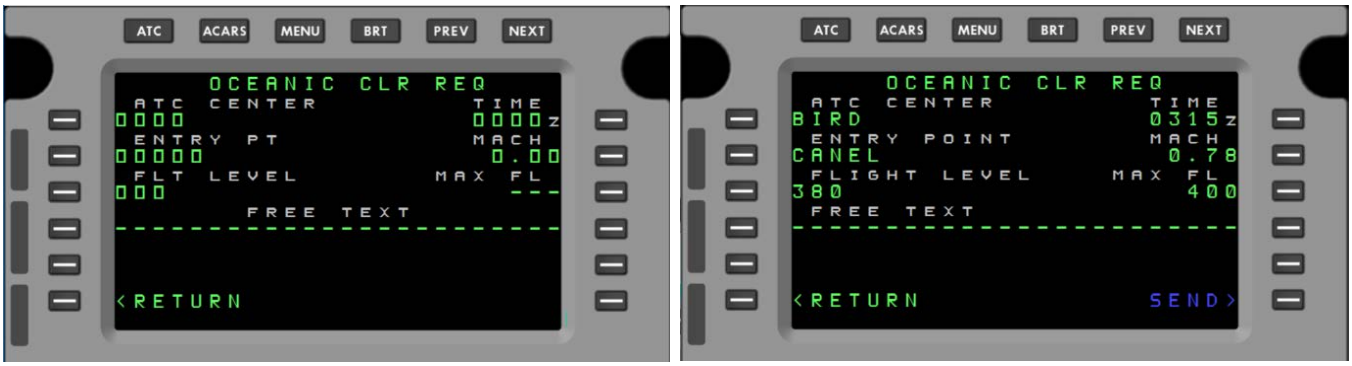



**Figure 5-7 OCEANIC CLR REQ**

The data input in the fields on this page persists if user navigates away from this page before sending the request.

**Table 5-5 OCEANIC CLR REQ Fields**

| LSK | LABEL | FUNCTION or DESCRIPTION |
|---|---|---|
| L1 | ATC CENTER | Required. Recipient of this request (may or may not be current data authority). |
| L2 | ENTRY PT | Required. Requested entry point. 3 to 11 characters (POS such as 55N101W). |
| L3 | FLT LEVEL | Required. Requested flight level. Example: 350. |
| L4 | FREE TEXT | Optional field of up to 24 characters to clarify this request. |
| R1 | TIME | Required. Requested time for oceanic clearance at entry point and flight level. |
| R2 | MACH | Required. Requested Mach speed at entry point. Example: 078 |
| R3 | MAX FL | Optional. Maximum flight level expressed in 500 ft. increments. |
| R6 | SEND | Send action appears when required input has been entered. Press **LSK R6** (SEND) to transmit the formatted message. |
| L6 | RETURN | Return to previous page |

Additional examples of the ENTRY POINT (POS) field:

| Format | Entry Point |
|---|---|
| DDYDDDZ | 53N054W |
| DDNNYDDDNNZ | 5305N05405W |
| AAA or AAAA or AAAAA | CARPE |

For example b, in the position format DDNNYDDDNNZ, the ranges of values are:

| DD | NN | Y | DDD | NN | Z |
|---|---|---|---|---|---|
| 00-90 Degrees | 00-59 Minutes | N (North) or S (South) | 000-180 Degrees | 00-59 Minutes | E (East) or W (West) |

When the first DD reads 90 Degrees, the following NN must be zero minutes**.**

When DDD reads 180 degrees, the following NN must be zero minutes.

### 5.4.1.6 Pushback Clearance Request

Use the PUSHBACK CLR REQ to notify ATC of request to commence departure.

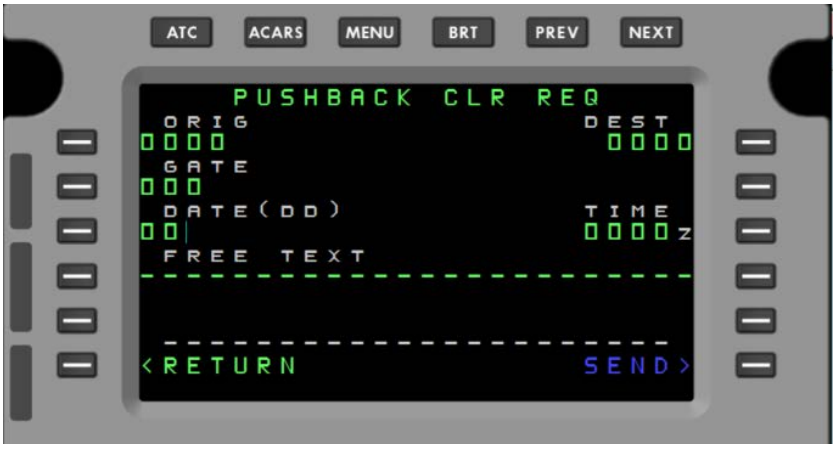



**Figure 5-8 PUSHBACK CLR REQ**

All of the information on this page, other than free text, may be autopopulated from available flight data or from prior ACARS or CPDLC activity for the current flight.

**Table 5-6 PUSHBACK CLR REQ Fields**

| LSK | LABEL | FUNCTION or DESCRIPTION |
|---|---|---|
| L1 | ORIG | Read only. ICAO departure airport. Editable from Flight Init page, Section 5.4.1.1. |
| L2 | GATE | Required. Departure gate. One to 5 characters. |
| L3 | DATE (DD) | Required. Scheduled flight date--day of month (1 to 31). |
| L4 | FREE TEXT | Optional field of up to 24 characters to clarify this request. |
| R1 | DEST | Read only. ICAO destination airport. Editable from Flight Init page, Section 5.4.1.1. |
| R3 | TIME | Scheduled flight time (required) (HHMM). |
| R6 | SEND | The SEND action prompt appears after the required data has been entered. Press LSK to transmit the downlink message. |

### 5.4.1.7 Taxi Clearance Request

Use the TAXI CLR REQ page to notify ATC of intent to depart gate.


**Figure 5-9 TAXI CLR REQ**

To make changes to the flight information, go to the Flight Init page in the Preflight Menu Section 5.4.1.1

**Table 5-7 TAXI CLR REQ Fields**

| LSK | LABEL | FUNCTION or DESCRIPTION |
|---|---|---|
| L1 | ORIG | Required. Autopopulated read-only ICAO departure airport. To edit, use Flight Initialization page |
| L2 | DATE | Required. Scheduled flight time day of the month (1 to 31). |
| L3 | LOCATION | Optional. Gate identifier, 1 to 5 characters. |
| L4 | FREE TEXT | Optional field of up to 24 characters to clarify this request. |
| R1 | DEST | Required. Autopopulated read-only ICAO destination airport. To edit, use Flight Initialization, page. |
| R3 | TIME | Required. Scheduled flight time (HHMM UTC) |
| R6 | SEND | When required fields have data, the SEND prompt appears. Pressing **LSK R6** (SEND) sends the formatted downlink message. |
| L6 | RETURN | Return to previous page |

### 5.4.1.8 Departure Delay Request

Use this page to construct a downlink request informing ATC of a delay in any part of the flight initialization.

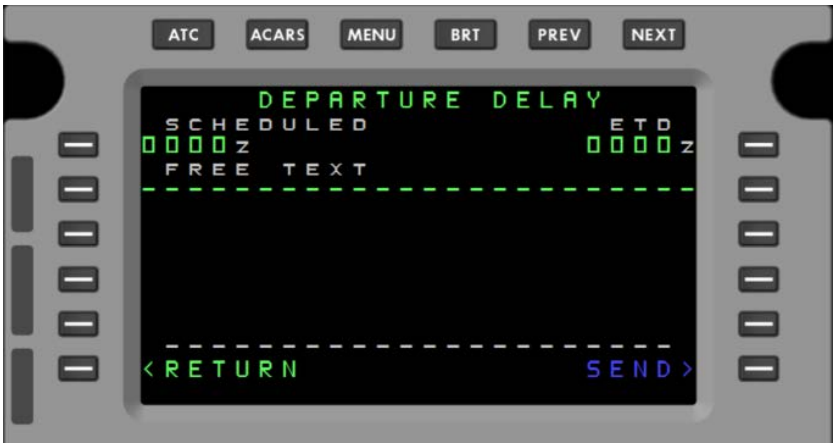



**Figure 5-10 DEPARTURE DELAY**

**Table 5-8 DEPARTURE DELAY Fields**

| LSK | LABEL | FUNCTION or DESCRIPTION |
|---|---|---|
| L1 | SCHEDULED | Required. Scheduled departure time may autopopulate from autopopulated data or be manually input by aircrew. |
| L2 | FREE TEXT | Optional. Justification for requesting a departure delay. |
| R1 | ETD | Required. Estimated new time of departure (HHMM) |
| R6 | SEND | When required fields have data, the SEND prompt appears. Pressing **LSK R6** (SEND) sends the formatted downlink message. |

### 5.4.1.9 Terminal Weather Request (TWIP)

Establish or cancel repeating or single weather reports for a given airport.

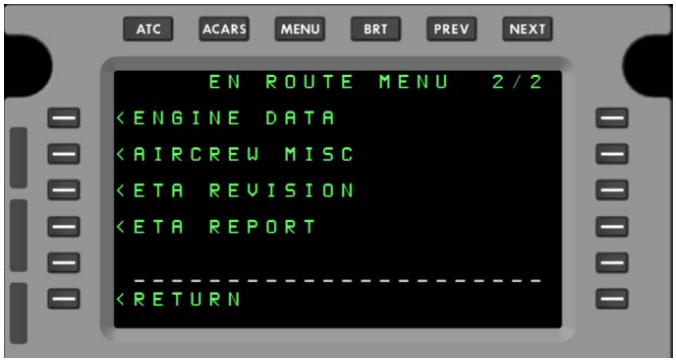

**Figure 5-11 TERMINAL WXR REQ**

**Table 5-9 TERMINAL WXR REQ Fields**

| LSK | LABEL | FUNCTION or DESCRIPTION |
|---|---|---|
| L1 | TYPE | Required. Selection list. Acceptable values:<br><blank> (default)<br>SINGLE TWIP REPORT<br>AUTOMATIC UPDATE<br>TERMINATE AUTO |
| L2 | AIRPORT | Required. Autopopulated or manually input if not available. |
| L6 | RETURN | Return to previous page |
| R6 | SEND | When required data is entered the SEND prompt is available. |

## 5.4.2 ACARS EN ROUTE MENU

Provides access to en route reports.


Provides links to the following:

- Weather Request
- D-ATIS Request
- Position Report
- Oceanic Clr Req
- Diversion Report
- Engine #1/#2 Data
- AIRCREW MISC
- ETA Revision
- ETA Report

### 5.4.2.1 Weather Request

See Section 5.4.1.2

### 5.4.2.2 D-ATIS Request

See Section 5.4.1.3 D-ATIS Request

### 5.4.2.3 Position Report

Use the POSITION REPORT page to construct an ACARS POSITION REPORT downlink. This report is also available from the EN ROUTE menu and the ACARS Service Messages page.


**Figure 5-12 POSITION REPORT**

The fields on this report can be autopopulated from the FMC, but may be entered manually if no data is available from the FMC.

**Table 5-10 ACARS POSITION REPORT Fields**

| LSK | Label | Description |
|---|---|---|
| | ALT | Read-only flight level. |
| L1 | POS | Required. Autopopulated or manually input. Current position** Acceptable inputs:<br>• FIX (4 or 5 alpha characters)<br>• NAVAID (numeric or alphanumeric, 3 alpha followed by NB)<br>• Airport ID (ICAO) |
| L2 | NEXT | Optional. Autopopulated or manually input. Next waypoint**. Acceptable inputs<br>• FIX (4 or 5 alpha characters)<br>• NAVAID (numeric or alphanumeric, 3 alpha followed by NB)<br>• Airport ID(ICAO) |
| L3 | SPEED | Required. Autopopulated. Mach value. |
| L4 | TEMP | Optional. Autopopulated. Degrees Celsius |
| L5 | SKY COND | Optional. Selection list: CLEAR, FEW, SCATTERED, BROKEN, OVERCAST, or blank (default) |
| R1 | ATA | Required. Autopopulated. Time at current position. |
| R2 | ETA | Optional. Autopopulated or manually input. Estimated time at next waypoint. |
| R3 | FOB*100 | Optional. Autopopulated or manually input. Fuel on Board in LB or KG. |
| R4 | WIND | Optional. Autopopulated. Wind direction/speed. |
| R5 | TURB | Optional. Turbulence. Selection list: NONE, LIGHT, MODERATE, SEVERE, EXTREME, or blank (default). |
| R6 | SEND | When all required data has been provided, SEND action appears. Press **LSK R5** to downlink the report. |

For related functionality, see 3.5.4 POS REPORT Message – FANS 1/A+.

### 5.4.2.4 Oceanic Clr Request

See Section 5.4.1.5

### 5.4.2.5 Diversion Report


**Figure 5-13 DIVERSION REPORT**

The fields on this report can be autopopulated from the FMC but may be entered manually if no data is available from the FMC or other ADC. This message uses 3-character IATA Airport codes.

**Table 5-11 DIVERSION REPORT Fields**

| LSK | Label | Description |
|---|---|---|
| L1 | PREV | Optional Previous destination/arrival airport (IATA Airport Code). |
| L2 | ETA AT DIVERSION | Optional. Estimated time at new station. |
| L3 | FOB*100 | Required. Autopopulated or manually input, LB or KG. |
| L4 | ORIGINATING STATION | Optional. Autopopulated or manually entered (IATA Airport Code).. |
| L5 | FREE TEXT | Optional. Justification for diversion. |
| R1 | NEW | Optional. New destination/arrival airport (IATA Airport Code). |
| R6 | SEND | Action displays when required data has been provided. |

### 5.4.2.6 Engine #1/#2 Data

To send an engine report to AOC maintenance.

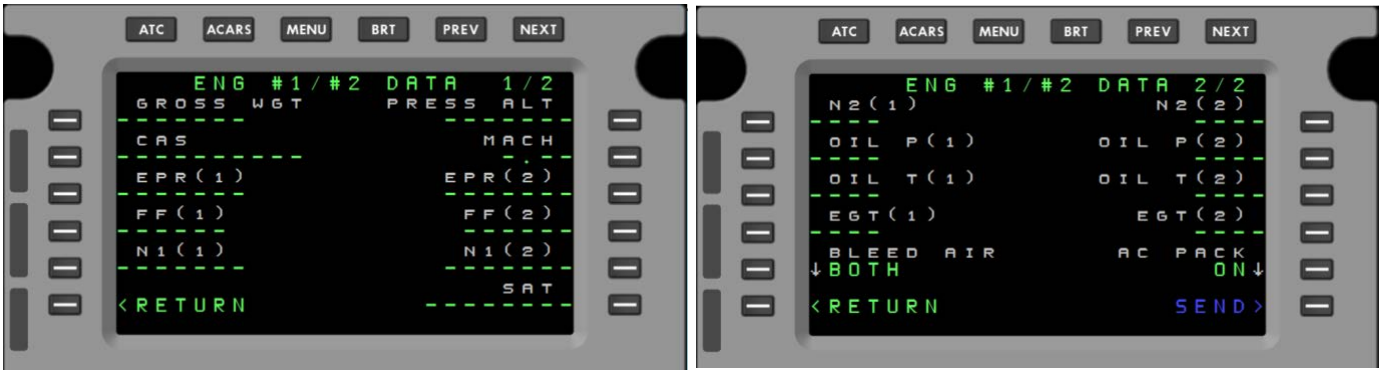



**Figure 5-14 ENGINE #1/#2 DATA 1/2 and 2/2**

**Table 5-12 ENGINE #1/#2 DATA 1/2 and 2/2 Fields**

| LSK | Label | Description |
|---|---|---|
| **Page 1/2** | | |
| L1 | GROSS WGT | Optional. Autopopulated, read-only. Gross weight |
| L2 | CAS | Optional. Autopopulated, read-only. Calculated air speed |
| L3 | EPR(1) | Optional. Autopopulated, read-only. Exhaust pressure ratio |
| L4 | FF(1) | Optional. Autopopulated, read-only. Fuel flow |
| L5 | N1 (1) | Optional. Autopopulated, read-only. Engine speed at spool, engine 1 |
| R1 | PRESS ALT | Optional. Autopopulated, read-only. Pressure altitude |
| R2 | MACH | Optional. Autopopulated, read-only. Speed |
| R3 | EPR(1) | Optional. Autopopulated, read-only. Exhaust press ratio |
| R4 | FF(1) | Optional. Autopopulated, read-only. Fuel flow |
| R5 | N1 (2) | Optional. Autopopulated, read-only. Engine speed at spool, engine 2 |
| R6 | SAT | Optional. Autopopulated, read-only. Static air temperature |
| **Page 2/2** | | |
| L1 | N2 (1) | Optional. Autopopulated, read-only.  Engine speed at spool 2, engine 1 |
| L2 | OIL P(1) | Optional. Autopopulated, read-only. Oil pressure, engine 1 |
| L3 | OIL T(1) | Optional. Autopopulated, read-only. Oil temperature, engine 1 |
| L4 | EGT(1) | Optional. Autopopulated, read-only. Exhaust gas temperature, engine 1 |
| L5 | BLEED AIR | Selection list: LEFT, RIGHT, BOTH |
| R1 | N2 (2) | Optional. Autopopulated, read-only. Engine speed at spool 2, engine 2 |
| R2 | OIL P(2) | Optional. Autopopulated, read-only. Oil pressure, engine 2 |
| R3 | OIL T(2) | Optional. Autopopulated, read-only. Oil temperature, engine 2 |
| R4 | EGT(2) | Optional. Autopopulated, read-only. Exhaust gas temperature, engine 2 |
| R5 | AC PACK | Selection list: ON, OFF |
| R6 | SEND | The data on this page is a snapshot taken when the page was opened. To refresh the values, close the Engine Data pages by returning to the parent page and then select Engine Data to reopen. When data values have popuated, press **LSK R6** to send the engine report. |

### 5.4.2.7 AIRCREW MISC

This page is available from EN ROUTE and from SERVICE MSGS and sends an AOC message. This page accepts up to 208 characters (2 pages) of free text.


**Figure 5-15 AIRCREW MISC**

As a free text page, begin typing. To edit a line of text, press the respective LSK (L1 to L5) and delete or replace the content, as required. For additional guidance, see Section 3.5.7

### 5.4.2.8 ETA Revision

Use this page to construct a downlink notification for a new destination and time.


**Figure 5-16 ETA REVISION**

**Table 5-13 ETA REVISION Fields**

| LSK | Label | Description |
|---|---|---|
| L1 | NEW DEST STA | Required. ICAO ID for new airport |
| L2 | FOB*100 | Optional. Estimated fuel on board. Autopopulated or manually input. KG or LB |
| L4 | FREE TEXT | Optional up to 24 characters |
| R1 | NEW ETA | Required. Zulu time for arrival at NEW DEST STA |
| R6 | SEND | When required data is provided, the message may be sent. |

### 5.4.2.9 ETA Report


**Figure 5-17 ETA REPORT**

**Table 5-14 ETA REPORT Fields**

| LSK | Label | Description |
|---|---|---|
| L1 | DEST STA | Required. ICAO ID for airport |
| L2 | FOB*100 | Optional. Estimated fuel on board. Autopopulated or manually input. |
| L4 | FREE TEXT | Optional up to 24 characters |
| R1 | ETA | Required. Zulu time for arrival at DEST STA |
| R6 | SEND | When required data is provided, the message may be sent. |

## 5.4.3 ACARS POST FLIGHT MENU

Use the POST FLIGHT MENU to finalize arrival (or to report a delay) and to send the flight log to AOC.


**Figure 5-18 POST FLIGHT MENU**

This menu provides access to:

- FLIGHT LOG
- ARRIVAL DELAY
- Send FLT LOG - CURRENT 1/4

### 5.4.3.1 FLIGHT LOG

**LSK L1** in the POST FLIGHT MENU opens the read-only FLT LOG page of the MAINTENANCE menu tree, described in Section 6.1.

The SEND FLT LOG action at **LSK R5** is available only at OOOI IN status, ON GROUND. When sending the flight log report, only FLT LOG - CURRENT 1/4 is included in the downlink.

### 5.4.3.2 ARRIVAL DELAY

Use the ARRIVAL DELAY page to construct a downlink request informing ATC of a delay in arrival.

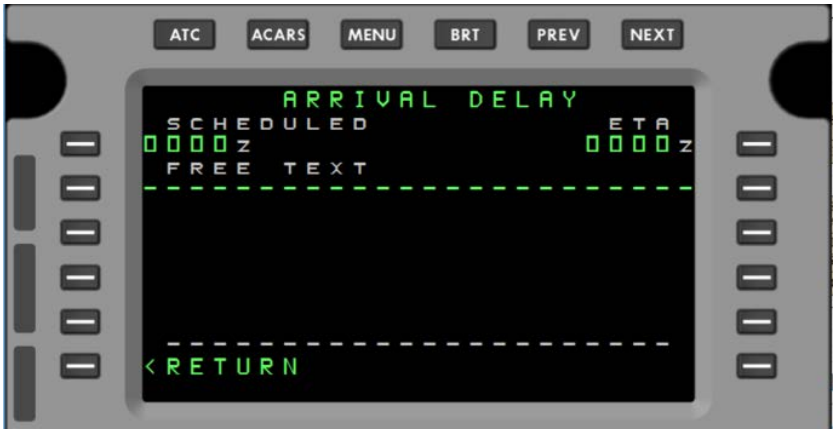



**Figure 5-19 ACARS ARRIVAL DELAY**

**Table 5-15 ARRIVAL DELAY Fields**

| LSK | LABEL | FUNCTION or DESCRIPTION |
|---|---|---|
| L1 | SCHEDULED | Required. Scheduled arrival time may autopopulate from autopopulated data or be manually input by aircrew. |
| L2 | FREE TEXT | Optional. Justification for requesting arrival delay. |
| R1 | ETA | Required. Estimated time of actual arrival (HHMM) |

## 5.4.4 ACARS MSG LOG

The ACARS Message Log displays uplink and downlink messages and reports, including ATC message sequences, system-generated OOOI reports, and other predefined event-based reports in chronological order, most recent first.

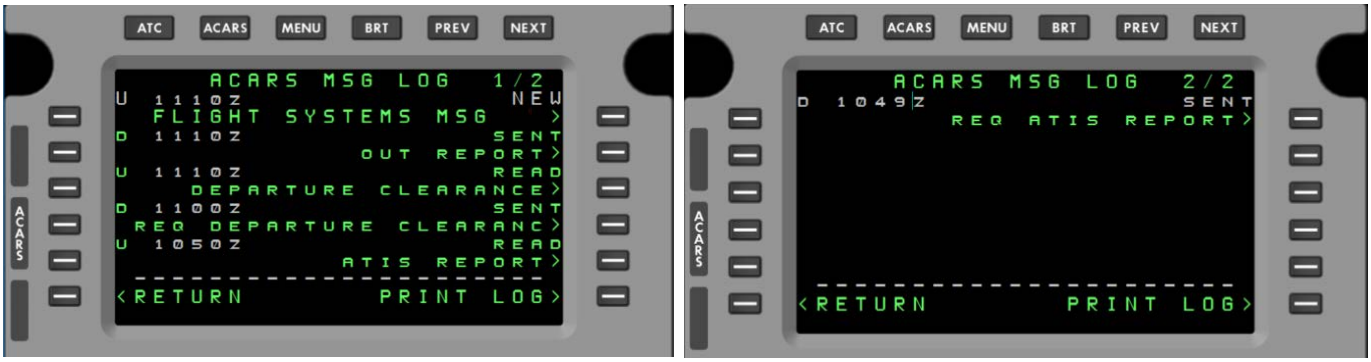



**Figure 5-20 ACARS MSG LOG**

When a new UPLINK message arrives, the ACARS annunciator illuminates. Pressing the ACARS function key when the annunciator is lit automatically displays the ACARS message detail or, if multiple NEW/OPEN messages exist, the MSG LOG.

The Envoy can manage up to 80 messages in the ACARS MSG LOG. The aircrew can use PREV and NEXT function keys to scroll the message log pages.

The aircrew can delete any message that has a status of SENT, READ, or READBACK by pressing the DEL key to set Delete mode in the message log and then pressing the LSK associated with the message to be deleted.

An entry in the message log can represent a single message or a message transaction, which includes the original message and the response message that closes the transaction.

Entries in the Message Log are identified by these common details:

| | |
|---|---|
| U or D | Uplink or downlink |
| Zulu time | Timestamp of when the message was created |
| Status | The status of ACARS messages can be:<br>• NEW<br>• SENDING<br>• SENT<br>• READ<br>• READBACK |
| Message Title | A short summary of the message, based on ACARS configuration settings.<br>Event driven reports can be automated or requested<br>• POSITION RPT – 15 MIN<br>• OFF REPORT<br>• ATIS REPORT<br>• Free text message title default: ACARS MESSAGE |

To view the details of any message in the log, press the associated LSK (R1 to R5) to open the message in ACARS MSG REVIEW page, described in Section 5.4.4.1.

The ACARS MSG LOG is dynamic, so the status of any message updates in real time. The status of an uplink message remains NEW until the aircrew sends a READ or READBACK response by navigating to the last page of the message detail.

The message log or individual message can be printed on a cockpit printer, if installed.

When a flight has completed, the ACARS MSG LOG is cleared ten minutes after the aircraft has been in the OOOI IN state.

### 5.4.4.1 ACARS MSG REVIEW 1/2

ACARS MSG REVIEW pages provide a static view of a single uplink or downlink entry from the ACARS MSG LOG. An ACARS message can contain up to 30 pages of text.

Titles of free text messages include a timestamp and one of the following labels:

- ACARS UPLINK
- ACARS DNLINK

The example below shows Departure Clearance, which, like the Oceanic Clearance, requires a READBACK confirmation (at LSK L5) on the last page of the message.

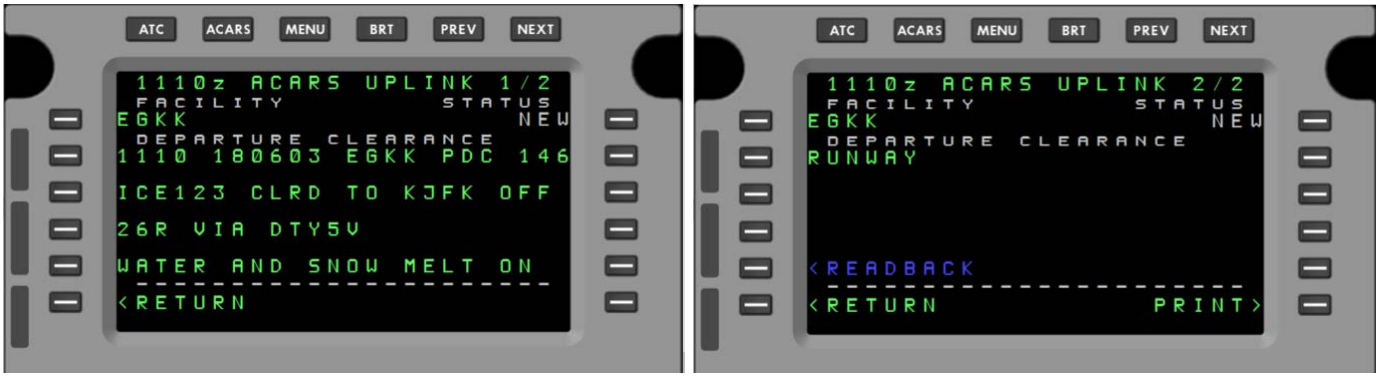



**Figure 5-21 ACARS MSG REVIEW 1/2 and 2/2**

The detailed message can be opened and then printed from the ACARS MSG LOG page.

The title on the ACARS MSG REVIEW pages includes the timestamp, the identifier (uplink or downlink), the field labels and content. If additional pages are required to display the free text, the second and subsequent pages include the title line, along with a subtitle line to identify the status.

If an ACARS message requires a READ or READBACK status (to indicate the aircrew scanned all pages of the message), then these actions always appear at LSK L5 on the last page of the MSG REVIEW.

PRINT always displays at **LSK R6** on the last page of a closed message.

**Table 5-16 ACARS MSG REVIEW Fields**

| LSK | Label | Description | |
|---|---|---|---|
| L1 | FACILITY | **ATC uplink message type:** | **Facility ID** |
| | | • Oceanic Clearance<br>• Flight Systems Message | ATCC ID/ICAO Designator |
| | | • D-ATIS Report | AIRPORT ID |
| | | • Terminal Weather Information | ICAO Airport ID |
| | | • Departure Clearance | Departure Airport |
| | | • Pushback Clearance<br>• Expected Taxi Clearance | ICAO Departure Airport |
| L2 | 24 Char Max Message ID | Header for detailed text of message that follows. | |
| L5 | READ/READBACK | Action key to send notification to ATC that message has been received | |
| L6 | RETURN | Go to ACARS MSG LOG | |

| | | |
|---|---|---|
| R1 | STATUS | NEW: large white font<br>Any other status: small green font |
| R6 | PRINT | Available on messages that have been READ or READBACK |

## 5.4.5 ACARS Service Messages

Service messages are sent to the airline maintenance facility.

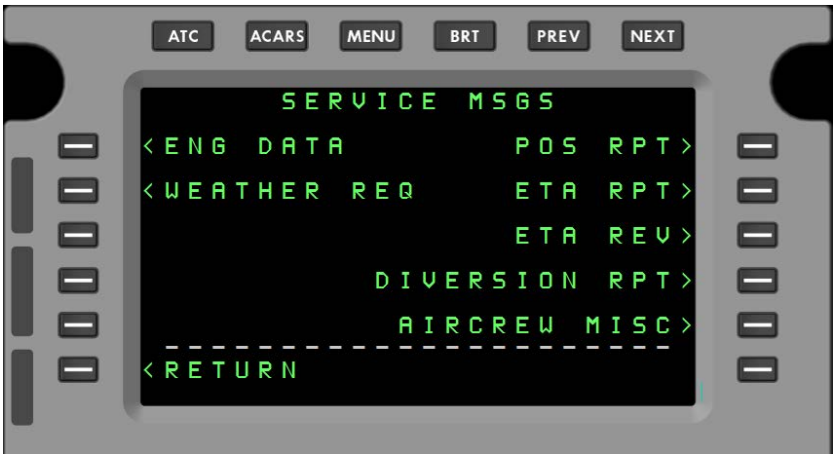



**Figure 5-22 SERVICE MESSAGES**

The SERVICE MESSAGES page is available only if ACARS is an enabled feature.

**Table 5-17 ATC REQUEST Menu**

| LSK | Label | Section | Description |
|---|---|---|---|
| L1 | ENG DATA | 5.4.2.6 | Navigate to ACARS Eng #1/#2 DATA |
| L2 | WEATHER REQ | 5.4.2.1 | Navigate to ACARS Weather Request |
| R1 | POS RPT | 5.4.2.3 | Navigate to Position Report |
| R2 | ETA RPT | 5.4.2.9 | Navigate to the ETA Report |
| R3 | ETA REV | 5.4.2.8 | Navigate to the ETA Revision request page |
| R4 | DIVERSION RPT | 5.4.2.5 | Navigate to the Diversion Report page |
| R5 | AIRCREW MISC | 5.4.2.7 | Navigate to the Aircrew Misc. free text page |

### 5.4.5.1 ENG#1/#2 DATA

See detail description in Section 5.4.2.6.

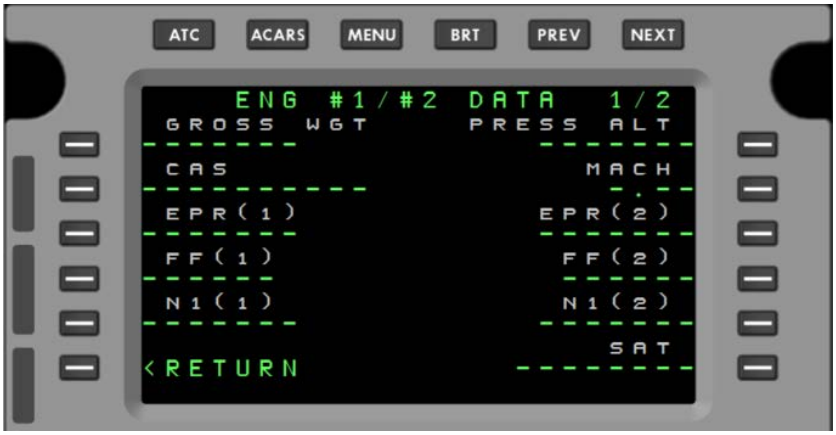



**Figure 5-23 ENG#1/#2 DATA**

### 5.4.5.2 Weather Request

See detailed description in Section 5.4.1.2

### 5.4.5.3 POSITION REPORT

This SERVICE MSGS report is described in Section 5.4.2.3.

### 5.4.5.4 ETA RPT

The ETA REPORT is described in Section 5.4.2.9

### 5.4.5.5 ETA REV

The ETA Revision request page is described in Section 5.4.2.8.

### 5.4.5.6 DIVERSION RPT

The Diversion Report is described in Section 5.4.2.5.

### 5.4.5.7 AIRCREW MISC

The Aircrew Misc. free text page is described in Section 5.4.2.7.

### 5.4.5.8 FLIGHT LOG

The FLT LOG is a maintenance page defined in Section 6.1. This page is available from all ACARS menu pages.

To send a downlink of the flight log in an AOC message, see Section 5.4.3.1

## 5.4.6 FLIGHT LOG

**LSK R3** in the ACARS MENU opens the FLT LOG, described in Section 6.1, of the MAINTENANCE menu.

### 5.4.7 ACARS FLIGHT INIT

**LSK R6** in the ACARS menu opens the ACARS FLIGHT INIT page, described in the ACARS Pre Flight Menu, Section 5.4.1.1

# 6 MAINTENANCE Menu

The Maintenance pages present display-only data that can be downloaded or printed and/or reported to AOC. Some maintenance data is intended for AOC installers or maintenance to verify an installation; some content can only be viewed while ON GROUND.

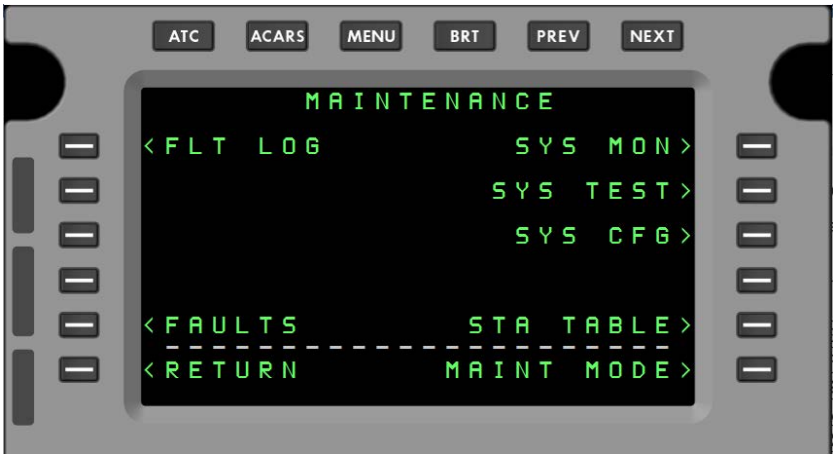



**Figure 6-1 MAINTENANCE Menu**

**Table 6-1 MAINTENANCE Menu Options**

| LSK | Label | Section | Description |
|---|---|---|---|
| L1 | FLT LOG | 6.1 | OOOI data for current flight and three prior flights. |
| L5 | FAULTS | 6.2 | Fault log for all non-catastrophic faults. A detailed view of a specific fault can be viewed, printed, sent, or cleared from the Fault Log. |
| R1 | SYS MON | 6.3 | Six pages of configuration and status details about aircraft TX/RX. Limited data view when not On Ground. |
| R2 | SYS TEST | 6.4 | Menu of tests and system settings. Available only On Ground. |
| R3 | SYS CFG | 0 | Aircraft and software configuration identifiers. Available only On Ground. |
| R5 | STA TABLE | 6.5.2 | Available ground stations within range. |
| R6 | MAINT MODE | 6.7 | Accessible only by maintenance personnel and out of scope of this document. Available only On Ground. |

## 6.1 FLIGHT LOG

The Flight Log displays timestamp and FOB for OOOI state changes for the current flight and up to three previous flights. The current flight information is available as soon as OOOI state is WAITING FOR OUT and remains available for up to 10 minutes after reaching IN state (See Section 6.1.1).

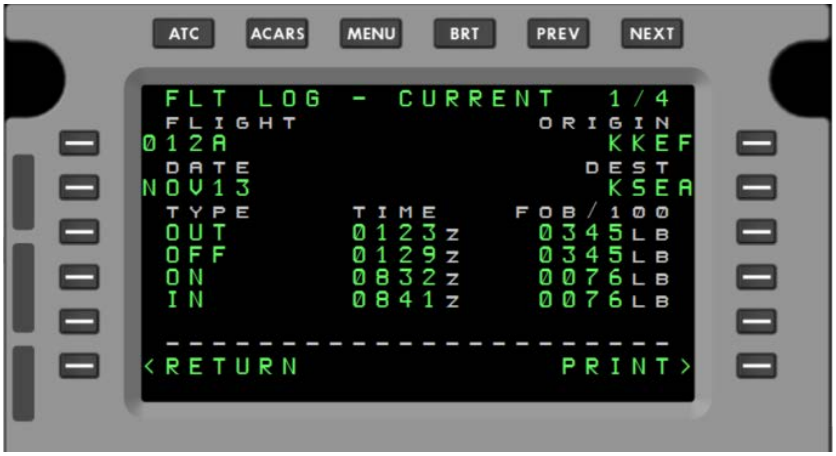



**Figure 6-2 FLIGHT LOG - CURRENT 1/4**

The other 3 pages of the FLT LOG show the OOOI details for the 3 prior flights.

**Table 6-2 Envoy FLT Log**

| Parameter | Description |
|---|---|
| FLIGHT | The ICAO flight ID is autopopulated data from the Flight Management Computer (FMC). |
| ORIGIN | ICAO airport code for the departure location, autopopulated from the FMC. |
| DEST | ICAO airport code for the arrival/destination, autopopulated from the FMC. |
| TAIL ID | Obtained from the Envoy Personality Module. |
| ICAO address | Obtained from Envoy Personality Module. |
| FLT NUM | Derived from an aircraft FLT ID and the IATA airline code. |
| TYPE | OOOI state is autopopulated from discretes (see MONITOR 2/6 – OOOI, COMM, and Message Status). |
| TIME | Envoy UTC time |
| FOB | Fuel Onboard is autopopulated from the FMC. This value can be expressed in LB or KG, depending on aircraft configuration. |

Data on the FLT LOG is read-only. OOOI data for the CURRENT can be accessed, printed, or sent to AOC from the ACARS POST FLIGHT MENU.

### 6.1.1 OOOI Event States, Triggers, Messages

OOOI (Out / Off / On / In) events provide a basic indication of the phase of a flight. The event triggers are configurable and established by the airline to provide information to an operational center as one or more downlink messages.

| Event | Triggered when all of these descriptions are true |
|---|---|
| INIT | Initialize - Envoy state at power-up, only used to determine current OOOI state. |
| Out | 1. Brakes are OFF<br>2. All doors are CLOSED<br>3. OOOI STATE is OUT<br>4. These conditions have existed for 5 consecutive seconds. |
| Off | 1. No weight on wheels<br>2. OOOI STATE is OFF<br>3. These conditions have existed for 5 consecutive seconds. |
| On | 1. There is weight on wheels<br>2. OOOI STATE is ON<br>3. These conditions have existed for 5 consecutive seconds. |
| In | 1. Brakes are ON<br>2. One or more doors is open<br>3. OOOI STATE is IN<br>4. These conditions have existed for 5 consecutive seconds. |
| Reset | 1. The flight complete timer (10 minutes) expires.<br>2. OOOI STATE is IN.<br>This erases the OOOI data; any reports should be sent within 10 minutes of IN event. |

For OOOI downlink message text formats (ARINC 620 compliant), see E.1.1 OOOI Downlink Message Labels in Appendix E.

## 6.2 FAULT LOG

To open the FAULT LOG, from the main menu press LSK L5 on the MAINT menu.

The fault log lists up to 4 pages of faults for the current/latest flight. in order of first occurrence, newest first. The main page lists the faults associated with the Envoy system and/or configured discretes, and provides access to the detailed fault description, which displays timestamps for the first and latest occurrence, along with total count of occurrences detected for the given fault. The fault log can be printed or sent to AOC during non-critical stages of flight, and when on the ground.

The aircrew can view detailed information about a specific fault by pressing the respective LSK to open the fault description page described in Section 6.2.1.

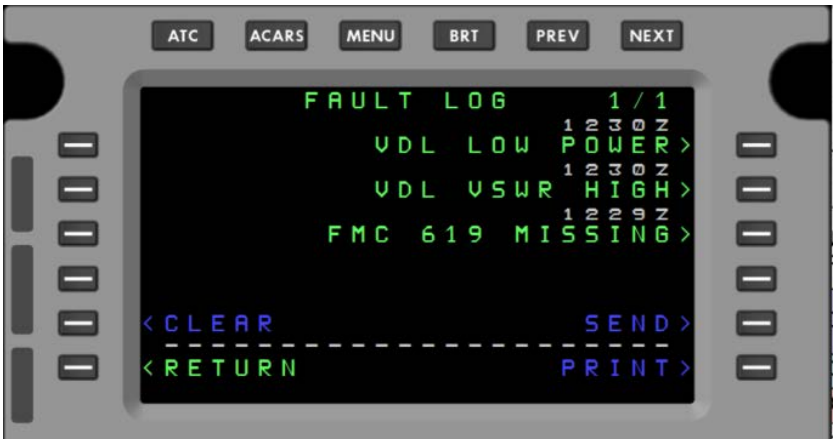



**Figure 6-3FAULT LOG**

For an itemized list of faults tracked by the Envoy, see Appendix G Fault Management.

## 6.2.1 Fault Description

Fault description is a detailed view of the fault, including the FAULT ID, along with a count of detected occurrences in the current flight. During flight, the fault description can be printed or sent to AOC. The aircrew has the ability to clear the fault from their view of the fault log.


**Figure 6-4 FAULT DESCR-ID 1/2 and 2/2**

**Table 6-3 FAULT DESCR Fields**

| LSK | LABEL | FUNCTION or DESCRIPTION |
|---|---|---|
| L1 | FAULT | Label of fault (matches FAULT ID in the title) |
| L2 | SEVERITY | Airport identifier |
| L3 | FIRST RECORD | Timestamp of first occurrence (since startup) |
| L4 | LAST RECORD | Timestamp of latest occurrence |
| L5 | CLEAR | Delete this fault from the aircrew view of the fault log. |
| R1 | ORIGIN | Identifies the location/cause of the fault. |
| R2 | DETECTS | Number of times the fault occurred since startup. |
| R5 | SEND | Send this fault detail to AOC. |
| R6 | PRINT | Print fault to configured cockpit printer. |
| **Page 2** | | |
| L1 | ORIG/DEST | Current flight data |
| L2 | FLIGHT ID | Current flight data |
| L3 | SHORT DESCRIPTION | Human readable description of fault. |
| R1 | A/C REG | Aircraft Identifier |

# 6.3 SYSTEM MONITOR

System monitor pages show read-only details about the configured discretes, VHF radio, and COMM status

| Label | Section | Description |
|---|---|---|
| MONITOR 1/6 | 6.3.1 | VHF Radio status |
| MONITOR 2/6 | 6.3.2 | OOOI, annunciators, alerts, COMM and MSG status |
| MONITOR 3/6 | 6.3.3 | A429 TX Status |
| MONITOR 4/6, 5/6 | 0 | TX/RX Discretes |
| MONITOR 6/6 | 6.3.5 | ADS Contracts |

## 6.3.1 MONITOR (1/6) – COMM Status and Frequency

MONITOR 1/6 shows details about the VHF and SAT COMM status.


**Figure 6-5 MONITOR 1/6 – COMM Status**

| LABEL | FUNCTION or DESCRIPTION |
|---|---|
| FREQ | VHF radio status and current frequency |
| STATION | Current VHF station (also current data authority (CDA)) |
| SQP | Signal Quality Parameter (average) for CDA. See STATION TABLE |
| COMM STATUS | Read-only status for both VHF and SATCOM.<br>Active COMM is indicated with an asterisk.<br>VHF values: NO COMM, M2, MA, DISABLED, or NO RADIO with option ATN AVAIL if ATN COMM is active.<br>SATCOM values: NO COMM, IN COMM, DISABLED, INOP, or <blank> if not configured. |
| VHF INHIBIT | Read-only state set by LSK L5.<br>Possible values: NOT INHIBITED or INHIBITED.<br>This field supports a configuration that shares the VHF COMM antenna with voice. If VHF voice is in use, this discrete is set to INHIBITED, and any Envoy communications would be over SATCOM until the switch relay is set to NOT INHIBITED. |
| MEDIA | Selection lists at LSK L5 and LSK R5 are available only if SAT media is configured.<br>Possible values: ENABLE or DISABLE If disabled, reset to default at system reboot, flight initialization, or 10 minutes after OOOI state is set to IN. |

## 6.3.2 MONITOR 2/6 – OOOI, COMM, and Message Status

This page displays read-only status of the discretes and annunciators associated with OOOI, COMM, and message status. Maintenance often uses this page to verify annunciators, chime, and any fail status for connected devices. The left side shows discrete inputs; the right side shows outputs.

| | |
|---|---|
| **Note** | If new/unread messages exist, the CPDLC MSG and ACARS MSG are active and the annunciators for ATC and ACARS are lit. There is also a chime pulse duration configuration setting that may provide aural annunciation for the items on this page. |

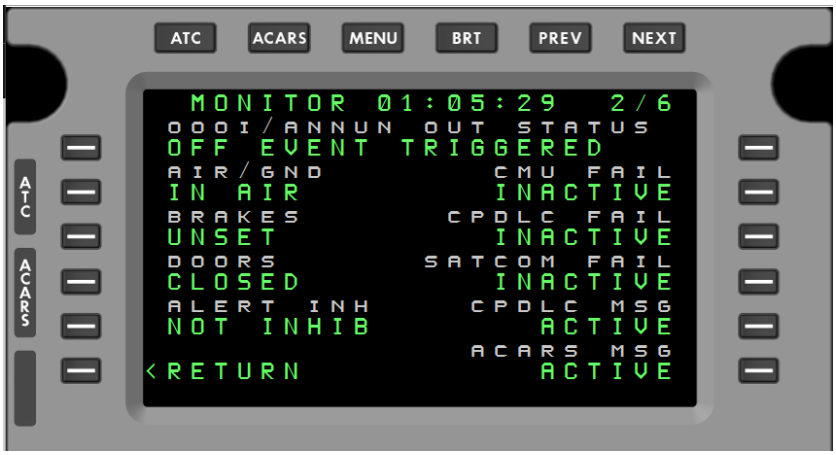



**Figure 6-6 MONITOR 2/6 – Status of Discretes and Enabled COMM**

| LABEL | FUNCTION or DESCRIPTION |
|---|---|
| OOOI / ANNUN OUT STATUS | Latest OOOI event |
| AIR/GND | IN AIR or ON GND |
| BRAKES | SET or UNSET |
| DOORS | OPEN or CLOSED |
| ALERT INH | NOT INHIB or INHIBITED. Alert inhibit status is managed by discrete settings. Annunciators and alerts are inhibited during critical flight phase, such as takeoff or landing. |
| CMU FAIL | Discrete output status: INACTIVE<br>ACTIVE – FAIL annunciatoris illuminated indicating a CMU failure |
| CPDLC FAIL | INACTIVE – no failures<br>ACTIVE – FAIL annunciator is illuminated indicating a CPDLC failure |
| SATCOM FAIL | INACTIVE or ACTIVE |
| CPDLC MSG | INACTIVE – no current messages<br>ACTIVE – new ATC message(s); ATC annunciator is illuminated |
| ACARS MSG | INACTIVE – no current message(s)<br>ACTIVE – new/unread ACARS message; ACARS annunciator is illuminated (see Section 5.4.4) |

## 6.3.3 MONITOR 3/6 – A429 TX Status

Shows the status of the installed A429 equipment.

Labels (TX numbers) for the installed devices may be in a different order. Names are assigned in the system configuration.

The two center columns show the status of each TX discrete.

- N/C means the TX discrete is not configured.
- OK means communication link to the configured device is active
- -- Means the Envoy has received no communication from the device

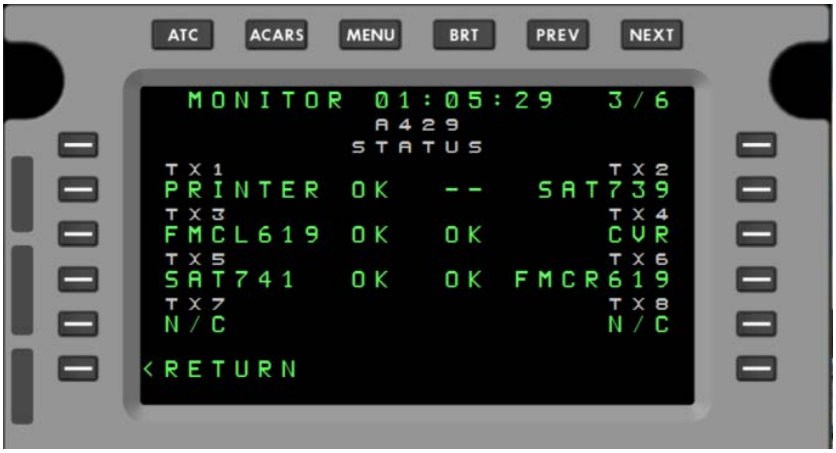



**Figure 6-7 SYSTEM MONITOR 3/6**

**Figure 6-8 MONITOR 3/6 – A429 TX Status**

| LABEL | FUNCTION or DESCRIPTION |
|---|---|
| TX1 | PRINTER – wired to the cockpit printer |
| TX3 | FMCL619 – wired to the left FMC port |
| TX5 | SAT741 – configured at installation with a SATCOM |
| TX7 | N/C – not configured |
| TX2 | SAT739 is configured, but is not active |
| TX4 | CVR – as an RX-only device, this field shows the cockpit voice recorder is accepting input from the Envoy |
| TX6 | FMCR619 is wired to the right FMC port. |
| TX8 | N/C – not configured |

## 6.3.4 MONITOR 4/6 and 5/6 – A429 RX

These SYSTEM Monitor pages display the A429 RX discretes that are configured with the Envoy. When ON GROUND, the A429 RX discretes pages provide active links at the respective LSKs to display additional details, as described in Section 6.3.4.1.


**Figure 6-9 MONITOR 4/6 – A429 RX Discretes (ON GROUND, left and IN AIR, right)**

| LSK | LABEL | FUNCTION or DESCRIPTION |
|---|---|---|
| L2 – R6 | RX1 – RX 18 | Name of configured discrete with status on the inside column. |

When on the ground, details such as label ID, label name and values being received from an I/O on SYS MON 4/6 and 5/6 can be viewed by selecting the adjacent LSK.

A typical read out of an ARINC 429 label, in this case RX3, configured as the FMC General Output Bus (GOB), is detailed on two pages, as shown in Figure 6-10.

#### 6.3.4.1 TX/RX Details Pages 1/2 and 2/2

The data received by the equipment configured at a TX or RX port on SYS MONITOR pages 3/6, 4/6, and 5/6 can be viewed when the aircraft is on the ground.

By pressing the respective LSK, one or more pages of data sent on a specific discrete can be viewed, or refreshed.

In the example below, the FMC General Output Bus (GOB) supplies details about the flight, which can be consumed by the Envoy in constructing CPDLC and ACARS messages.

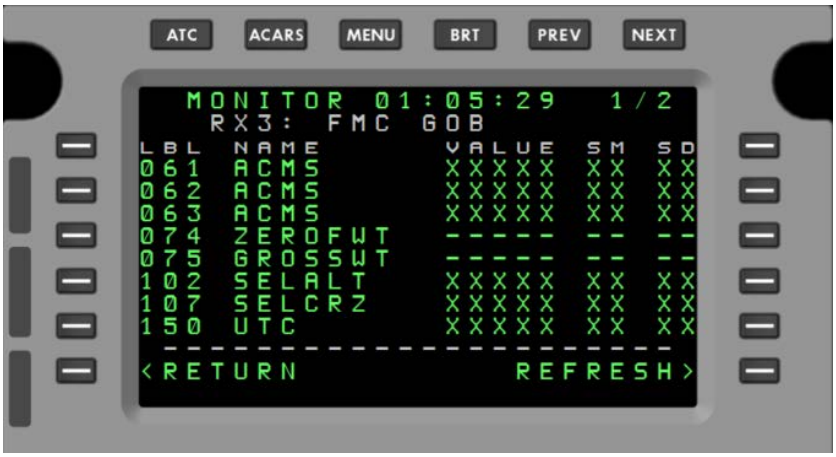



**Figure 6-10 A429 RX Details Pages 1/2 and 2/2**

The labels, names and values described below are a sample read out.

| LABEL | FUNCTION or DESCRIPTION |
|---|---|
| RX3 (subtitle) | FMC GOB: FMC general output bus |
| LBL | 061, 062, 063 FMS Origin/Destination data<br>074, 075 Fuel/Gross weight<br>102, 107 Altitude and cleared cruise altitude<br>150 UTC in HHMMSS |
| NAME | ACMS |
| VALUE | |
| SM | Signed Status Matrix |
| SD | Source Destination Identifiers |

Discretes and labels for dynamic data sent to the Envoy from other configured devices may be appended to the FMC GOB, including dynamic data from the EFIS (Electronic Flight Instrument System), such as Distance to Go, Active Waypoints, FMS LAT/LON, flight plan vectors, reference waypoints.

Details for all labels are out of scope of this user guide and are available one of the following Envoy documents:

- Envoy Interface Control Document, ICD-15000
- Envoy Component Maintenance Manual, CMM-15000

### 6.3.5 MONITOR 6/6 – ADS Contracts

When a FANS 1/A+ session is active, MONITOR 6/6 displays the active ADS-C contracts and provides access to the details for any contract, along with the ability to cancel a specific contract.

The Envoy can manage up to 5 ATC facility ADS contracts. If an ADS-C contract is with an AOC facility, by default, the facility information displays at LSK L5.


**Figure 6-11 MONITOR 6/6 - ADS-C Contracts Summary**

| LSK | Label | Description |
|---|---|---|
| L1-L4 | ADS Center | Any ATC facility that has an active contract. The Current Data Authority (CDA), if it has an active contract, is always listed at LSK L1 |
| L5 | <AOC FACILITY ID> | The AOC facility |
| -- | ESTAB | Time of first ADS-C transmission to the ADSG |
| -- | LAST | Time of latest ADS-C transmission to the ADSG |

To view the type of contract established and the data being transmitted, press the respective **LSK (L1, L2, L3, L4, L5)** .

The types of contracts and data collected are described on ADS-C CENTER detail page described in Section4 Automatic Dependent Surveillance (ADS) for a description of type(s) of contracts and data collected.

#### 6.3.5.1 ADS-C CENTER Detail Page

Use the ADS-C CENTER detail page to view the type of contract and data being collected, or to inhibit an ADS contract. For additional information about an ADS contract, see Section 4.


**Figure 6-12 ADS-C CENTER Contract Detail**

The terms and conditions of an ADS-C agreement are set by the aircraft's configuration and may be further limited by the ATSU, which can specify what data is to be contained in the ADS-C report.

The page title identifies the ATSG facility that has an active ADS contract.

| Label | Description | |
|---|---|---|
| GROUPS | Identifies the types of data that are being tracked and reported to the specified ATSU | |
| | BASIC | |
| | FLIGHT ID | |
| | EARTH REF | |
| | AIR REF | |
| | AIRFRM ID | |
| | METEORLOG | |
| | PRED RTE | -predetermined route |
| PERIODIC (DEMAND, EVENT) | Identifies the type of contract, and the modulus for the reports, where 1 indicates the group data is being sent each modulus, and 13 means the data is being sent every 3 modulus (or time periods). If an item contains --, that data is not being (or has not yet been) collected. | |
| LAST | Time of latest ADS-C transmission to the ADSG | |

| LSK | Label | Description |
|---|---|---|
| L1-L4 | GROUPS | |
| L6 | | The AOC facility |
| R6 | INIBIT | Disable reporting to the ADSG identified on the title page<br><br>To inhibit all ADS-C transmissions for FANS 1/A+, see Table 3-2 LOGON/STATUS 2/2. |
| -- | LAST | Time of latest ADS-C transmission to the ADSG |

When transitioning to an ATN data authority, all existing ADS-C contracts are automatically canceled.

## 6.4 SYSTEM TEST

SYSTEM TEST menu is available when on the ground at OOOI state IN. This menu provides test frames for annunciators, display, connectivity to other devices on the aircraft, such as printers.


**Figure 6-13 SYSTEM TEST**

### 6.4.1 LINK TEST

Use LINK TEST to test accessibility to ACARS or Aviation VHF Link Control (AVLC).

| **Note** If VHF Mode 2 is not available, AVLC TEST FRAME cannot be run. |
|---|


**Figure 6-14 LINK TEST with Results**

| LSK | LABEL | FUNCTION or DESCRIPTION |
|---|---|---|
| L1 | ACARS LINK TEST | RESULT shows status of having run the test. If blank, test has not been run. |
| L2 | AVLC TEST FRAME | RESULT shows status of having run the test. If blank, test has not been run. If cannot be run, an error notification displays in the scratchpad. |

## 6.4.2 UTC SOURCE AND STATUS

Identify source of current date and time, adjust time, or reset the Envoy time and date.

The current time (Zulu) and date (Zulu) is selected by the Envoy IO subsystem from multiple sources. This page identifies the source.

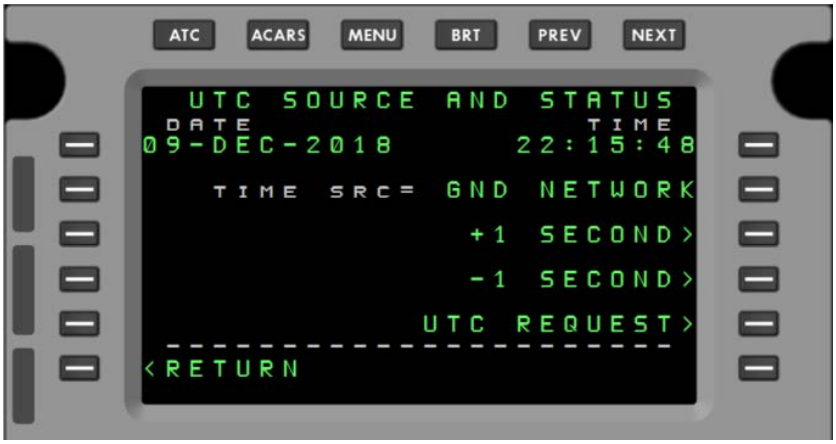



**Figure 6-15 UTC SOURCE AND STATUS**

Perform the following actions from the UTC SOURCE AND STATUS page

| LSK | LABEL | FUNCTION or DESCRIPTION |
|---|---|---|
| R3 | +1 SECOND | Change current UTC time by 1 second per press. |
| R4 | -1 SECOND | |
| R5 | UTC REQUEST | Press to obtain UTC time from a new time source |

The read-only values on this page show:

| Label | Description |
|---|---|
| DATE | DD-MMM-YYYY format of today's date in Envoy Flash memory |
| TIME | HH:MM:SS in Zulu format of time in Envoy Flash memory |
| TIME SRC | System controlled source of current UTC time and date |

## 6.4.3 SELF TEST AND STATUS

Test the functionality of annunciators, discretes, and display. Tests that have been run during the current logon session can be printed.


**Figure 6-16 SELF TEST AND STATUS**

### 6.4.3.1 ANNUNCIATOR TEST (common)

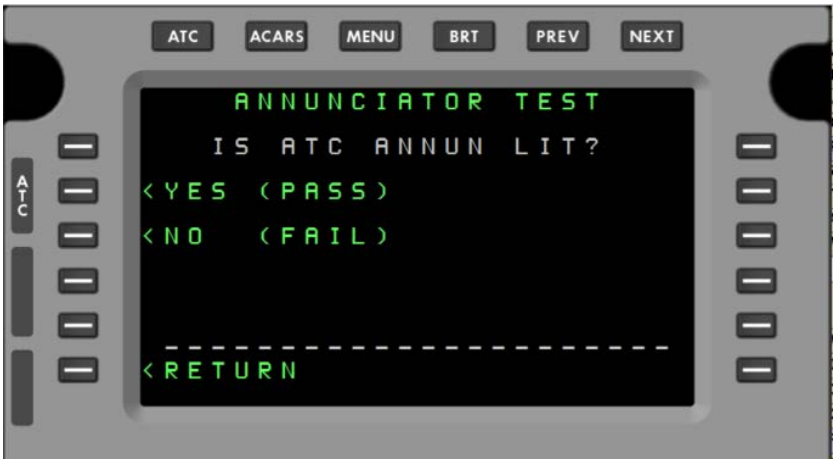



**Figure 6-17 ATC ANNUNCIATOR TEST**

# 6.5 SYS CONFIG

SYS CONFIG pages are a read-only summary of configuration details. Each page can be printed on an individual page basis:

| Label | Section | Description |
|---|---|---|
| UNIT CONFIG 1/3 | 6.5.1 | Identifies part number, enabled functionality, and customer specific configuration information for the unit |
| UNIT SOFTWARE 2/3 | 6.5.2 | Bootloader and application versions and CRCs |
| AIRCRAFT CONFIG 3/3 | 6.5.3 | Aircraft and TSAP database identifiers and NSAP address |

## 6.5.1 UNIT CONFIG 1/3

The UNIT CONFIG page displays the unit configuration identifiers, including the Envoy part number, configured functionality, as described in Section 1.4, and software version identifiers.

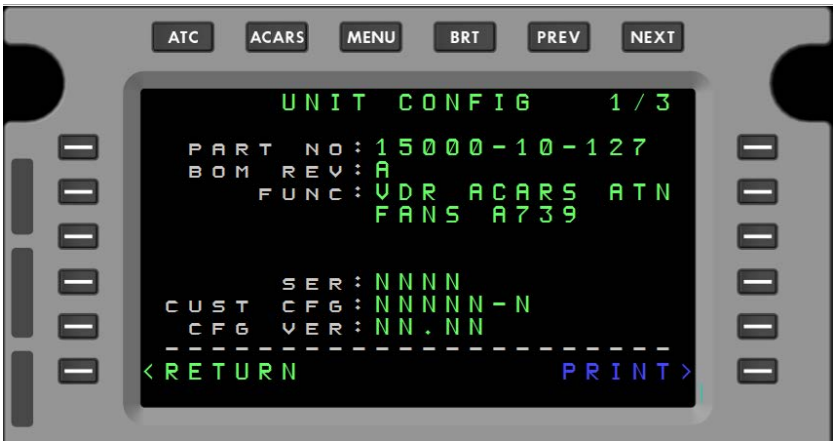



**Figure 6-18 UNIT CONFIG 1/3**

| Label | Description |
|---|---|
| PART NO | P/N of the Envoy unit identifies factory-enabled Envoy features (see Section 1.4 Configuration Options for Envoy) |
| BOM REV | Revision number on the Bill of Materials for the current unit |
| FUNC | Text version of the Configuration Options for the Envoy |
| SER | Serial number of unit, also appears on the label on the side of the LRU |
| CUST CFG | Part number of customer configuration |
| CFG VER | Version number of customer configuration |

## 6.5.2 UNIT SOFTWARE 2/3

The UNIT SOFTWARE page displays the versions and CRCs for the currently loaded Envoy software.

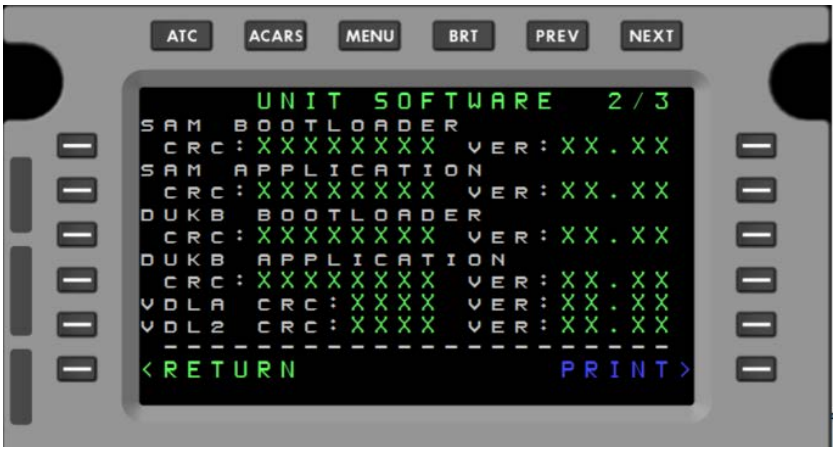



**Figure 6-19 UNIT SOFTWARE 2/3**

The CRCs and VERsion identifiers listed here are compared with stored credentials from the companion Personality Module whenever the system is rebooted.

| Label | Description |
|---|---|
| SAM BOOTLOADER | System Application Manager for system startup, data loading, hardware and PBIT |
| SAM APPLICATION | System Application Manager for data link functions |
| DUKB BOOTLOADER | Display Unit Keyboard application for system startup and data loading |
| DUKB APPLICATION | Manages human machine interface (HMI) functions including keys and display |
| VDLA | Controls radio hardware for Mode A messaging |
| VDL2 | Controls radio hardware for Mode 2 messaging |

### 6.5.3 AIRCRAFT CONFIG 2/3

This page displays the registration ID for the aircraft and the system identifiers for the TSAP database. In the TSAP example below, the TSAP VER shows a MODED label, indicating that the factory-installed version has been modified as a result of adding one or more ATN ground station addresses in a redirect instruction during an ATN CPDLC session.

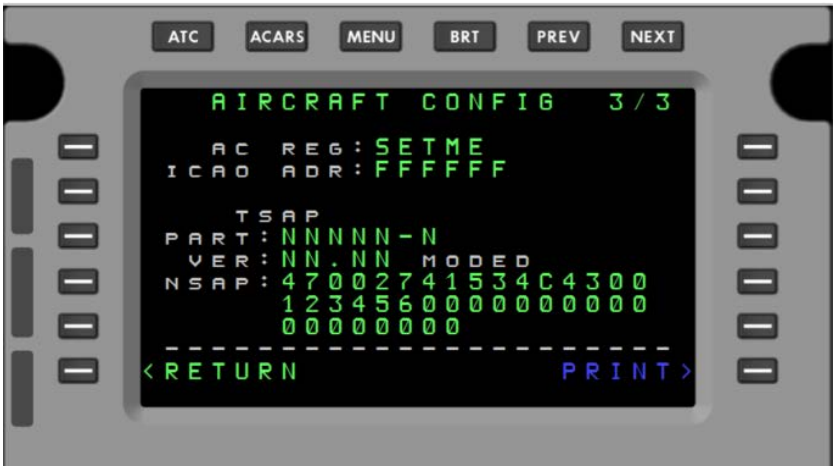



**Figure 6-20 AIRCRAFT CONFIG 3/3**

| Label | Description |
|---|---|
| AC REG | Aircraft Registration (8 char max.) |
| ICAO ADR | 6-digit numeric ASCII code representing the 3-letter code for the airline |
| TSAP PART/VER | The currently loaded version of the TSAP database. |
| NSAP | The 40-character ATN Network Service Access point. |

## 6.6 STATION TABLE

The STATION TABLE displays the available (in range) ground stations and the Envoy autotunes to the best station/frequency based on preferred station, signal strength, configuration options, the flight plan (departure/destination airports), and preferred provider.

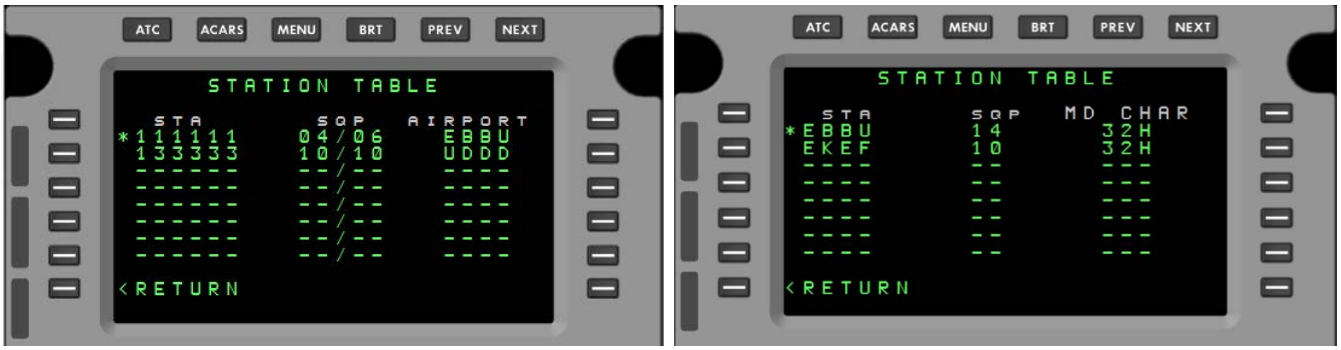



**Figure 6-21 STATION TABLE (ACARS) VDL Mode 2 (left) and VDL Mode A (right)**

Depending on which VDL mode is available, station data may differ, as indicated in Figure 6-21. Up to eight (8) preferred stations can be configured and can be on the same frequency. The current COMM station is denoted with an asterisk (*).

| Label | VDL Mode 2 Description | VDL Mode A Description |
|---|---|---|

| | | |
|---|---|---|
| STA | Station identifier (6 numeric characters) | ICAO code for airport nearest the station |
| SQP | Current and average SQP | Average SQP 3=Acceptable and 15 is the strongest. |
| AIRPORT | ICAO code for airport nearest the station | -- |
| MD CHAR | -- | Station MODE character |

## 6.7 MAINTENANCE MODE

Access limited to authorized maintenance personnel and out of scope of this document.

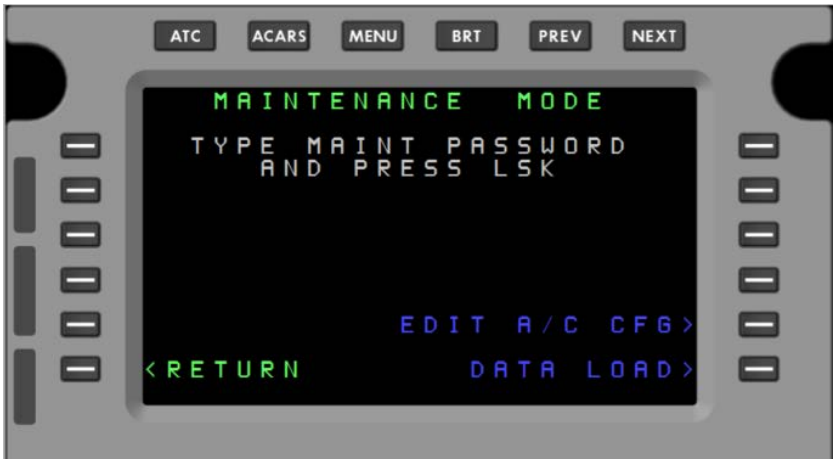



**Figure 6-22 MAINTENANCE MODE**

# Appendix A Acronyms

| Acronym/Term | Definition |
|---|---|
| ACARS | Aircraft Communications Addressing and Reporting System. A digital data link system for transmission of short and relatively simple messages between aircraft and ground stations using the airband VHF radio link. The message protocol was designed by ARINC |
| ACMMA | ACARS Custom Menu Manager Application |
| ACMS | Aircraft Condition Monitoring System |
| ADC | Air Data Computer |
| ADS | Automatic Dependent Surveillance |
| ADS-C | Automatic Dependent Surveillance-Contract |
| ADSF | ADS Function |
| ADSG | Ground ADS application |
| AFN | ATS Facilities Notification |
| AGNS | Automated Ground Network System |
| ANSP | Air Navigation Service Provider |
| AOC | Aeronautical Operational Control (see also ACARS) |
| ARINC | Aeronautical Radio Inc |
| ATC | Air Traffic Control (ATC COMM is another name for CPDLC) |
| ATN B1 | Aeronautical Telecommunications Network Baseline 1 |
| ATM | Air Traffic Management |
| ATS | Air Traffic Services |
| ATSU | Air Traffic Services Unit (ground data link system) |
| CADS | A CSP's centralized ADS-C system |
| CBT | Computer Based Training |
| CDA | Current Data Authority, appears on ATC LOGON/STATUS 1/2 |
| CDU | Cockpit Display Unit |
| CFDIU | Centralized Flight (or Fault) Display Interface Unit |
| CMU | Communications Management Unit |
| CNS/ATM | Communications Navigation Surveillance/Air Traffic Management |
| COMM | Communications Mode |
| CPDLC | Controller Pilot Data Link Communications. FANS 1/A+ or ATN B1 protocol which provides ATC data communication between controllers (ATSU) and the aircraft, using air-ground and ground-ground subnetwork, and which is consistent with the ICAO phraseology for the current ATC voice communication. |
| CRC | Cyclic Redundancy Check |
| CSC | Common Signaling Channel |
| CSP | Communication Service Provider |
| D-ATIS | Digital Automatic Terminal Information Service – a continuous broadcast of recorded aeronautical information including weather, active runways, available approaches, and NOTAMS in airports and their immediate surroundings. |
| DFDAU | Digital Flight Data Acquisition Unit |
| DLK | Data Link |
| DLIC | Data link initiation capability. A data link application that provides the ability to exchange addresses, names and version numbers necessary to initiate data link applications. |
| DLS | Data Link Services |
| DM | Downlink Message (see Appendix B, Appendix D, and Appendix E) |
| EASA | European Aviation Safety Agency |
| EATMN | European Air Traffic Management Network |
| ETD/EOBT | Estimated Time of Departure (US)/ Estimated Off-Block Time (EUROCONTROL/IATA) |
| FANS | Future Air Navigation System |
| FDAMS | Flight Data Acquisition Management System (see DFDAU) |
| FL | Flight Level, typically expressed in the nearest thousand feet divided by 100. |

| Acronym/Term | Definition |
|---|---|
| FMC | Flight Management Computer (or FMS, flight management system), a fundamental component of an airline's avionics that automates a variety in-flight tasks, reducing the workload of the aircrew. |
| FOB | Fuel on Board (LB, KG or MINUTES) |
| GOB | General Output Bus |
| GOLD | Global Operational Data Link Document, ICAO standard for CPDLC |
| IATA | International Air Transport Association |
| ICAO | International Civil Aviation Organization |
| LSK | Line Select Key |
| MAS | Message Assurance |
| MCDU | Multifunction Control and Display Unit |
| NAT HLA | North Atlantic Track High Level Airspace |
| NDA | Next Data Authority, appears on ATC LOGON/STATUS 1/2 |
| NOTAM | Notice to Airmen |
| OOOI | Event triggers for ACARS: Gate Out, Wheels Off, Wheels On, Gate In |
| PBIT | Power-On Built-In Test |
| SATCOM | Satellite Communications |
| SQP | Signal Quality Parameter |
| TSAP | Transport Services Access Point, database of valid facility IDs for ATN B1 |
| TWIP | Terminal Weather Information for Pilots |
| UDM | User Defined Message (ACARS AOC) |
| UM | Uplink Message (see  CPDLC Uplink Message ElementsAppendix B andACARS Uplink Message Labels ) |
| UTC | Universal Time Coordinated |
| VDL | VHF Data Link |
| VDR | VHF Data Radio |
| VFR | Visual Flight Rules |
| VHF | Very High Frequency |
| VMC | Visual Meteorological Conditions to use VFR |

# Appendix B AFN Messages

To establish communication for ATS transactions, the ATS facility needs to discover the identity of the aircraft and the available ATS application(s) (ACARS, CPDLC, FANS, ATN, ADS). Similarly, an aircraft needs to acquire the ground address of the ATS facility. The ATS Facilities Notification (AFN) application provides this functionality via the following messages:

| Message Label | Intent |
|---|---|
| FN_CON | Downlink AFN Contact message. |
| FN_AK | Uplink AFN Acknowledgement message. |
| FN_CAD | Uplink AFN Contact Advisory message. |
| FN_RESP | Downlink AFN Response message. |
| FN_COMP | Downlink AFN Complete message. |

The AFN application consists of two basic procedures:

**Initial Notification** - The Initial Notification procedure allows an aircraft to introduce itself to the ground end-system in a chosen ATS facility and to make that end-system aware of its aircraft registration and the ATS data link applications that it supports. The Initial Notification procedure may be initiated by aircrew action or by an automatic trigger. When initiated, an AFN Contact message is sent to the ground end-system. If the Initial Notification procedure is successful, the ATS facility responds with the full seven character address of the ground AFN end-system. This procedure is known as the AFN LOG-ON.

**Request for Notification** - The Request for Notification procedure allows an ATS facility to request an aircraft to notify another ATS facility. The ATS facility initiates the Request for Notification by sending an AFN Contact Advisory message to the aircraft.

# Appendix C Supported CPDLC Messages

The Envoy supports the CPDLC message elements detailed in the following sections:

- CPDLC Downlink Message Elements
- CPDLC Uplink Message Elements

Where applicable, optional preformatted text may be combined to form a message with up to 5 elements.

## C.1 CPDLC Downlink Message Elements

The FANS 1/A+ A/1 and ATN B1 CPDLC downlink messages in this appendix are supported by Envoy.

The following highlights identify CPDLC protocol-specific messaging support:

| | |
|---|---|
| | FANS and ATN B1 common |
| | FANS only |
| | ATN B1 only |

**Appendix Table 1 CPLDC Downlink Message (DM) Format**

| Section | ID | CPDLC DM/Example | Message Intent | PANS/GOLD |
|---|---|---|---|---|
| 3.4.3.1 | 0 | WILCO | The instruction is understood and will be complied with. | 4.6-18 Responses |
| | 1 | UNABLE | The instruction cannot be complied with. | |
| | 2 | STANDBY | Wait for a reply. | |
| | 3 | ROGER | Message received and understood. | |
| | 4 | AFFIRM | Yes. | |
| | 5 | NEGATIVE | No. | |
| 3.5.1.1 | 6 | REQUEST [level]<br>REQUEST FL250 | Request to fly at the specified level. | 4.6-19 Vertical Requests |
| | 7 | REQUEST BLOCK [level] TO [level]<br>REQUEST BLOCK 20000FT TO 25000FT | Request to fly at a level within the specified vertical range. | |
| | 8 | REQUEST CRUISE CLIMB TO [level]<br>REQUEST CRUISE CLIMB TO FL250 | Request to cruise climb to the specified level. | |
| | 9 | REQUEST CLIMB TO [level]<br>REQUEST CLIMB TO 25000FT | Request to climb to the specified level. | |
| | 10 | REQUEST DESCENT TO [level]<br>REQUEST DESCENT TO 20000FT | Request to descend to the specified level. | |
| | 11 | AT [position] REQUEST CLIMB TO [level]<br>AT XYZ REQUEST CLIMB TO 25000FT | Request that at the specified position a climb to the specified level be approved. | |

| Section | ID | CPDLC DM/Example | Message Intent | PANS/GOLD |
|---|---|---|---|---|
| | 12 | AT [position] REQUEST DESCENT TO [level]<br>AT ABC REQUEST DESCENT TO 5000M | Request that at the specified position a descent to the specified level be approved. | |
| | 13 | AT [time] REQUEST CLIMB TO [level]<br>AT 1254 REQUEST CLIMB TO 25000FT | Request that at the specified time a climb to the specified level be approved. | |
| | 14 | AT [time] REQUEST DESCENT TO [level]<br>AT 1032 REQUEST DESCENT TO 22000FT | Request that at the specified time a descent to the specified level be approved. | |
| 3.5.1.3 | 15 | REQUEST OFFSET [specifiedDistance] [direction] OF ROUTE<br>REQUEST OFFSET 200KM LEFT OF ROUTE | Request that a parallel track, offset from the cleared track by the specified distance in the specified direction, be approved. | 4.6-19 Vertical Requests |
| 3.5.1.2 | 18 | REQUEST [speed]<br>REQUEST 200KTS | Request to fly at the specified speed. | 4.6-21 Speed Requests |
| 3.5.9 | 20 | REQUEST VOICE CONTACT<br>REQUEST VOICE CONTACT | Request for voice contact. | 4.6-22 Voice Contact Requests |
| | 21 | REQUEST VOICE CONTACT [frequency]<br>REQUEST VOICE CONTACT 136.975 | Request for voice contact on the specified frequency. | |
| 3.5.1.3 | 22 | REQUEST DIRECT TO [position]<br>REQUEST DIRECT TO XYZ | Request to track from the present position direct to the specified position. | 4.6-23 Rte Mod Req |
| 3.5.7.2 | 23 | REQUEST [procedureName]<br>REQUEST ARRIVAL, XYZ.ABC | Request for the specified procedure or named instruction. | |
| 3.5.7.1 | 24 | REQUEST [routeClearance] | Request route clearance | |
| | 25 | REQUEST [clearanceType] CLEARANCE<br>REQUEST ARRIVAL CLEARANCE | Request arrival or departure clearance. | |
| 3.5.1.3 | 26 | REQUEST WEATHER DEVIATION TO [position] VIA [routeClearance]<br>REQUEST WEATHER DEVIATION TO ABC VIA XYZ | Request for a weather deviation to the specified position via a specified route clearance. | |
| | 27 | REQUEST WEATHER DEVIATION UP TO [specifiedDistance] [direction] OF ROUTE<br>REQUEST WEATHER DEVIATION UP TO 150KM RIGHT OF ROUTE | Request for a weather deviation up to the specified distance off track in the specified direction. | |
| 3.5.2 | 28 | LEAVING [level]<br>LEAVING 20000FT | Report of leaving the specified level. | 4.6-24 Reports |
| | 29 | CLIMBING TO [level]<br>CLIMBING TO 25000FT | Report of climbing to the specified level. | |
| | 30 | DESCENDING TO [level]<br>DESCENDING TO 23000FT | Notification of descending to the specified level. | |
| 3.5.2 | 31 | PASSING [position]<br>PASSING XYZ | Notification of passing the specified position. | |

| Section | ID | CPDLC DM/Example | Message Intent | PANS/GOLD |
|---|---|---|---|---|
| 3.5.2.1 (ATN)<br>3.5.4 | 32 | PRESENT LEVEL [level]<br>PRESENT LEVEL 23000FT | Notification of the present level. | |
| | 33 | PRESENT POSITION [position]<br>PRESENT POSITION XYZ | Notification of the present position. | |
| | 34 | PRESENT SPEED [speed]<br>PRESENT SPEED 200KTS | Notification of the present speed. | |
| | 35 | PRESENT HEADING [degrees]<br>PRESENT HEADING 150T | Notification of the present heading in degrees. | |
| 3.5.4 | 36 | PRESENT GROUND TRACK [degrees]<br>PRESENT GROUND TRACK 165 | Notification of the present ground track in degrees. | |
| 3.5.2.3 | 37 | MAINTAINING [level]<br>MAINTAINING 23000FT | Notification that the aircraft is maintaining the specified level. | |
| 3.4.3 | 38 | ASSIGNED LEVEL [level]<br>ASSIGNED LEVEL 23000FT | Readback of the assigned level. | |
| | 39 | ASSIGNED SPEED [speed]<br>ASSIGNED SPEED 200KTS | Readback of the assigned speed. | |
| | 40 | ASSIGNED ROUTE[routeclearance] | | |
| | 41 | BACK ON ROUTE<br>BACK ON ROUTE | The aircraft has regained the cleared route. | |
| | 42 | NEXT WAYPOINT [position]<br>NEXT WAYPOINT DAR | The next waypoint is the specified position. | |
| | 43 | NEXT WAYPOINT ETA [time]<br>NEXT WAYPOINT ETA 1124 | The ETA at the next waypoint is as specified. | |
| | 44 | ENSUING WAYPOINT [position]<br>ENSUING WAYPOINT DAR | The next but one waypoint is the specified position. | |
| | 45 | REPORTED WAYPOINT [position]<br>REPORTED WAYPOINT DAR | Clarification of previously reported waypoint passage. | |
| | 46 | REPORTED WAYPOINT [time]<br>REPORTED WAYPOINT 1124 | Clarification of time over previously reported waypoint. | |
| | 47 | SQUAWKING [code]<br>SQUAWKING 2130 | The specified SSR code has been selected. | |
| 3.5.4 | 48 | POSITION REPORT [positionReport]<br>POSITION REPORT XYZ | Position report. | |
| 3.5.3 | 49 | WHEN CAN WE EXPECT [speed]<br>WHEN CAN WE EXPECT 200KTS | Request for the earliest time at which a clearance to the specified speed can be expected. | 4.6-25 Negotiation Requests |
| | 51 | WHEN CAN WE EXPECT BACK ON ROUTE<br>WHEN CAN WE EXPECT BACK ON ROUTE | Request for the earliest time at which a clearance to regain the planned route can be expected. | |
| | 52 | WHEN CAN WE EXPECT LOWER LEVEL | Request for the earliest time at which a clearance to descend can be expected. | |
| | 53 | WHEN CAN WE EXPECT HIGHER LEVEL | Request for the earliest time at which a clearance to climb can be expected. | |
| 3.5.5 | 55 | PAN PAN PAN | Non-life-threatening emergency. High level urgency. | 4.6-26 Emergency Messages |
| | 56 | MAYDAY MAYDAY MAYDAY | Life threatening emergency. High level urgency. | |

| Section | ID | CPDLC DM/Example | Message Intent | PANS/GOLD |
|---|---|---|---|---|
| | 57 | [remainingFuel] of FUEL REMAINING AND [remainingSouls] SOULS ON BOARD<br>HH:MM of FUEL REMAINING AND 999 SOULS ON BOARD | Hour(s) and minutes left before running out of fuel and number of people on board: an emergency message. High level urgency. | |
| 0 | 58 | CANCEL EMERGENCY | Reset ADS EMER OFF | |
| 3.5.5 | 59 | DIVERTING TO [position] VIA [routeClearance]<br>DIVERTING TO EBBU VIA XYZ | Emergency Urgency: High level. Report indication diverting to specified position via specified route and which may be sent without any previous coordination with ATC. | |
| | 60 | OFFSETTING [distanceOffset] [direction] AT [time or waypoint] | Emergency Urgency: High level. Report that aircraft is offsetting to a parallel track from the cleared route | |
| | 61 | DESCENDING TO [level]<br>DESCENDING TO FL250 | URGENT alert. Report indicating descending to specified level | |
| -- | 62 | ERROR [errorInformation]<br>ERROR INSUFFICIENT RESOURCES | A system-generated message that the avionics has detected an error. | 4.6-27 System Management Messages |
| -- | 63 | NOT CURRENT DATA AUTHORITY | A system-generated denial to any CPDLC message sent from a ground facility that is not the current data authority. | |
| -- | 64 | [icaofacilitydesignation] | ID for current ATSU or next data authority (NDA) | |
| 3.5.1 | 65 | DUE TO WEATHER | Used to explain reasons for pilots message. | 4.6-28 Additional Messages |
| | 66 | DUE TO AIRCRAFT PERFORMANCE | Used to explain reasons for pilots message. | |
| 3.5.8 | 67 | [freeText] | Up to 256 alphanumeric characters and symbols | |
| | 67(1) | 'ETA [position] TIME [time]' | Response to UM 141 | 4.6-29 Pre-formatted free text |
| | 67(2) | 'PREFERRED LEVEL [level]' | FANS response to UM169(8) | |
| | 67(3) | 'WE CAN ACCEPT [level] AT [time]' | Indication that the specified level can be accepted at the specified time. FANS (ATN is DM81) | |
| | 67(4) | 'WE CAN ACCEPT [level] AT [position]' | Indication that the specified level can be accepted at the specified position | |
| | 67(5) | 'WE CANNOT ACCEPT [level]' | Indication that the specified level cannot be accepted (ATN is DM82) | |
| 67(6) | 67(6) | 'TOP OF DESCENT [time]' | Shortcut: TOD in free text. Notification of the preferred time and position to commence descent for approach (ATN: DM109( | |
| 67(7) | 67(7) | 'GROUND SPEED [speed]' | Report indicating the speed. Accepts input GS. FANS only. | |
| 67(8) | 67(8) | 'WE CAN ACCEPT [speed] AT [position]' | Indication that the specified speed can be accepted at the specified position. | |
| 67(9) | 67(9) | 'WE CAN ACCEPT [speed] AT [time]' | Indication that the specified speed can be accepted at the specified time. | |

| Section | ID | CPDLC DM/Example | Message Intent | PANS/GOLD |
|---|---|---|---|---|
| 67(10) | 67(10) | 'WE CANNOT ACCEPT [speed]' | Indication that the specified speed cannot be accepted. | |
| 67(11) | 67(11) | '[traffic identification] SIGHTED AND PASSED' | Report indicating visual sighting of traffic. | |
| 67(12) | 67(12) | '[traffic identification] NOT SIGHTED' | Report indicating no visual sighting of traffic. | |
| 67(13) | 67(13) | 'TRAFFIC SIGHTED' | Report indicating visual sighting of traffic. | |
| 3.5.9 | 67(14) | 'RELAY FROM [callSign] [response params]' | Notification from the intermediary aircraft of the specified response from the specified aircraft. | |
| 67(15) | 67(15) | 'WE CANNOT ACCEPT [distanceoffset][direction]' | Notification that aircraft is unable to accept the specified offset. | |
| 3.5.5 | 67(14) | 'CAUSE: [cause]' | Prepended to an EMERGENCY downlink. Where [cause] is one of: ENGINE, CAB PRESS, FIRE, or HIJACK | |
| 67(18) | 68 | 'REVISED ETA [time]' | Supplemental or free text response to append to downlink message(s) | |
| 68 | 68 | [freeText] | | |
| 2.3.1 | 69 (1) | 'THIS CONCATENATION IS NOT SUPPORTED BY THIS AIRCRAFT' | Error. Combination of multi-element messages used UM or DM with same number more than once. | |
| 2.3.1 | 70 | 'UPLINK DELAYED IN NETWORK AND REJECTED - RESEND OR CONTACT BY VOICE' | Error (exceeded max. uplink delay) | |
| | 71 | 'UPLINK TIME STAMP INDICATES FUTURE TIME' | Error. | |
| 69 (1) | 72 | 'CLEAR OF WEATHER' | | |
| 70 | 73 | REQUEST HEADING [degrees]<br>REQUEST HEADING 150T | Request a clearance to adopt the specified heading | 4.6-23 Rte Mod Req |
| 3.5.2.4 | 74 | REACHING [level] -REACHING 25000FT | Notification that the aircraft has reached the specified level. | 4.6-24 Reports |
| 3.1 | 75 | [versionnumber] | Response to a CONNECT CONFIRM uplink | 4.6-27 System Management Messages |
| 3.5.2.4 | 76 | REACHING BLOCK [level] TO [level]<br>REACHING BLOCK 23000FT TO 25000FT | Notification that the aircraft has reached a level within the specified vertical range. | 4.6-24 Reports |
| | 77 | ASSIGNED BLOCK [level] TO [level]<br>ASSIGNED BLOCK 23000FT TO 25000FT | Read-back of the assigned vertical range. | |
| 78 | 78 | AT [time] [distance] [tofrom] [position]<br>AT 1241 200KM TO XYZ | Notification that at the specified time, the aircrafts position was as specified. | |
| 3.5.1.4 | 79 | ATIS [atisCode]<br>ATIS G | Single letter for latest ATIS report received. | |
| 3.5.5 | 80 | DEVIATING [distanceOffset][direction] OF ROUTE | Urgency: High Report indicating deviating specified distance or degrees in specified direction from cleared route. | |

| Section | ID | CPDLC DM/Example | Message Intent | PANS/GOLD |
|---|---|---|---|---|
| 3.4.3 and 3.5.3 | 81 | WE CAN ACCEPT [level] AT [time]<br>WE CAN ACCEPT 25000FT AT 1024z | We can accept the specified level at the specified time. | For FANS, see DM67, variations of preformatted free text |
| | 82 | WE CANNOT ACCEPT [level]<br>WE CANNOT ACCEPT 100000FT | We cannot accept the specified level. | |
| | 83 | WE CAN ACCEPT [speed] AT [time]<br>WE CAN ACCEPT 200KTS AT 1130 | We can accept the specified speed at the specified time. | |
| | 84 | WE CANNOT ACCEPT [speed]<br>WE CANNOT ACCEPT 700KTS | We cannot accept the specified speed. | |
| | 85 | WE CAN ACCEPT [specifiedDistance] [direction] AT [time]<br>WE CAN ACCEPT 200KM RIGHT AT 1135 | We can accept a parallel track offset the specified distance in the specified direction at the specified time. | |
| | 86 | WE CANNOT ACCEPT [specifiedDistance] [direction]<br>WE CANNOT ACCEPT 500KM RIGHT | We cannot accept a parallel track offset the specified distance in the specified direction. | |
| 3.5.3 | 87 | WHEN CAN WE EXPECT CLIMB TO [level]<br>WHEN CAN WE EXPECT CLIMB TO 20000FT | Request for the earliest time at which a clearance to climb to the specified level can be expected. Envoy uses DM53 | |
| | 88 | WHEN CAN WE EXPECT DESCENT TO [level]<br>WHEN CAN WE EXPECT DESCENT TO 1000FT | Request for the earliest time at which a clearance to descend to the specified level can be expected. Envoy uses DM 52 | |
| 3.5.11 | 89 | MONITORING [unitName] [frequency]<br>MONITORING EBBU CENTER 136.975 | The specified airport ID is being monitored on the specified frequency. | ATN Only. For FANS, see DM67, variations of preformatted free text |
| 98 | 98 | [freetext] | Up to 256 alpha-numeric characters and symbols<br>Predefined responses: THIS<br>'CONCATENATION NOT SUPPORTED BY THIS AIRCRAFT'<br>'ELEMENT ORDER NOT SUPPORTED BY THIS AIRCRAFT'<br>'AIR SYSTEM TIMEOUT' | |
| 99 | 99 | CURRENT DATA AUTHORITY - This DM is not viewable in the ATC MSG LOG, rather displays and is updated on ATC LOGON/STATUS 1/2 | A system-generated message to inform a ground facility that it is now the current data authority. | |
| 100 | 100 | LOGICAL ACKNOWLEDGMENT | Confirmation to the ground system that the aircraft system has received the message to which the logical acknowledgment refers and found it acceptable for display to the responsible person. | |

| Section | ID | CPDLC DM/Example | Message Intent | PANS/GOLD |
|---|---|---|---|---|
| 3.5.2.1 | 106 | PREFERRED LEVEL [level]<br>PREFERRED LEVEL 25000FT | Notification of the preferred level. | |
| -- | 107 | NOT AUTHORIZED NEXT DATA AUTHORITY | A system-generated downlink message sent to a ground station that tries to connect to an aircraft when the current data authority has not designated that station as the NDA. | |
| Response to an ADVISE TOP OF DESCENT segment of an uplink | 109 | TOP OF DESCENT [time]<br>TOP OF DESCENT 1237 | Notification of the preferred time to commence descent for approach. | |
| | 110 | TOP OF DESCENT [position]<br>TOP OF DESCENT XYZ | Notification of the preferred position to commence descent for approach. | |
| | 111 | TOP OF DESCENT [time] [position]<br>TOP OF DESCENT 1200 XYZ | Notification of the preferred time and position to commence descent for approach. | |
| | 111 | | | |
| | | | | |
| | | | | |

# C.2 CPDLC Uplink Message Elements

The following FANS 1/A+ A/1 and ATN B1 CPDLC uplink messages are supported by Envoy. The CPDLC UM/Example coluumn shows the elements expected in an uplink. If a UM is received with elements other than those shown, it will result in the following downlink error message:

- MESSAGE NOT SUPPORTED BY THIS AIRCRAFT

In the table beow, supported messages are color-coded based on CPDLC protocol:

| | |
|---|---|
| | FANS and ATN common |
| | FANS only |
| | ATN only |

This table shows message ID, format, and description

| ID | CPDLC UM/Example | Use/Intent | DO-258A |
|---|---|---|---|
| 0 | UNABLE | Notification that ATSU cannot comply with the request. | Table 4.6-6 Responses/ Acknowledge-ments |
| 1 | STANDBY | Notification that ATSU has received the message and will respond. | |
| 2 | REQUEST DEFERRED | Notification that ATSU has received the request but it has been deferred until later. | |
| 3 | ROGER | Notification that ATSU has received and understood the message. | |
| 4 | AFFIRM | Yes. | |
| 5 | NEGATIVE | No. | |
| 6 | EXPECT [level]<br>EXPECT 25000FT | Notification that a level change instruction should be expected. | Table 4.6-7 Vertical Clearances |
| 7 | EXPECT CLIMB AT [time]<br>EXPECT CLIMB AT 1232 | Notification that an instruction should be expected for the aircraft to commence climb at the specified time. | |
| 8 | EXPECT CLIMB AT [position]<br>EXPECT CLIMB AT KXX | Notification that an instruction should be expected for the aircraft to commence climb at the specified position. | |
| 9 | EXPECT DESCENT AT [time]<br>EXPECT DESCENT AT 1232 | Notification that an instruction should be expected for the aircraft to commence descent at the specified time. | |
| 10 | EXPECT DESCENT AT [position]<br>EXPECT DESCENT AT XXZ | Notification that an instruction should be expected for the aircraft to commence descent at the specified position. | |
| 11 | EXPECT CRUISE CLIMB AT [time]<br>EXPECT CRUISE CLIMB AT 1232 | Notification that an instruction should be expected for the aircraft to commence cruise climb at the specified time. | |
| 12 | EXPECT CRUISE CLIMB AT [position]<br>EXPECT CRUISE CLIMB AT XYZ | Notification that an instruction should be expected for the aircraft to commence cruise climb at the specified position. | |
| 13 | AT [time] EXPECT CLIMB TO [level]<br>AT 1232 EXPECT CLIMB TO 25000FT | Notification that an instruction should be expected for the aircraft to commence climb at the specified time to the specified level. | |
| 14 | AT [pos] EXPECT CLIMB TO [level]<br>AT XYZ EXPECT CLIMB TO 25000FT | Notification that an instruction should be expected for the aircraft to commence climb at the specified position to the specified level. | |
| 15 | AT [time] EXPECT DESCENT TO [level]<br>AT 1232 EXPECT DESCENT TO 25000FT | Notification that an instruction should be expected for the aircraft to commence descent at the specified time to the specified level. | |

| ID | CPDLC UM/Example | Use/Intent | DO-258A |
|---|---|---|---|
| 16 | AT [pos] EXPECT DESCENT TO [level]<br>AT XYZ EXPECT DESCENT TO 25000FT | Notification that an instruction should be expected for the aircraft to commence descent at the specified position to the specified level. | |
| 17 | AT [time] EXPECT CRUISE CLIMB TO [level]<br>AT 1232 EXPECT CRUISE CLIMB TO 25000FT | Notification that an instruction should be expected for the aircraft to commence cruise climb at the specified time to the specified level. | |
| 18 | AT [position] EXPECT CRUISE CLIMB TO [level]<br>AT XYZ EXPECT CRUISE CLIMB TO 25000FT | Notification that an instruction should be expected for the aircraft to commence cruise climb at the specified position to the specified level. | |
| 19 | MAINTAIN [level]<br>MAINTAIN 25000FT | Instruction to maintain the specified level. | |
| 20 | CLIMB TO (AND MAINTAIN) [level]<br>CLIMB TO 25000FT | Instruction that a climb to a specified level is to commence and once reached the specified level is to be maintained. | |
| 21 | AT [time] CLIMB TO (AND MAINTAIN) [level]<br>AT 1232 CLIMB TO 25000FT | Instruction that at the specified time a climb to the specified level is to commence and once reached the specified level is to be maintained. | |
| 22 | AT [position] CLIMB TO (AND MAINTAIN) [level]<br>AT XYZ CLIMB TO 25000FT | Instruction that at the specified position a climb to the specified level is to commence and once reached the specified level is to be maintained. | |
| 23 | DESCEND TO (AND MAINTAIN) [level]<br>DESCEND TO 25000FT | Instruction that a descent to a specified level is to commence and once reached the specified level is to be maintained. | |
| 24 | AT [time] DESCEND TO [level]<br>AT 1232 DESCEND TO 25000FT | Instruction that at a specified time a descent to a specified level is to commence and once reached the specified level is to be maintained. | |
| 25 | AT [position] DESCEND TO [level]<br>AT XYZ DESCEND TO 25000FT | Instruction that at the specified position a descent to the specified level is to commence and once reached the specified level is to be maintained. | |
| 26 | CLIMB TO REACH [level] BY [time]<br>CLIMB TO REACH 25000FT BY 1232 | Instruction that a climb is to commence at a rate such that the specified level is reached at or before the specified time. | |
| 27 | CLIMB TO REACH [level] BY [position]<br>CLIMB TO REACH 25000FT BY XYZ | Instruction that a climb is to commence at a rate such that the specified level is reached at or before the specified position. | |
| 28 | DESCEND TO REACH [level] BY [time]<br>DESCEND TO REACH 25000FT BY 1232 | Instruction that a descent is to commence at a rate such that the specified level is reached at or before the specified time. | |
| 29 | DESCEND TO REACH [level] BY [position]<br>DESCEND TO REACH 25000FT BY XYZ | Instruction that a descent is to commence at a rate such that the specified level is reached at or before the specified position. | |
| 30 | MAINTAIN BLOCK [level] TO [level]<br>MAINTAIN BLOCK 25000FT TO 25000FT | Instruction to maintain the specified vertical range. | |
| 31 | CLIMB TO AND MAINTAIN BLOCK [level] TO [level]<br>CLIMB TO AND MAINTAIN BLOCK 25000FT TO 30000FT | Instruction that a climb to a level within the vertical range defined is to commence. | |

| ID | CPDLC UM/Example | Use/Intent | DO-258A |
|---|---|---|---|
| 32 | DESCEND TO AND MAINTAIN BLOCK [level] TO [level]<br>DESCEND TO AND MAINTAIN BLOCK 25000FT TO 20000FT | Instruction that a descent to a level within the vertical range defined is to commence. | |
| 33 | CRUISE [level] | | |
| 34 | CRUISE CLIMB TO [level]<br>CRUISE CLIMB TO 25000FT | Instruction that a cruise climb is to commence and continue until the specified level is reached. | |
| 35 | CRUISE CLIMB ABOVE [level]<br>CRUISE CLIMB ABOVE 25000FT | Instruction that a cruise climb can commence once above the specified level. | |
| 36 | EXPEDITE CLIMB TO [level]<br>EXPEDITE CLIMB TO 25000FT | Instruction that the climb to the specified level should be made at the aircraft's best rate. | |
| 37 | EXPEDITE DESCENT TO [level]<br>EXPEDITE DESCENT TO 25000FT | Instruction that the descent to the specified level should be made at the aircraft's best rate. | |
| 38 | IMMEDIATELY CLIMB TO [level]<br>IMMEDIATELY CLIMB TO 25000FT | Urgent instruction to immediately climb to the specified level. | |
| 38 | ASSIGNED ROUTE[routeClearance] | Readback of the assigned route | |
| 39 | IMMEDIATELY DESCEND TO [level]<br>IMMEDIATELY DESCEND TO 25000FT | Urgent instruction to immediately descend to the specified level. | |
| 40 | IMMEDIATELY STOP CLIMB AT [altitude] | Urgent instruction to immediately stop ascent at the specified level. | |
| 41 | IMMEDIATELY STOP DESCENT AT [altitude] | Urgent instruction to immediately stop descent at the specified level. | |
| 42 | EXPECT TO CROSS [position] AT [level]<br>EXPECT TO CROSS XYZ AT 25000FT | Notification that a level change instruction should be expected which will require the specified position to be crossed at the specified level. | Table 4.6-8 Crossing Constraints |
| 43 | EXPECT TO CROSS [position] AT OR ABOVE [level]<br>EXPECT TO CROSS XYZ AT OR ABOVE 25000FT | Notification that a level change instruction should be expected which will require the specified position to be crossed at or above the specified level. | |
| 44 | EXPECT TO CROSS [position] AT OR BELOW [level]<br>EXPECT TO CROSS XYZ AT OR BELOW 25000FT | Notification that a level change instruction should be expected which will require the specified position to be crossed at or below the specified level. | |
| 45 | EXPECT TO CROSS [position] AT AND MAINTAIN [level]<br>EXPECT TO CROSS XYZ AT AND MAINTAIN 25000FT | Notification that a level change instruction should be expected which will require the specified position to be crossed at the specified level, which is then to be maintained. | |
| 46 | CROSS [position] AT [level]<br>CROSS XYZ AT 25000FT | Instruction that the specified position is to be crossed at the specified level. This may require the aircraft to modify its climb or descent profile. | |
| 47 | CROSS [position] AT OR ABOVE [level]<br>CROSS XYZ AT OR ABOVE 25000FT | Instruction that the specified position is to be crossed at or above the specified level. | |
| 48 | CROSS [position] AT OR BELOW [level]<br>CROSS XYZ AT OR ABOVE 25000FT | Instruction that the specified position is to be crossed at or below the specified level. | |
| 49 | CROSS [position] AT AND MAINTAIN [level]<br>CROSS XYZ AT AND MAINTAIN 25000FT | Instruction that the specified position is to be crossed at the specified level and that level is to be maintained when reached. | |

| ID | CPDLC UM/Example | Use/Intent | DO-258A |
|---|---|---|---|
| 50 | CROSS [position] BETWEEN [level] AND [level]<br>CROSS XYZ BETWEEN 20000FT AND 25000FT | Instruction that the specified position is to be crossed at a level between the specified levels. | |
| 51 | CROSS [position] AT [time]<br>CROSS XYZ AT 1232 | Instruction that the specified position is to be crossed at the specified time. | |
| 52 | CROSS [position] AT OR BEFORE [time] -CROSS XYZ AT OR BEFORE 1232 | Instruction that the specified position is to be crossed at or before the specified time. | |
| 53 | CROSS [position] AT OR AFTER [time]<br>CROSS XYZ AT OR AFTER 1232 | Instruction that the specified position is to be crossed at or after the specified time. | |
| 54 | CROSS [position] BETWEEN [time] AND [time]<br>CROSS XYZ BETWEEN 1230 AND 1250 | Instruction that the specified position is to be crossed at or after the specified time. | |
| 55 | CROSS [position] AT [speed]<br>CROSS XYZ AT 200KTS | Instruction that the specified position is to be crossed at the specified speed and the specified speed is to be maintained until further advised. | |
| 56 | CROSS [position] AT OR LESS THAN [speed]<br>CROSS XYZ AT OR LESS THAN 200KTS | Instruction that the specified position is to be crossed at a speed equal to or less than the specified speed and the specified speed or less is to be maintained until further advised. | |
| 57 | CROSS [position] AT OR GREATER THAN [speed]<br>CROSS XYZ AT OR GREATER THAN 200KTS | Instruction that the specified position is to be crossed at a speed equal to or greater than the specified speed and the specified speed or greater is to be maintained until further advised. | |
| 58 | CROSS [position] AT [time] AT [level]<br>CROSS XYZ AT 1232 AT 25000FT | Instruction that the specified position is to be crossed at the specified time and the specified level. | |
| 59 | CROSS [position] AT OR BEFORE [time] AT [level]<br>CROSS XYZ AT OR BEFORE 1232 AT 25000FT | Instruction that the specified position is to be crossed at or before the specified time and at the specified level. | |
| 60 | CROSS [position] AT OR AFTER [time] AT [level]<br>CROSS XYZ AT OR AFTER 1232 AT 25000FT | Instruction that the specified position is to be crossed at or after the specified time and at the specified level. | |
| 61 | CROSS [position] AT AND MAINTAIN [level] AT [speed]<br>CROSS XYZ AT AND MAINTAIN 25000FT AT 200KTS | Instruction that the specified position is to be crossed at the specified level and speed, and the level and speed are to be maintained. | |
| 62 | AT [time] CROSS [position] AT AND MAINTAIN [level]<br>AT 1232 CROSS XYZ AT AND MAINTAIN 25000FT | Instruction that at the specified time the specified position is to be crossed at the specified level and the level is to be maintained. | |
| 63 | AT [time] CROSS [position] AT AND MAINTAIN [level] AT [speed]<br>AT 1232 CROSS XYZ AT AND MAINTAIN 25000FT AT 200KTS | Instruction that at the specified time the specified position is to be crossed at the specified level and speed, and the level and speed are to be maintained. | |
| 64 | OFFSET [specifiedDistance] [direction] OF ROUTE<br>OFFSET 200KM LEFT OF ROUTE | Instruction to fly a parallel track to the cleared route at a displacement of the specified distance in the specified direction. | Table 4.6-9 Lateral Offsets |

| ID | CPDLC UM/Example | Use/Intent | DO-258A |
|---|---|---|---|
| 65 | AT [position] OFFSET [specifiedDistance] [direction] OF ROUTE<br>AT XYZ OFFSET 200KM LEFT OF ROUTE | Instruction to fly a parallel track to the cleared route at a displacement of the specified distance in the specified direction and commencing at the specified position. | |
| 66 | AT [time] OFFSET [specifiedDistance] [direction] OF ROUTE<br>AT 1232 OFFSET 200KM LEFT OF ROUTE | Instruction to fly a parallel track to the cleared route at a displacement of the specified distance in the specified direction and commencing at the specified time. | |
| 67 | PROCEED BACK ON ROUTE | Instruction that the cleared flight route is to be rejoined. | |
| 68 | REJOIN ROUTE BY [position]<br>REJOIN ROUTE BY XYZ | Instruction that the cleared flight route is to be rejoined at or before the specified position. | |
| 69 | EXPECT BACK ON ROUTE BY [time]<br>REJOIN ROUTE BY 1232 | Instruction that the cleared flight route is to be rejoined at or before the specified time. | |
| 70 | EXPECT BACK ON ROUTE BY [position]<br>EXPECT BACK ON ROUTE BY XYZ | Notification that a clearance may be issued to enable the aircraft to rejoin the cleared route at or before the specified position. | |
| 71 | EXPECT BACK ON ROUTE BY [time]<br>EXPECT BACK ON ROUTE BY 1232 | Notification that a clearance may be issued to enable the aircraft to rejoin the cleared route at or before the specified time. | |
| 72 | RESUME OWN NAVIGATION | Instruction to resume own navigation following a period of tracking or heading clearances. May be used in conjunction with an instruction on how or where to rejoin the cleared route. | |
| 73 | [predepartureClearance]<br>EBBU CLEARED TO: AAAAA | Notification to the aircraft of the instructions to be followed from departure until the specified clearance limit. | Table 4.6-11 Route Modifications |
| 74 | PROCEED DIRECT TO [position]<br>PROCEED DIRECT TO XYZ | Instruction to proceed directly from its present position to the specified position. | |
| 75 | WHEN ABLE PROCEED DIRECT TO [position]<br>WHEN ABLE PROCEED DIRECT TO XYZ | Instruction to proceed, when able, directly to the specified position. | |
| 76 | AT [time] PROCEED DIRECT TO [position]<br>AT 1232 PROCEED DIRECT TO XYZ | Instruction to proceed, at the specified time, directly to the specified position. | |
| 77 | AT [position] PROCEED DIRECT TO [position]<br>AT ABA PROCEED DIRECT TO XYZ | Instruction to proceed, at the specified position, directly to the next specified position. | |
| 78 | AT [level] PROCEED DIRECT TO [position]<br>AT 25000FT PROCEED DIRECT TO XYZ | Instruction to proceed, upon reaching the specified level, directly to the specified position. | |
| 79 | CLEARED TO [position] VIA [routeClearance]<br>CLEARED TO XYZ VIA *** | Instruction to proceed to the specified position via the specified route.<br>***To view msg, open ATC MSG DETAIL from the ATC Message Log | |
| 80 | CLEARED [routeClearance]<br>CLEARED*** | Instruction to proceed via the specified route.<br>***To view msg, open ATC MSG DETAIL from the ATC Message Log | |

| ID | CPDLC UM/Example | Use/Intent | DO-258A |
|---|---|---|---|
| 81 | CLEARED [procedureName]<br>CLEARED ARRIVAL, XYZ.ABC | Instruction to proceed in accordance with the specified procedure. | |
| 82 | CLEARED TO DEVIATE UP TO [specifiedDistance] [direction] OF ROUTE<br>CLEARED TO DEVIATE UP TO 200KM LEFT OF ROUTE | Approval to deviate up to the specified distance from the cleared route in the specified direction. | |

| | | | | |
|---|---|---|---|---|
| | 84 | AT [position] CLEARED [procedureName]<br>AT XYZ CLEARED ARRIVAL, XYZ.ABC | Instruction to proceed from the specified position via the specified procedure. | |
| | 85 | EXPECT [routeClearance] – EXPECT*** | Notification that a clearance to fly on the specified route may be issued.<br>***To view msg, open ATC MSG DETAIL from the ATC Message Log | |
| | 86 | AT [position] EXPECT [routeClearance]<br>AT XYZ EXPECT*** | Notification that a clearance to fly on the specified route from the specified position may be issued.<br>***Open ATC MSG DETAIL from the ATC Message Log to view route clearance options | |
| | 87 | EXPECT DIRECT TO [position]<br>EXPECT DIRECT TO XYZ | Notification that a clearance to fly directly to the specified position may be issued. | |
| | 88 | AT [position] EXPECT DIRECT TO [position]<br>AT ABA EXPECT DIRECT TO XYZ | Notification that a clearance to fly directly from the first specified position to the next specified position may be issue | |
| | 89 | AT [time] EXPECT DIRECT TO [position]<br>AT 1232 EXPECT DIRECT TO XYZ | Notification that a clearance to fly directly to the specified position commencing at the specified time may be issued. | |
| | 90 | AT [level] EXPECT DIRECT TO [position]<br>AT 25000FT EXPECT DIRECT TO XYZ | Notification that a clearance to fly directly to the specified position commencing when the specified level is reached may be issued. | |
| | 91 | HOLD AT [position] MAINTAIN [level] INBOUND TRACK [degrees][direction] TURN LEG TIME [legtype]<br>HOLD AT XYZ MAINTAIN 25000FT INBOUND TRACK 010T LEFT TURN LEG TIME 100KM | Instruction to enter a holding pattern with the specified characteristics at the specified position and level. | |
| | 92 | HOLD AT [position] AS PUBLISHED MAINTAIN [level]<br>HOLD AT XYZ AS PUBLISHED MAINTAIN 25000FT | Instruction to enter a holding pattern with the published characteristics at the specified position and level. | |
| | 93 | EXPECT FURTHER CLEARANCE AT [time]<br>EXPECT FURTHER CLEARANCE AT 1232 | Notification that an onwards clearance may be issued at the specified time. | |
| | 94 | TURN [direction] HEADING [degrees]<br>TURN LEFT HEADING 010T | Instruction to turn left or right as specified onto the specified heading. | |
| | 95 | TURN [direction] GROUND TRACK [degrees]<br>TURN LEFT GROUND TRACK 010T | Instruction to turn left or right as specified onto the specified track. | |
| | 96 | CONTINUE PRESENT HEADING | Instruction to turn left or right as specified onto the specified track. | |
| | 97 | AT [position] FLY HEADING [degrees]<br>AT XYZ FLY HEADING 010T | Instruction to continue to fly on the current heading. | |
| | 98 | IMMEDIATELY TURN [direction] HEADING [degrees]<br>IMMEDIATELY TURN LEFT HEADING 010T | Instruction to turn immediately left or right as specified on to the specified heading. | |
| | 99 | EXPECT [procedureName]<br>EXPECT ARRIVAL, XYZ.ABC | Notification that a clearance may be issued for the aircraft to fly the specified procedure. | |
| | 100 | AT [time] EXPECT [speed]<br>AT 1232 EXPECT 200KTS | Notification that a speed instruction may be issued to be effective at the specified time. | |

| | | | | |
|---|---|---|---|---|
| | 169 (1) | '[freeText]' | Instruction to proceed via specified departure clearance' and may be combined with UM 158 ATIS and/or UM123 and UM19 MAINTAIN. | |
| | 169 (2) | 'EXPECT [clearanceName]' | Used for an unpublished clearance/procedure name, otherwise use UM99 for a published procedure. | |

| | | | | |
|---|---|---|---|---|
| | 169 (4) | ‘REPORT CLEAR OF WEATHER’ | Instruction to report when clear of weather. Response attribute (DM69) | |
| | 169 (5) | ‘STOP CLIMB AT [altitude]’ | Instruction to stop climb at specified level, and once specified level is reached, maintain. Instruction should be issued only when controller can confirm that the previously assigned level has not yet been reached. | |
| | 169 (6) | ‘STOP DESCENT AT [altitude]’ | Instruction to top the descent at the specified level and, once reached, this level is to be maintained. The specified level will be above previously specified level. This instruction should only be issued when the controller can confirm that the previously assigned level has not yet been reached. | |
| | 169 (7) | ‘EXPECT [level single] [number of minutes] AFTER DEPARTURE’ | Notification that a clearance may be issued for the aircraft to commence a climb to the specified level at the specified number of minutes after departure. | |
| | 169 (8) | ‘ADVISE PREFERRED LEVEL’ | Request to provide preferred level. FANS only, response is DM67(2) preformatted. (ATN: see UM231) | |
| | 169 (9) | ‘ADVISE TOP OF DESCENT’ | Request to provide the preferred time and/or position to commence descent to the aerodrome of intended arrival. FANS only (ATN: see UM232) | |
| | 169 (10) | ‘NO SPEED RESTRICTION’ | Indication that the preferred speed may be flown w/out restriction. FANS only. (ATN: see UM222) | |
| | 169 (11) | ‘REPORT GROUND SPEED’ | Used when controller requests aircrew to report present ground speed. | |
| | 169 (12) | ‘[facilityID] ALTIMETER [altimeter setting]’ | Advisory providing the specified altimeter setting for the specified facility. Facility designation is always provided, time provided if available. See UM153 ATN: UM213 | |
| | 169 (13) | ‘SURVEILLANCE SERVICE TERMINATED’ | Advisory that the radar and/or ADS-B service is terminated. (See also UM154). FANS | |
| | 169 (14) | ‘REQUEST AGAIN WITH NEXT ATC UNIT’ | Advisory to request again with next ATSU. ATN: UM237 | |
| | 169 (15) | ‘TRAFFIC IS [traffic description]’ | Advisory of traffic significant to the flight. | |
| | 169 (16) | ‘REPORT SIGHTING AND PASSING OPPOSITE DIRECTION [trafficDescription] (ETP [time])’ | Instruction to report that the specified traffic has been visually sighted and passed. The instruction may indicate the estimated time of passing (if available). | |
| | 169 (17) | ‘STOP ADS-B TRANSMISSION’ | Instruction to stop ADS-B transmissions. (Response attribute) | |
| | 169 (18) | ‘ACTIVATE ADS C’ | Instruction to activate the ADS-C capability. | |
| | 169 (19) | ‘ADS-C OUT OF SERVICE REVERT TO CPDLC POSITION REPORTS’ (R response) | Instruction to transmit CPDLC position reports, as specified, due to ADS-C being out of service. | |
| | 169 (20) | ‘ADS-C OUT OF SERVICE REVERT TO VOICE POSITION REPORTS’ (R response) | Instruction to transmit voice position reports, as specified, due to ADS-C being out of service. | |
| | 169 (21) | ‘RELAY TO [callSign] [unitName] [text] ([frequency[O]])’ | Instruction to intermediary aircraft to relay the specified message to the specified aircraft on the specified | |

| | | | | |
|---|---|---|---|---|
| | 228 | Report ETA [position]<br>Report ETA XYZ | Instruction to report the estimated time of arrival at the specified position. | |
| | 229 | Report Alternate Aerodrome | Instruction to report the preferred alternate aerodrome for landing. | |
| | 230 | IMMEDIATELY | The associated instruction is to be complied with immediately. | |
| | 231 | STATE PREFERRED LEVEL | Instruction to indicate the pilot's preferred level. (ATN only) | |
| | 232 | STATE TOP OF DESCENT | Instruction to indicate the pilot's preferred time and/or position to commence descent to the aerodrome of intended arrival.(ATN only) | |
| | 233 | USE OF LOGICAL ACKNOWLEDGMENT PROHIBITED | Notification to the pilot that messages sent requiring a logical acknowledgment will not be accepted by this ground system. | |
| | 234 | FLIGHT PLAN NOT HELD | Notification that the ground system does not have a flight plan for that aircraft. | |
| | 236 | LEAVE CONTROLLED AIRSPACE | Instruction to leave controlled airspace. | |
| | 237 | REQUEST AGAIN WITH NEXT UNIT | Indicates that the request cannot be responded to by the current unit, and that it should be requested from the next unit | |

# Appendix D ADS-C Tags

## D.1 ADS-C Downlink Tags

| MSG ID | Description |
|---|---|
| 3 | Acknowledgement |
| 4 | Negative Acknowledgment |
| 5 | Noncompliance Notification |
| 6 | Cancel Emergency Mode |
| 7 | Basic Report |
| 9 | Emergency Basic Report |
| 10 | Lateral Deviation Change Event |
| 12 | Flight Identification Event |
| 13 | Predicted Route Group |
| 14 | Earth Reference Group |
| 15 | Air Reference Group |
| 16 | Meteorological Group |
| 17 | Airframe Identification Group |
| 18 | Vertical Rate Change Group |
| 19 | Altitude Range Event |
| 20 | Waypoint Change Event |
| 22 | Intermediate Projected Intent Group |
| 23 | Fixed Projected Intent Group |

## D.2 ADS-C Uplink Tags

| MSG ID | Description |
|---|---|
| 1 | Cancel All Contracts and Terminate Connection |
| 2 | Cancel Contract |
| 6 | Cancel Emergency Mode |
| 7 | Periodic Contract |
| 8 | Event Contract |
| 9 | Emergency Periodic Contract |
| 10 | Lateral Deviation Event |
| 11 | Reporting Rate |
| 12 | Flight Identification Group |
| 13 | Predicted Route Group |
| 14 | Earth Reference Group |
| 15 | Air Reference Group |
| 16 | Meteorological Group |
| 17 | Airframe Identification Group |
| 18 | Vertical Rate Change |
| 19 | Altitude Range Change |
| 20 | Waypoint Change |
| 21 | Aircraft Intent Group |

# Appendix E ACARS Message Labels

Some of ACARS messages are automatically generated and not visible; some are implemented in ACARS or MAINTENANCE menu pages, and others are custom configuration options.

This appendix identifies downlink, OOOI, and uplink message labels.

## E.1 ACARS Downlink Message Labels

| Label | Description | Section |
|---|---|---|
| 00 | Hijack Situation Report | 3.5.5 or 4.2 |
| 52 | Ground UTC Request | 6.4.2 |
| 54 | Voice Contact Request (Ground Party Address) | |
| 57 | Aircrew Initiated Position Report (Alternate Format) | 5.4.2.3 or 5.4.5.3 |
| 58 | Aircraft Tracking Periodic Position Report | |
| 5R | Aircrew Initiated Position Report | 5.4.5.3 |
| 5U | Weather Request | 5.4.5.2 |
| 5Y | Aircrew Revision to Previous ETA/Diversion Report | 5.4.5.5, 5.4.5.6 |
| 5Z | Airline Designated Downlink | |
| 7A | Aircrew Initiated Engine Data/Takeoff Thrust Report | 5.4.5.1 |
| 7B | Aircrew Entered Miscellaneous Message | 5.4.5.7 |
| B1 | Request Oceanic Clearance | 5.4.1.5, 5.4.2.4 |
| B2 | Oceanic Clearance Readback | |
| B3 | Request Departure Clearance | 5.4.1.4 |
| B4 | Departure Clearance Readback | |
| B8 | Request Departure Slot | |
| B9 | Request ATIS Report | 5.4.1.3 |
| BB | Terminal Weather Information for Pilots (TWIP) | |
| BC | Pushback Clearance Request | 5.4.1.6 |
| BD | Expected Taxi Clearance Request | 5.4.1.7 |
| H1 | Message with Label H1 from ARINC 619 Client | |
| Q0 | Link Test | 6.4.1 |
| Q1 | Departure/Arrival Report | |
| Q1 | Arrival Report | |
| Q1 | Departure Report | |
| Q2 | Estimated Time of Arrival Report | |
| Q7 | Arrival Delay | |
| Q7 | Departure Delay | |
| QK | Landing Report (IATA Airport Code) | |
| QL | Arrival Report (IATA Airport Code) | |
| QM | Arrival Information Report (IATA Airport Code) | |
| QN | Diversion Report (IATA Airport Code) | |

### E.1.1 OOOI Downlink Message Labels

OOOI and other event-driven messages/reports are automatically triggered by discrete sensors on the aircraft connected to the Envoy and automatically sent without any pilot interaction. For OOOI report status, see Sections 6.1, 6.1.1, 6.1.1, and 6.3.2.

**Table 6-4 ACARS OOOI Downlink Message Labels**

| OOOI | Event | Label | Format/Fields in Message/Report |
|---|---|---|---|
| **OOOI Labels that use IATA Airport Code** | | | |
| OUT | Fuel Report | QA | Flight Number, Departure Station (IATA Airport Code), Out Time, Boarded Fuel, Fuel Quantity, Customer-defined text. |

| OOOI | Event | Label | Format/Fields in Message/Report |
|---|---|---|---|
| OFF | Report | QB | Flight Number, Departure Station (IATA Airport Code), Off Time, Customer-defined text. |
| ON | Report | QC | Flight Number, Destination Station (IATA Airport Code), On Time, Customer-defined text. |
| IN | Fuel/Destination Report | QD | Flight Number, Destination Station (IATA Airport Code), In Time, Fuel On Board, C/FO ID, Customer-defined text. |
| OUT | Fuel Report | QE | Flight Number, Departure Station (IATA Airport Code), Out Time, Boarded Fuel, Fuel Quantity, Destination Station, Customer-defined text. |
| OFF | Destination Report | QF | Flight Number, Departure Station (IATA Airport Code), Off Time, Destination Station, Customer-defined text. |
| OUT | Return IN Report | QG | Flight Number, Departure Station (IATA Airport Code), Out Time, Return Time, Customer-defined text. |
| OUT | Report | QH | Flight Number, Departure Station (IATA Airport Code), Out Time, Customer-defined text. |
| **OOOI Labels that use ICAO Airport Code** | | | |
| OUT | Fuel Report | QP | Flight Number, Departure Station, Destination Station, Out Time, Fuel Quantity, Boarded Fuel, Customer-defined text. |
| OFF | Report | QQ | Flight Number, Departure Station, Destination Station, Off Time, Customer-defined text. |
| ON | Report | QR | Flight Number, Departure Station, Destination Station, Out Time, Fuel Quantity, Boarded Fuel, Customer-defined text. |
| IN | Fuel/Destination Report | QS | Flight Number, Departure Station, Destination Station, In Time, Fuel Quantity, OFF ID, Category of Landing, Customer-defined text. |
| OUT | Return IN Report | QT | Flight Number, Departure Station, Destination Station, Out Time, Return Time, Fuel Quantity, Customer-defined text. |

## E.2 ACARS Uplink Message Labels

Standard ACARS uplink messages supported in the Envoy include:

| Label | Description | Section |
|---|---|---|
| 00 | Hijack Situation Report | 3.5.5 or 4.2 |
| 52 | Ground UTC Update | |
| 54 | Voice Go-Ahead (or ACARS Frequency Uplink) | |
| A1 | Oceanic Clearance | |
| A3 | Departure Clearance | |
| A4 | Flight Systems Message | |
| A7 | Free Text from ATC | |
| A8 | Deliver Departure Slot | |
| A9 | ATIS Report | |
| AB | Terminal Weather Information for Pilots (TWIP) | |
| AC | Pushback Clearance | |
| AD | Expected Taxi Clearance | |
| RA* | Command/Response Uplink* | |

*RA, the Command/Response uplink application is user-defined and initiated by the ground host (AOC).

# Appendix F ATSU Call Signs (ICAO, IATA)

## F.1 ICAO Codes by Region

| Flight Information Region (ATSU Call Sign) | AFN ICAO | Remarks |
|---|---|---|
| Algeria | DAAA | |
| Australia (Brisbane) | YBBB | |
| Australia (Melbourne) | YMMM | |
| Australia Honiara (Brisbane) | YBBB | |
| Australia Nauru (Brisbane) | YBBB | |
| Brazil (Atlantico) | SBAO | |
| Canada (Edmonton) | CZEG | |
| Canada (Gander) Domestic | CDQX | |
| Canada (Gander) Oceanic | CZQX | Revised ETA via CPDLC Free Text |
| Canada (Moncton) | CZQM | |
| Canada (Montreal) | CZUL | |
| Canada (Toronto) | CZYZ | |
| Canada (Vancouver) | CZVR | |
| Canada (Winnipeg) | CZWG | |
| Cape Verde, (Sal) Oceanic | GVSC | |
| Chad N'Djamena | FTTT | |
| Chile (Santiago) | SCEZ | |
| Chile Antofagasta (Santiago) | SCEZ | |
| Chile Isla de Pascua (Santiago) | SCEZ | |
| Chile Puerto Montt (Santiago) | SCEZ | |
| Chile Punta Arenas (Santiago) | SCEZ | |
| China (Beijing) | ZBAB | |
| China (Chengdu) | ZUUU | |
| China (Harbin) | ZYHB | |
| China (Kunming) | ZPPP | |
| China (Lanzhou) | ZLLL | |
| China (Lhasa) | ZULS | |
| China (Urum-Qi) | ZWWW | |
| Congo (Brazzaville) | FCCC | |
| Congo (Kinshasa) | FZZA | |
| Egypt (Cairo) | HECA/HECC | |
| Fiji (Nadi) | NFFF | |
| French Guyana (Rochambeau) | SOOO | |
| Germany (Rhein) | EDUU | |
| Ghana (Accra) | DGAC | |
| Hong Kong | VHHH | |
| Iceland (Reykjavik) | BIRD | Revised ETA via CPDLC Free Text |
| India (Chennai) | VOMF | |
| India (Delhi) | VIDF | |
| India (Mumbai) | VABF | |
| India, (Kolkata) | VECF | |
| Indonesia (Jakarta) | WIIF | |
| Indonesia (Ujung Pandang) | WAAF | |
| Iran | OIII | |
| Ivory Coast (Abidjan) | DIII | |
| Japan (Fukuoka) | RJJJ | |
| Korea (Seoul) | RKTT | |
| Laos (Vientiane) | VLVT | Bay of Bengal supported |

| Flight Information Region (ATSU Call Sign) | AFN ICAO | Remarks |
|---|---|---|
| Maastricht | EDYY | High Altitude Control Center FL245 and above, “downlink error” uplink indicates CPDLC messaging not functional yet. |
| Madagascar (Antananarivo) | FMMM | |
| Malaysia (Kota Kinabalu) | WBKK | No plan to implement as of 7/2/2011 |
| Malaysia (Kuala Lumpur) | WMFC | |
| Mauritius | FIMM | |
| Mexico, Mexico City | MMMD | Could not find any reference |
| Mongolia (Ulan Bataar) | ZMUA | |
| Myanmar (Yangon) | VYYF | |
| New Zealand (Auckland) | NZZO | Also controls other FIR traffic |
| Nigeria (Niamey) | DRRR | |
| Norway (Bodo) | ENOB | ADS-C only |
| Philippines (Manila) | RPHI | |
| Portugal | LPPC | February 2013 |
| Portugal (Santa Maria) | LPPO | Revised ETA via CPDLC Free Text |
| Russia (Murmansk oceanic) | ULMM | |
| Russia Far East (Magadan) | GDBX | |
| Saudi Arabia (Riyadh) | OERK | |
| Senegal (Dakar) | GOOO | |
| Seychelles | FSSS | |
| Singapore | WSJC | |
| South Africa (Capetown) | FACT | |
| South Africa (Johannesburg) Oceanic | FAJO | |
| Spain (Barcelona) | LEBL | February 2013 |
| Spain (Canarias) | GCCC | |
| Spain (Madrid) | LECM | February 2013 |
| Sri Lanka (Colombo) | VCCF | |
| Switzerland (Geneva) | LSAG | |
| Switzerland (Zurich) | LSAZ | |
| Tahiti (Papeete) | NTTT | |
| Thailand, (Bangkok) | VTBB | |
| U.K. (London) | EGTT | February 2013 |
| U.K. (Shannon) | EISN | February 2013 |
| U.K. (Shanwick) | EGGX | Revised ETA via CPDLC Free Text |
| U.S. (Anchorage) Domestic & (Anchorage) Arctic [North of N63 and East of W165] | PAZA | CPDLC only |
| U.S. (Anchorage) Oceanic [South of N63 and West of W165] | PAZN | |
| U.S. (Memphis, TN) Memphis Int’l airport | KMEM | Historical |
| U.S. (New York) Oceanic | KZWY | |
| U.S. (Newark, NJ) Newark Liberty Int’l airport | KEWR | Historical |
| U.S. (Oakland) Oceanic | KZAK | |
| U.S. Domestic (all continental) | KUSA | Effective 22 October 2017, replaces all tower codes! |
| Uzbekistan | UTTT | |
| Vietnam (Ho Chi Minh) | VVTS | |

# F.2 IATA Codes for Airports/Cities

| City/Airport | Country | IATA Code |
|---|---|---|
| Aarhus | Denmark | AAR |
| Abadan | Iran | ABD |
| Abeche | Chad | AEH |
| Aberdeen | United Kingdom | ABZ |
| Aberdeen (SD) | USA | ABR |
| Abidjan | Cote d'Ivoire | ABJ |
| Abilene (TX) | USA | ABI |
| Abu Dhabi - Abu Dhabi International | United Arab Emirates | AUH |
| Abuja - Nnamdi Azikiwe International Airport | Nigeria | ABV |
| Abu Rudeis | Egypt | AUE |
| Abu Simbel | Egypt | ABS |
| Acapulco | Mexico | ACA |
| Accra - Kotoka International Airport | Ghana | ACC |
| Adana | Turkey | ADA |
| Addis Ababa - Bole International Airport | Ethiopia | ADD |
| Adelaide | Australia | ADL |
| Aden - Aden International Airport | Yemen | ADE |
| Adiyaman | Turkey | ADF |
| Adler/Sochi | Russia | AER |
| Agades | Niger | AJY |
| Agadir | Morocco | AGA |
| Agana (Hagåtña) | Guam | SUM |
| Aggeneys | South Africa | AGZ |
| Aguadilla | Puerto Rico | BQN |
| Aguascaliente | Mexico | AGU |
| Ahmedabad | India | AMD |
| Aiyura | Papua New Guinea | AYU |
| Ajaccio | France | AJA |
| Akita | Japan | AXT |
| Akron (OH) | USA | CAK |
| Akrotiri - RAF | Cyprus | AKT |
| Al Ain | United Arab Emirates | AAN |
| Al Arish | Egypt | AAC |
| Albany | Australia | ALH |
| Albany (GA) | USA | ABY |
| Albany (NY) - Albany International Airport | USA | ALB |
| Albi | France | LBI |
| Alborg | Denmark | AAL |
| Albuquerque (NM) | USA | ABQ |
| Albury | Australia | ABX |
| Alderney | Channel Islands | ACI |
| Aleppo | Syria | ALP |
| Alesund | Norway | AES |
| Alexander Bay - Kortdoorn | South Africa | ALJ |
| Alexandria - Borg el Arab Airport | Egypt | HBH |
| Alexandria - El Nhouza Airport | Egypt | ALY |
| Alexandria - Esler Field | USA (LA) | ESF |
| Alfujairah (Fujairah) | United Arab Emirates | FJR |
| Alghero Sassari | Italy | AHO |
| Algiers, Houari Boumediene Airport | Algeria | ALG |

| City/Airport | Country | IATA Code |
|---|---|---|
| Al Hoceima | Morocco | AHU |
| Alicante | Spain | ALC |
| Alice Springs | Australia | ASP |
| Alldays | South Africa | ADY |
| Allentown (PA) | USA | ABE |
| Almaty (Alma Ata) - Almaty International Airport | Kazakhstan | ALA |
| Almeria | Spain | LEI |
| Alta | Norway | ALF |
| Altay | PR China | AAT |
| Altenrhein | Switzerland | ACH |
| Altoona (PA) | USA | AOO |
| Altus | USA | AXS |
| Amami | Japan | ASJ |
| Amarillo (TX) | USA | AMA |
| Amazon Bay | Papua New Guinea | AZB |
| Amman - Queen Alia International Airport | Jordan | AMM |
| Amman - Amman-Marka International Airport | Jordan | ADJ |
| Amritsar | India | ATQ |
| Amsterdam - Amsterdam Airport Schiphol | Netherlands | AMS |
| Anand | India | QNB |
| Anchorage (AK) - Ted Stevens Anchorage International | USA | ANC |
| Ancona - Ancona Falconara Airport | Italy | AOI |
| Andorra La Vella - Heliport | Andorra | ALV |
| Anguilla | Anguilla | AXA |
| Anjouan - Anjouan Airport | Comoros (Comores) | AJN |
| Ankara | Turkey | ANK |
| Ankara - Esenboğa International Airport | Turkey | ESB |
| Annaba | Algeria | AAE |
| Ann Arbor (MI) | USA | ARB |
| Annecy | France | NCY |
| Anniston (AL) | USA | ANB |
| Antalya | Turkey | AYT |
| Antananarivo (Tanannarive) - Ivato International Airport | Madagascar | TNR |
| Antigua, V.C. Bird International | Antigua and Barbuda | ANU |
| Antwerp | Belgium | ANR |
| Aomori | Japan | AOJ |
| Apia - Faleolo International Airport | Samoa | APW |
| Appelton/Neenah/Menasha (WI) | USA | ATW |
| Aqaba | Jordan | AQJ |
| Aracaju | Brazil | AJU |
| Arkhangelsk | Russia | ARH |
| Arusha | Tanzania | ARK |
| Araxos | Greece | GPA |
| Arlit | Niger | RLT |
| Arrecife/Lanzarote | Spain | ACE |
| Aruba - Reina Beatrix International, Oranjestad | Aruba | AUA |
| Asheville (NC) | USA | AVL |

| City/Airport | Country | IATA Code |
|---|---|---|
| Ashgabat - Saparmurat Turkmenbashy Int. Airport | Turkmenistan | ASB |
| Asmara - Asmara International | Eritrea | ASM |
| Aspen, (CO) - Aspen-Pitkin County Airport | USA | ASE |
| Assiut | Egypt | ATZ |
| Astana - Astana International Airport | Kazakhstan | TSE |
| Asuncion - Asunción International Airport | Paraguay | ASU |
| Aswan - Daraw Airport | Egypt | ASW |
| Athens - Elefthérios Venizélos International Airport | Greece | ATH |
| Athens, Hellinikon Airport | Greece | HEW |
| Athens (GA) | USA | AHN |
| Athens (OH) | USA | ATO |
| Atlanta (GA) - Hartsfield Atlanta International Airport | USA | ATL |
| Atlantic City (NJ) - Atlantic City International | USA | ACY |
| Attawapiskat, NT | Canada | YAT |
| Auckland - Auckland International Airport | New Zealand | AKL |
| Augsburg - Augsbur gAirport | Germany | AGB |
| Augusta (GA) | USA | AGS |
| Augusta (ME) - Augusta State Airport | USA | AUG |
| Aurillac | France | AUR |
| Austin (TX) - Austin-Bergstrom Airport | USA | AUS |
| Ayawasi | Indonesia | AYW |
| Ayers Rock - Connellan | Australia | AYQ |
| Ayr | Australia | AYR |
| Badajoz | Spain | BJZ |
| Bagdad - Baghdad International Airport | Iraq | BGW |
| Bagdogra | India | IXB |
| Bahamas - Lynden Pindling International Airport | The Bahamas | NAS |
| Bahawalpur | Pakistan | BHV |
| Bahrain - Bahrain International Airport | Bahrain | BAH |
| Bakersfield (CA) | USA | BFL |
| Baku - Heydar Aliyev International Airport | Azerbaijan | BAK |
| Ballina | Australia | BNK |
| Baltimore (MD) - Washington International Airport | USA | BWI |
| Bamaga | Australia | ABM |
| Bamako - Bamako-Sénou International Airport | Mali | BKO |
| Bambari | Central African Republic | BBY |
| Bandar Seri Begawan - Brunei International Airport | Brunei | BWN |
| Bandung - Husein Sastranegara International Airport | Indonesia | BDO |
| Bangalore | India | BLR |

| City/Airport | Country | IATA Code |
|---|---|---|
| Bangassou | Central African Republic | BGU |
| Bangkok, Don Muang | Thailand | DMK |
| Bangkok, Suvarnabhumi International | Thailand | BKK |
| Bangor (ME) | USA | BGR |
| Bangui - M'Poko International Airport | Central African Republic | BGF |
| Banjul - Banjul International Airport (Yundum International) | Gambia | BJL |
| Bannu | Pakistan | BNP |
| Barcelona | Spain | BCN |
| Barcelona | Venezuela | BLA |
| Bardufoss | Norway | BDU |
| Bari | Italy | BRI |
| Barisal | Bangladesh | BZL |
| Baroda | India | BDQ |
| Barra (the famous tidal beach landing) | United Kingdom | BRR |
| Barranquilla | Colombia | BAQ |
| Basel | Switzerland | BSL |
| Basel/Mulhouse | Switzerland/France | EAP |
| Basra, Basrah | Iraq | BSR |
| Basse-Terre - Pointe-à-Pitre International Airport | Guadeloupe | PTP |
| Basseterre - Robert L. Bradshaw International Airport | Saint Kitts and Nevis | SKB |
| Bastia | France | BIA |
| Baton Rouge (LA) - Baton Rouge Metropolitan Airport | USA | BTR |
| Bayreuth - Bindlacher-Berg | Germany | BYU |
| Beaumont/Pt. Arthur (TX) | USA | BPT |
| Beckley (WV) | USA | BKW |
| Beef Island - Terrance B. Lettsome | Virgin Islands (British) | EIS |
| Beijing | China | PEK |
| Beijing - Nanyuan Airport | China | NAY |
| Beira | Mozambique | BEW |
| Beirut - Beirut Rafic Hariri International Airport | Lebanon | BEY |
| Belem - Val de Cans International Airport | Brazil | BEL |
| Belfast - George Best Belfast City Airport | United Kingdom | BHD |
| Belfast - Belfast International Airport | United Kingdom | BFS |
| Belgaum | India | IXG |
| Belgrad (Beograd) - Belgrade Nikola Tesla International | Serbia | BEG |
| Belize City - Philip S.W.Goldson International | Belize | BZE |
| Bellingham (WA) | USA | BLI |
| Belo Horizonte - Tancredo Neves International Airport | Brazil | CNF |
| Bemidji (MN) | USA | BJI |
| Benbecula | United Kingdom | BEB |
| Benghazi (Bengasi) | Libya | BEN |
| Benguela | Angola | BUG |
| Benton Harbour (MI) | USA | BEH |
| Berberati | Central African Republic | BBT |

| City/Airport | Country | IATA Code |
|---|---|---|
| Bergamo/Milan - Orio Al Serio | Italy | BGY |
| Bergen | Norway | BGO |
| Bergerac - Roumanieres | France | EGC |
| Berlin | Germany | BER |
| Berlin, Schoenefeld | Germany | SXF |
| Berlin, Tegel | Germany | TXL |
| Berlin, Tempelhof (ceased operating in 2008) | Germany | THF |
| Bermuda - L.F. Wade International Airport | Bermuda | BDA |
| Berne, Bern-Belp | Switzerland | BRN |
| Berne, Railway Service | Switzerland | ZDJ |
| Bethel (AK) | USA | BET |
| Bhopal | India | BHO |
| Bhubaneswar | India | BBI |
| Biarritz | France | BIQ |
| Bilbao | Spain | BIO |
| Billings (MT) | USA | BIL |
| Billund | Denmark | BLL |
| Bintulu | Malaysia | BTU |
| Biraro | Central African Republic | IRO |
| Birmingham - Birmingham International Airport | United Kingdom | BHX |
| Birmingham (AL) | USA | BHM |
| Bishkek - Manas International Airport | Kyrgyzstan | FRU |
| Bismarck (ND) - Bismarck Municipal Airport | USA | BIS |
| Bissau - Osvaldo Vieiro International Airport | Guinea-Bissau | BXO |
| Blackpool | United Kingdom | BLK |
| Blackwater | Australia | BLT |
| Blantyre (Mandala) - Chileka International Airport | Malawi | BLZ |
| Blenheim | New Zealand | BHE |
| Bloemfontein - Bloemfontein Airport | South Africa | BFN |
| Bloomington (IL) | USA | BMI |
| Bloomington (IN) | USA | BMG |
| Bluefield (WV) | USA | BLF |
| Boa Vista | Brazil | BVB |
| Bobo/Dioulasso | Burkina Faso | BOY |
| Bodo | Norway | BOO |
| Bodrum - Milas Airport | Turkey | BJV |
| Bogota - El Nuevo Dorado International Airport | Colombia | BOG |
| Boise (ID) - Boise Air Terminal | USA | BOI |
| Bologna | Italy | BLQ |
| Bombay (Mumbai) - Chhatrapati Shivaji International | India | BOM |
| Bonaire | Netherlands Antilles | BON |
| Bonaventure, PQ | Canada | YVB |
| Bora Bora | French Polynesia | BOB |
| Bordeaux - Bordeaux Airport | France | BOD |
| Borrego Springs (CA) | USA | BXS |
| Boston (MA) - General Edward Lawrence Logan | USA | BOS |

| City/Airport | Country | IATA Code |
|---|---|---|
| Bouake | Cote d'Ivoire | BYK |
| Bourgas/Burgas | Bulgaria | BOJ |
| Bournemouth | United Kingdom | BOH |
| Bowen | Australia | ZBO |
| Bozeman (MT) | USA | BZN |
| Bradford/Warren (PA) /Olean (NY) | USA | BFD |
| Brainerd (MN) | USA | BRD |
| Brampton Island | Australia | BMP |
| Brasilia - President Juscelino Kubitschek International | Brazil | BSB |
| Bratislava - M. R. Štefánik Airport | Slovakia | BTS |
| Brazzaville - Maya-Maya Airport | Congo (ROC) | BZV |
| Bremen - Bremen Airport (Flughafen Bremen) | Germany | BRE |
| Brescia, Montichiari | Italy | VBS |
| Brest | France | BES |
| Bria | Central African Republic | BIV |
| Bridgeport (CT) | USA | BDR |
| Bridgetown - Grantley Adams International | Barbados | BGI |
| Brindisi | Italy | BDS |
| Brisbane | Australia | BNE |
| Bristol | United Kingdom | BRS |
| Broennoeysund | Norway | BNN |
| Broken Hill | Australia | BHQ |
| Brookings (SD) | USA | BKX |
| Broome | Australia | BME |
| Brunswick (GA) | USA | BQK |
| Brussels - Brussels Airport | Belgium | BRU |
| Bucaramanga | Colombia | BGA |
| Bucharest | Romania | BUH |
| Bucharest - Henri Coandă International Airport | Romania | OTP |
| Budapest - Budapest Ferihegy International Airport | Hungary | BUD |
| Buenos Aires | Argentina | BUE |
| Buenos Aires, Ezeiza International Airport | Argentina | EZE |
| Buenos Aires, Jorge Newbery | Argentina | AEP |
| Buffalo Range | Zimbabwe | BFO |
| Buffalo/Niagara Falls (NY) | USA | BUF |
| Bujumbura - Bujumbura International Airport | Burundi | BJM |
| Bulawayo | Zimbabwe | BUQ |
| Bullhead City (NV) | USA | BHC |
| Bundaberg | Australia | BDB |
| Burbank (CA) | USA | BUR |
| Burlington IA | USA | BRL |
| Burlington (VT) | USA | BTV |
| Burnie (Wynyard) | Australia | BWT |
| Butte (MT) | USA | BTM |
| Cabinda | Angola | CAB |
| Cagliari | Italy | CAG |
| Cairns | Australia | CNS |
| Cairo - Cairo International Airport | Egypt | CAI |
| Calama - El Loa | Chile | CJC |

| City/Airport | Country | IATA Code |
|---|---|---|
| Calcutta (Kolkata) - Netaji Subhas Chandra | India | CCU |
| Calgary - Calgary International Airport | Canada | YYC |
| Cali | Colombia | CLO |
| Calicut | India | CCJ |
| Calvi | France | CLY |
| Cambridge Bay | Canada | YCB |
| Cambrigde | United Kingdom | CBG |
| Campbeltown | United Kingdom | CAL |
| Campo Grande | Brazil | CGR |
| Canberra - Canberra Airport | Australia | CBR |
| Cancun | Mexico | CUN |
| Cannes – Mandelieu Airport | France | CEQ |
| Canouan (island) - Canouan Airport | Saint Vincent & the Grenadines | CIW |
| Cape Town - Cape Town International Airport | South Africa | CPT |
| Caracas - Simón Bolívar International Airport | Venezuela | CCS |
| Cardiff - Cardiff Airport | United Kingdom | CWL |
| Carlsbad (CA) | USA | CLD |
| Carnarvon | Australia | CVQ |
| Carnot | Central African Republic | CRF |
| Carson City (NV) | USA | CSN |
| Casablanca | Morocco | CAS |
| Casablanca, Mohamed V | Morocco | CMN |
| Casa de Campo - La Romana International Airport | Dominican Republic | LRM |
| Casino | Australia | CSI |
| Casper (WY) | USA | CPR |
| Castaway | Fiji | CST |
| Cartagena - Rafael Núñez International Airport | Colombia | CTG |
| Castries - George F. L. Charles Airport | Saint Lucia | SLU |
| Catania | Italy | CTA |
| Cayenne - Cayenne-Rochambeau Airport | French Guiana | CAY |
| Cottbus - Cottbus-Drewitz Airport | Germany | CBU |
| Cebu City - Mactan-Cebu International | Philippines | CEB |
| Cedar City (UT) | USA | CDC |
| Cedar Rapids IA | USA | CID |
| Ceduna | Australia | CED |
| Cessnock | Australia | CES |
| Chabarovsk (Khabarovsk) | Russia | KHV |
| Chambery | France | CMF |
| Champaign (IL) | USA | CMI |
| Chandigarh - Chandigarh International Airport | India | IXC |
| Changchun | Jilin, PR China | CGQ |
| Chania | Greece | CHQ |
| Chaoyang, Beijing - Chaoyang Airport | PR China | CHG |
| Charleston (SC) | USA | CHS |
| Charleston (WV) - Yeager Airport | USA | CRW |

| City/Airport | Country | IATA Code |
|---|---|---|
| Charlotte (NC) | USA | CLT |
| Charlottesville (VA) | USA | CHO |
| Charters Towers | Australia | CXT |
| Chattanooga (TN) | USA | CHA |
| Chengdu - Shuangliu | Sichuan, PR China | CTU |
| Chennai (Madras) | India | MAA |
| Cheyenne (WY) - Cheyenne Regional Airport | USA | CYS |
| Chiang Mai - Chiang Mai International Airport | Thailand | CNX |
| Chiba City | Japan | QCB |
| Chicago (IL), Midway | USA | MDW |
| Chicago (IL), O'Hare International Airport | USA | ORD |
| Chicago (IL) | USA | CHI |
| Chichen Itza | Mexico | CZA |
| Chico (CA) | USA | CIC |
| Chihuahua - Gen Fierro Villalobos | Mexico | CUU |
| Chios | Greece | JKH |
| Chipata | Zambia | CIP |
| Chisinau - Chişinău International Airport | Moldova | KIV |
| Chita (Tschita) | Russia | HTA |
| Sapporo - New Chitose Airport | Japan | CTS |
| Chitral | Pakistan | CJL |
| Chittagong | Bangladesh | CGP |
| Chongqing - Jiangbei International Airport | Sichuan, PR China | CKG |
| Christchurch | New Zealand | CHC |
| Chub Cay | Bahamas | CCZ |
| Churchill | Canada | YYQ |
| Cienfuegos - Jaime González Airport | Cuba | CFG |
| Cincinnati (OH) - Cincinnati/Northern Kentucky Int'l | USA | CVG |
| Ciudad Del Carmen | Mexico | CME |
| Ciudad Guayana | Venezuela | CGU |
| Ciudad Juarez | Mexico | CJS |
| Ciudad Obregon | Mexico | CEN |
| Ciudad Victoria | Mexico | CVM |
| Clarksburg (WV) | USA | CKB |
| Clermont | Australia | CMQ |
| Clermont Ferrand | France | CFE |
| Cleveland (OH) , Burke Lakefront | USA | BKL |
| Cleveland (OH) - Cleveland Hopkins International | USA | CLE |
| Cochabamba | Bolivia | CBB |
| Cochin | India | COK |
| Cody/Powell/Yellowstone (WY) | USA | COD |
| Coffmann Cove (AK) | USA | KCC |
| Coffs Harbour | Australia | CFS |
| Coimbatore | India | CJB |
| Colima | Mexico | CLQ |
| College Station/Bryan (TX) | USA | CLL |
| Collinsville | Australia | KCE |
| Cologne - Cologne Airport (Flughafen Köln/Bonn) | Germany | CGN |

| City/Airport | Country | IATA Code |
|---|---|---|
| Colombo - Bandaranaike International Airport | Sri Lanka | CMB |
| Colorado Springs (CO) | USA | COS |
| Columbia (SC) - Columbia Metropolitan Airport | USA | CAE |
| Columbus (GA) | USA | CSG |
| Columbus (OH) - Port Columbus International | USA | CMH |
| Conakry - Conakry International Airport | Guinea | CKY |
| Concord (CA) - Buchanan Field | USA | CCR |
| Concord (NH) - Concord Municipal Airport | USA | CON |
| Constantine | Algeria | CZL |
| Constanta (Constanța) - Constanta Int'l Airport | Romania | CND |
| Coober Pedy | Australia | CPD |
| Cooktown | Australia | CTN |
| Cooma | Australia | OOM |
| Copenhagen - Copenhagen Airport | Denmark | CPH |
| Cordoba | Argentina | COR |
| Cordoba | Spain | ODB |
| Cordova (AK) | USA | CDV |
| Corfu | Greece | CFU |
| Cork | Ireland | ORK |
| Corpus Christi (TX) | USA | CRP |
| Cotonou - Cotonou Cadjehoun Airport | Benin | COO |
| Coventry - Baginton | United Kingdom | CVT |
| Cozmel | Mexico | CZM |
| Craig (AK) | USA | CGA |
| Crescent City (CA) | USA | CEC |
| Cuiaba - Marechal Rondon International Airport | Brazil | CGB |
| Culiacan | Mexico | CUL |
| Curacao - Curaçao International Airport | Netherlands Antilles | CUR |
| Curitiba - Afonso Pena International Airport | Brazil | CWB |
| Cuyo | Philippines | CYU |
| Dakar - Léopold Sédar Senghor International Airport | Senegal | DKR |
| Dalaman | Turkey | DLM |
| Dalby | Australia | DBY |
| Dalian - Zhoushuizi International Airport | Liaoning, PR China | DLC |
| Dallas (TX) , Love Field | USA | DAL |
| Dallas/Ft. Worth (TX) - Dallas/Fort Worth International | USA | DFW |
| Daloa | Cote d'Ivoire | DJO |
| Damascus, International | Syria | DAM |
| Dammam, King Fahad International | Saudi Arabien | DMM |
| Danville (VA) | USA | DAN |
| Dar es Salam (Daressalam) - Julius Nyerere Int'l | Tanzania | DAR |
| Darwin | Australia | DRW |

| City/Airport | Country | IATA Code |
|---|---|---|
| Daydream Island | Australia | DDI |
| Dayton (OH) | USA | DAY |
| Daytona Beach (FL) | USA | DAB |
| Decatur (IL) | USA | DEC |
| Deer Lake/Corner Brook | Canada | YDF |
| Delhi - Indira Gandhi International Airport | India | DEL |
| Den Haag (The Hague) | Netherlands | HAG |
| Denizli | Turkey | DNZ |
| Denpasar/Bali | Indonesia | DPS |
| Denver (CO) - Denver International Airport | USA | DEN |
| Dera Ismail Khan - Dera Ismail Khan Airport | Pakistan | DSK |
| Derby | Australia | DRB |
| Derry (Londonderry) | United Kingdom | LDY |
| Des Moines (IA) - Des Moines International Airport | USA | DSM |
| Detroit (MI) , Coleman A. Young Municipal | USA | DET |
| Detroit (MI) , Wayne County Airport | USA | DTW |
| Detroit (MI) , Metropolitan Area | USA | DTT |
| Devils Lake (ND) | USA | DVL |
| Devonport | Australia | DPO |
| Dhahran | Saudi Arabia | DHA |
| Dhaka - Zia International Airport | Bangladesh | DAC |
| Dili - Nicolau Lobato International Airport | Timor Leste (East Timor) | DIL |
| Dillingham (AK) | USA | DLG |
| Dinard | France | DNR |
| Disneyland Paris | France | DLP |
| Djerba | Tunisia | DJE |
| Djibouti (city) - Djibouti-Ambouli International Airport | Djibouti | JIB |
| Dodoma - Dodoma Airport | Tanzania | DOD |
| Doha - Doha International Airport | Qatar | DOH |
| Doncaster/Sheffield, Robin Hood International Airport | United Kingdom | DSA |
| Donegal (Carrickfin) | Ireland | CFN |
| Dortmund | Germany | DTM |
| Dothan (AL) | USA | DHN |
| Douala | Cameroon | DLA |
| Dresden - Dresden Airport | Germany | DRS |
| Dubai - Dubai International Airport | United Arab Emirates | DXB |
| Dubbo | Australia | DBO |
| Dublin - Dublin International Airport | Ireland | DUB |
| Dubois (PA) | USA | DUJ |
| Dubrovnik | Croatia (Hrvatska) | DBV |
| Dubuque IA | USA | DBQ |
| Duesseldorf - Düsseldorf International Airport | Germany | DUS |
| Duluth (MN) /Superior (WI) | USA | DLH |
| Dundee | United Kingdom | DND |
| Dunedin | New Zealand | DUD |
| Dunk Island | Australia | DKI |
| Durango (CO) | USA | DRO |

| City/Airport | Country | IATA Code |
|---|---|---|
| Durban | South Africa | DUR |
| Dushanbe (Duschanbe) - Dushanbe Airport | Tajikistan | DYU |
| Dutch Harbor (AK) | USA | DUT |
| Dysart | Australia | DYA |
| Dzaoudzi | Mayotte | DZA |
| East London | South Africa | ELS |
| Easter Island | Chile | IPC |
| Eau Clarie (WI) | USA | EAU |
| Edinburgh - Edinburgh Airport | Scotland, UK | EDI |
| Edmonton | Canada | YEA |
| Edmonton, International | Canada | YEG |
| Edmonton, Municipal | Canada | YXD |
| Egilsstadir | Iceland | EGS |
| Eindhoven | Netherlands | EIN |
| Samana - Samaná El Catey International Airport | Dominican Republic | AZS |
| Elba Island, Marina Di Campo | Italy | EBA |
| Elat | Israel | ETH |
| Elat, Ovula | Israel | VDA |
| Elkhart (IN) | USA | EKI |
| Elko (NV) | USA | EKO |
| Ellisras | South Africa | ELL |
| El Minya | Egypt | EMY |
| Elmira (NY) | USA | ELM |
| El Paso (TX) - El Paso International Airport | USA | ELP |
| Ely (NV) | USA | ELY |
| Emerald | Australia | EDR |
| Emerald | Australia | EMD |
| Enontekioe | Finland | ENF |
| Entebbe - Entebbe International Airport | Uganda | EBB |
| Erfurt - Erfurt Airport (Flughafen Erfurt) | Germany | ERF |
| Erie (PA) | USA | ERI |
| Eriwan (Yerevan, Jerevan) | Armenia | EVN |
| Erzincan | Turkey | ERC |
| Erzurum | Turkey | ERZ |
| Esbjerg | Denmark | EBJ |
| Escanaba (MI) | USA | ESC |
| Esperance | Australia | EPR |
| Eugene (OR) | USA | EUG |
| Eureka (CA) | USA | ACV |
| Evansville (IN) | USA | EVV |
| Evenes | Norway | EVE |
| Exeter | United Kingdom | EXT |
| Fairbanks (AK) | USA | FAI |
| Fair Isle (Shetland) | United Kingdom | FIE |
| Faisalabad | Pakistan | LYP |
| Fargo (ND) (MN) | USA | FAR |
| Farmington (NM) | USA | FMN |
| Faro | Portugal | FAO |
| Faroer - Vágar Airport | Denmark | FAE |
| Fayetteville (AR) | USA | FYV |
| Fayetteville/Ft. Bragg (NC) | USA | FAY |

| City/Airport | Country | IATA Code |
|---|---|---|
| Fes | Morocco | FEZ |
| Figari | France | FSC |
| Flagstaff (AZ) | USA | FLG |
| Flin Flon | Canada | YFO |
| Flint (MI) | USA | FNT |
| Florence (Firenze) - Peretola Airport | Italy | FLR |
| Florence (SC) | USA | FLO |
| Florianopolis | Brazil | FLN |
| Floro | Norway | FRO |
| Fort Albert | Canada | YFA |
| Fortaleza - Pinto Martins Airport | Brazil | FOR |
| Fort de France - Martinique Aimé Césaire International | Martinique | FDF |
| Fort Dodge IA | USA | FOD |
| Fort Huachuca/Sierra Vista (AZ) | USA | FHU |
| Fort Lauderdale/Hollywood (FL) | USA | FLL |
| Fort McMurray | Canada | YMM |
| Fort Myers, Metropolitan Area (FL) | USA | FMY |
| Fort Myers, Southwest Florida Reg (FL) | USA | RSW |
| Fort Riley (KS) - Marshall AAF | USA | FRI |
| Fort Smith | Canada | YSM |
| Fort Smith (AR) | USA | FSM |
| Fort St. John | Canada | YXJ |
| Fort Walton Beach (FL) | USA | VPS |
| Fort Wayne (IN) | USA | FWA |
| Fort Worth (TX) - Dallas/Fort Worth International Airport | USA | DFW |
| Foula (Shetland) | United Kingdom | FOU |
| Francistown | Botswana | FRW |
| Frankfurt/Main - Frankfurt Airport (Rhein-Main-Flughafen) | Germany | FRA |
| Frankfurt/Hahn | Germany | HHN |
| Franklin/Oil City (PA) | USA | FKL |
| Fredericton | Canada | YFC |
| Freeport - Grand Bahama International Airport | Bahamas | FPO |
| Freetown - Freetown-Lungi International Airport | Sierra Leone | FNA |
| Frejus | France | FRJ |
| Fresno (CA) | USA | FAT |
| Friedrichshafen - Bodensee-Airport Friedrichshafen | Germany | FDH |
| Fuerteventura | Spain | FUE |
| Fujairah, International Airport | United Arab Emirates | FJR |
| Fukuoka | Japan | FUK |
| Fukushima - Fukushima Airport | Japan | FKS |
| Funchal | Portugal | FNC |
| Futuna | Wallis and Futuna Islands | FUT |
| Gaborone - Sir Seretse Khama International Airport | Botswana | GBE |
| Gadsden (AL) | USA | GAD |
| Gainesville (FL) | USA | GNV |
| Galway | Ireland | GWY |
| Gander | Canada | YQX |
| Garoua | Cameroon | GOU |

| City/Airport | Country | IATA Code |
|---|---|---|
| Gaza City - Gaza International Airport | Palestinian Territory | GZA |
| Gaziantep | Turkey | GZT |
| Gdansk | Poland | GDN |
| Geelong | Australia | GEX |
| Geneva - Geneva-Cointrin International Airport | Switzerland | GVA |
| Genoa | Italy | GOA |
| George | South Africa | GRJ |
| Georgetown - Cheddi Jagan International Airport | Guyana | GEO |
| Geraldton | Australia | GET |
| Gerona | Spain | GRO |
| Ghent (Gent) | Belgium | GNE |
| Gibraltar | Gibraltar | GIB |
| Gilette (WY) | USA | GCC |
| Gilgit | Pakistan | GIL |
| Gillam | Canada | YGX |
| Gladstone | Australia | GLT |
| Glasgow, Prestwick | United Kingdom | PIK |
| Glasgow | United Kingdom | GLA |
| Glasgow (MT) | USA | GGW |
| Glendive (MT) | USA | GDV |
| Goa | India | GOI |
| Goiania, Santa Genoveva Airport | Brazil | GYN |
| Gold Coast | Australia | OOL |
| Goondiwindi | Australia | GOO |
| Goose Bay | Canada | YYR |
| Gorna | Bulgaria | GOZ |
| Gothenburg (Göteborg) - Landvetter | Sweden | GOT |
| Gove (Nhulunbuy) | Australia | GOV |
| Govenors Harbour | Bahamas | GHB |
| Granada | Spain | GRX |
| Grand Bahama International | Bahamas | FPO |
| Grand Canyon (AZ) | USA | GCN |
| Grand Cayman - Owen Roberts International | Cayman Islands | GCM |
| Grand Forks (ND) | USA | GFK |
| Grand Junction (CO) | USA | GJT |
| Grand Rapids (MI) | USA | GRR |
| Grand Rapids (MN) | USA | GPZ |
| Graz | Austria | GRZ |
| Great Falls (MT) | USA | GTF |
| Great Keppel Island | Australia | GKL |
| Green Bay (WI) | USA | GRB |
| Greenbrier/Lewisburg (WV) | USA | LWB |
| Greensboro/Winston Salem (NC) | USA | GSO |
| Greenville (MS) | USA | GLH |
| Greenville (NC) | USA | PGV |
| Greenville/Spartanburg (SC) | USA | GSP |
| Grenada - Point Salines Airport also Maurice Bishop | Grenada | GND |
| Grenoble | France | GNB |
| Griffith | Australia | GFF |
| Groningen - Eelde | Netherlands | GRQ |
| Groote Eylandt - Alyangula | Australia | GTE |

| City/Airport | Country | IATA Code |
|---|---|---|
| Groton/New London (CT) | USA | GON |
| Guadalajara | Mexico | GDL |
| Guadalcanal | Solomon Islands | GSI |
| Guam | Guam | GUM |
| Guangzhou (Canton) - Baiyun International Airport | Guangdong, PR China | CAN |
| Sao Paulo - Guarulhos International | Brazil | GRU |
| Guatemala City - La Aurora International Airport | Guatemala | GUA |
| Guayaquil - Simon Bolivar | Ecuador | GYE |
| Guernsey | Channel Islands | GCI |
| Guettin | Germany | GTI |
| Gulfport/Biloxi (MS) | USA | GPT |
| Guilin - Liangjiang | Guangxi, PR China | KWL |
| Gulu | Uganda | ULU |
| Gunnison/Crested Butte (CO) | USA | GUC |
| Guwahati | India | GAU |
| Gwadar | Pakistan | GWD |
| Gweru | Zimbabwe | GWE |
| Gympie | Australia | GYP |
| Hachijo Jima | Japan | HAC |
| Hagåtña - Guam International Airport | Guam | GUM |
| Haifa | Israel | HFA |
| Haines (AK) | USA | HNS |
| Hakodate | Japan | HKD |
| Halifax International | Canada | YHZ |
| Hall Beach | Canada | YUX |
| Hamburg - Fuhlsbuettel | Germany | HAM |
| Hamilton | Australia | HLT |
| Hamilton | Canada | YHM |
| Hamilton | New Zealand | HLZ |
| Hamilton Island | Australia | HTI |
| Hammerfest | Norway | HFT |
| Hancock (MI) | USA | CMX |
| Hangchow (Hangzhou) | Zhejiang, PR China | HGH |
| Hannover | Germany | HAJ |
| Hanoi - Noi Bai International Airport | Vietnam | HAN |
| Harare - Harare International Airport | Zimbabwe | HRE |
| Harbin (Haerbin) | Heilongjiang, PR China | HRB |
| Harlingen/South Padre Island (TX) | USA | HRL |
| Harrington Harbour, PQ | Canada | YHR |
| Harrisburg (PA) - Harrisburg Skyport | USA | HAR |
| Harrisburg (PA) - Harrisburg International | USA | MDT |
| Hartford (CT) /Springfield (MA) | USA | BDL |
| Hatyai (Hat Yai) | Thailand | HDY |
| Haugesund | Norway | HAU |
| Havana - José Martí International | Cuba | HAV |
| Havre (MT) | USA | HVR |
| Hayman Island | Australia | HIS |
| Helena (MT) | USA | HLN |
| Helsingborg | Sweden | JHE |
| Helsinki - Vantaa | Finland | HEL |
| Heraklion | Greece | HER |
| Hermosillo - Gen. Pesqueira Garcia | Mexico | HMO |

| City/Airport | Country | IATA Code |
|---|---|---|
| Hervey Bay | Australia | HVB |
| Hibbing (MN) | USA | HIB |
| Hickory (NC) | USA | HKY |
| Hilo (HI) | USA | ITO |
| Hilton Head Island (SC) | USA | HHH |
| Hinchinbrook Island | Australia | HNK |
| Hiroshima International | Japan | HIJ |
| Ho Chi Minh City (Saigon) - Tan Son Nhat International | Viet Nam | SGN |
| Hobart | Australia | HBA |
| Hof | Germany | HOQ |
| Holguin | Cuba | HOG |
| Home Hill | Australia | HMH |
| Homer (AK) | USA | HOM |
| Hong Kong - International Airport (HKIA) | Hong Kong | HKG |
| Hong Kong - Chek Lap Kok | Hong Kong | ZJK |
| Honiara Henderson International | Solomon Islands | HIR |
| Honolulu (HI) - Honolulu International Airport | USA | HNL |
| Hoonah (AK) | USA | HNH |
| Horta | Portugal | HOR |
| Houston (TX) , Hobby | USA | HOU |
| Houston, TX - George Bush Intercontinental Airport | USA | IAH |
| Huahine | French Polynesia | HUH |
| Huatulco | Mexico | HUX |
| Hue - Phu Bai | Viet Nam | HUI |
| Humberside | United Kingdom | HUY |
| Huntington (WV) | USA | HTS |
| Huntsville (AL) | USA | HSV |
| Hurghada International | Egypt | HRG |
| Huron (SD) | USA | HON |
| Hwange National Park | Zimbabwe | HWN |
| Hyannis (MA) | USA | HYA |
| Hydaburg (AK) | USA | HYG |
| Hyderabad - Rajiv Gandhi International Airport | India | HYD |
| Hyderabad | Pakistan | HDD |
| Ibiza | Ibiza/Spain | IBZ |
| Idaho Falls (ID) | USA | IDA |
| Iguazu, Cataratas | Argentina | IGR |
| Ile des Pins | New Caledonia | ILP |
| Ile Ouen | New Caledonia | IOU |
| Iliamna (AK) | USA | ILI |
| Imperial (CA) | USA | IPL |
| Incercargill | New Zealand | IVC |
| Incheon, Incheon International Airport | Korea South | ICN |
| Indianapolis (IN) International | USA | IND |
| Ingham | Australia | IGH |
| Innisfail | Australia | IFL |
| Innsbruck - Kranebitten | Austria | INN |
| International Falls (MN) | USA | INL |
| Inuvik | Canada | YEV |
| Invercargill | New Zealand | IVC |

| City/Airport | Country | IATA Code |
|---|---|---|
| Inverness | United Kingdom | INV |
| Inykern (CA) | USA | IYK |
| Iqaluit (Frobisher Bay) | Canada | YFB |
| Iquitos | Peru | IQT |
| Irkutsk | Russia | IKT |
| Ishigaki - New Ishigaki Airport | Japan | ISG |
| Islamabad - Benazir Bhutto International Airport | Pakistan | ISB |
| Islay | United Kingdom | ILY |
| Isle of Man | | IOM |
| Istanbul - Istanbul Atatürk Airport | Turkey | IST |
| Istanbul - Sabiha Gokcen | Turkey | SAW |
| Ithaca/Cortland (NY) | USA | ITH |
| Ivalo | Finland | IVL |
| Ixtapa/Zihuatenejo | Mexico | ZIH |
| Izmir | Turkey | IZM |
| Izmir - Adnan Menderes Airport | Turkey | ADB |
| Jackson Hole (WY) | USA | JAC |
| Jackson (MI) - Reynolds Municipal | USA | JXN |
| Jackson, MN | USA | MJQ |
| Jackson (MS) - Jackson Internationall | USA | JAN |
| Jackson (MS) - Hawkins Field | USA | HKS |
| Jackson (TN) - Mckellar | USA | MKL |
| Jackson Hole (WY) | USA | JAC |
| Jacksonville (AR) Little Rock AFB | USA | LRF |
| Jacksonville (FL) - Cecil Field NAS | USA | NZC |
| Jacksonville (FL) Jacksonville NAS | USA | NIP |
| Jacksonville (FL) - International | USA | JAX |
| Jacksonville (FL) - Craig Municipal | USA | CRG |
| Jacksonville (IL) - Municipal Airport | USA | IJX |
| Jacksonville (NC) | USA | OAJ |
| Jacksonville (TX) | USA | JKV |
| Jacmel | Haiti | JAK |
| Jacobabad | Pakistan | JAG |
| Jacobina | Brazil | JCM |
| Jacquinot Bay | Papua New Guinea | JAQ |
| Jaffna - Kankesanturai | Sri Lanka | JAF |
| Jagdalpur | India | JGB |
| Jaipur - Sanganeer | India | JAI |
| Jaisalmer | India | JSA |
| Jakarta - Halim Perdana Kusuma | Indonesia | HLP |
| Jakarta - Metropolitan Area | Indonesia | JKT |
| Jakarta - Soekarno-Hatta International | Indonesia | CGK |
| Jalalabad | Afghanistan | JAA |
| Jalandhar | India | JLR |
| Jalapa | Mexico | JAL |
| Jales | Brazil | JLS |
| Jaluit Island | Marshall Islands | UIT |
| Jamba | Angola | JMB |
| Jambi - Sultan Taha Syarifudn | Indonesia | DJB |
| Jambol | Bulgaria | JAM |
| Jamestown (ND) | USA | JMS |
| Jamestown (NY) | USA | JHW |

| City/Airport | Country | IATA Code |
|---|---|---|
| Jammu - Satwari | India | IXJ |
| Jamnagar - Govardhanpur | India | JGA |
| Jamshedpur - Sonari Airport | India | IXW |
| Janakpur | Nepal | JKR |
| Jandakot | Australia | JAD |
| Janesville (WI) - Rock County | USA | JVL |
| Januaria | Brazil | JNA |
| Jaque | Panama | JQE |
| Jatai | Brazil | JTI |
| Jauja | Peru | JAU |
| Jayapura - Sentani | Indonesia | DJJ |
| Jeddah - King Abdulaziz International | Saudi Arabia | JED |
| Jefferson City (MO) - Jefferson Memorial | USA | JEF |
| Jeremie - Jeremie Airport | Haiti | JEE |
| Jerez de la Frontera/Cadiz - La Parra | Spain | XRY |
| Jersey | Channel Islands | JER |
| Jerusalem - Atarot Airport (closed) | Israel | JRS |
| Jessore - Jessore Airport | Bangladesh | JSR |
| Jeypore - Jeypore Airport | India | PYB |
| Ji'an | Jiangxi, China | JGS |
| Jiamusi - Jiamusi Airport | PR China | JMU |
| Jiayuguan - Jiayuguan Airport | PR China | JGN |
| Jijel | Algeria | GJL |
| Jijiga | Ethiopia | JIJ |
| Jilin | PR China | JIL |
| Jimma | Ethiopia | JIM |
| Jinan | Shandong, PR China | TNA |
| Jingdezhen | PR China | JDZ |
| Jinghong - Gasa Airport | PR China | JHG |
| Jining | PR China | JNG |
| Jinja | Uganda | JIN |
| Jinjiang | PR China | JJN |
| Jinka - Baco/Jinka Airport | Ethiopia | BCO |
| Jinzhou - Jinzhou Airport | PR China | JNZ |
| Jipijapa | Ecuador | JIP |
| Jiri | Nepal | JIR |
| Jiujiang - Jiujiang Lushan Airport | PR China | JIU |
| Jiwani | Pakistan | JIW |
| Joacaba | Brazil | JCB |
| Joao Pessoa - Castro Pinto Airport | Brazil | JPA |
| Jodhpur | India | JDH |
| Jönköping (Jonkoping) - Axamo Airport | Sweden | JKG |
| Joensuu | Finland | JOE |
| Johannesburg - OR Tambo International Airport | South Africa | JNB |
| Johnson City (NY) - Binghamton/Endicott/Johnson | USA | BGM |
| Johnston Island | USA | JON |
| Johnstown (PA) | USA | JST |
| Johor Bahru - Sultan Ismail International | Malaysia | JHB |
| Joinville - Cubatao Airport | Brazil | JOI |

| City/Airport | Country | IATA Code |
|---|---|---|
| Jolo | Philippines | JOL |
| Jomsom | Nepal | JMO |
| Jonesboro (AR)  Jonesboro Airport | USA | JBR |
| Joplin (MO) | USA | JLN |
| Jorhat - Rowriah Airport | India | JRH |
| Jos | Nigeria | JOS |
| Jose De San Martin | Argentina | JSM |
| Jouf | Saudi Arabia | AJF |
| Juanjui | Peru | JJI |
| Juba | South Sudan | JUB |
| Juist (island) | Germany | JUI |
| Juiz De Fora - Francisco De Assis Airport | Brazil | JDF |
| Jujuy - El Cadillal Airport | Argentina | JUJ |
| Julia Creek | Australia | JCK |
| Juliaca | Peru | JUL |
| Jumla | Nepal | JUM |
| Jundah | Australia | JUN |
| Juneau (AK) - Juneau International Airport | USA | JNU |
| Junin | Argentina | JNI |
| Juticalpa | Honduras | JUT |
| Jwaneng | Botswana | JWA |
| Jyväskylä (Jyvaskyla) | Finland | JYV |
| Kabul - Khwaja Rawash Airport | Afghanistan | KBL |
| Kagoshima | Japan | KOJ |
| Kahramanmaras | Turkey | KCM |
| Kahului (HI) | USA | OGG |
| Kajaani | Finland | KAJ |
| Kalamata | Greece | KLX |
| Kalamazoo/Battle Creek (MI) | USA | AZO |
| Kalgoorlie | Australia | KGI |
| Kaliningrad | Russia | KGD |
| Kalispell (MT) | USA | FCA |
| Kalmar | Sweden | KLR |
| Kamloops, BC | Canada | YKA |
| Kamuela (HI) | USA | MUE |
| Kano | Nigeria | KAN |
| Kanpur | India | KNU |
| Kansas City (MO) - Kansas City International Airport | USA | MCI |
| Kaohsiung International | Taiwan | KHH |
| Kapalua West (HI) | USA | JHM |
| Karachi - Jinnah International Airport | Pakistan | KHI |
| Karlsruhe-Baden - Soellingen | Germany | FKB |
| Karlstad | Sweden | KSD |
| Karpathos | Greece | AOK |
| Karratha | Australia | KTA |
| Kars | Turkey | KYS |
| Karumba | Australia | KRB |
| Karup | Denmark | KRP |
| Kaschechawan, PQ | Canada | ZKE |
| Kassala | Sudan | KSL |
| Katherine | Australia | KTR |
| Kathmandu - Tribhuvan International Airport | Nepal | KTM |

| City/Airport | Country | IATA Code |
|---|---|---|
| Katima Mulilo/Mpacha | Namibia | MPA |
| Kauhajoki | Finland | KHJ |
| Kaunakakai (HI) | USA | MKK |
| Kavalla | Greece | KVA |
| Kayseri | Turkey | ASR |
| Kazan - Kazan International Airport | Russia | KZN |
| Keetmanshoop | Namibia | KMP |
| Kelowna, BC | Canada | YLW |
| Kemi/Tornio | Finland | KEM |
| Kenai (AK) | USA | ENA |
| Kent (Manston) Kent International | United Kingdom | MSE |
| Kerry County | Ireland | KIR |
| Ketchikan (AK) | USA | KTN |
| Key West (FL) | USA | EYW |
| Khamis Mushayat | Saudi Arabia | AHB |
| Kharga - New Valley | Egypt | UVL |
| Kharkov | Ukraine | HRK |
| Khartoum - Khartoum International Airport | Sudan | KRT |
| Khuzdar | Pakistan | KDD |
| Kiel - Holtenau | Germany | KEL |
| Kiev - Borispol | Ukraine | KBP |
| Kiev - Zhulhany | Ukraine | IEV |
| Kigali - Gregoire Kayibanda | Rwanda | KGL |
| Kilimadjaro | Tanzania | JRO |
| Killeem (TX) | USA | ILE |
| Kimberley | South Africa | KIM |
| King Island | King Island (Australia) | KNS |
| King Salomon (AK) | USA | AKN |
| Kingscote | Australia | KGC |
| Kingston - Norman Manley | Jamaica | KIN |
| Kingston (NC) | USA | ISO |
| Kingstown - E. T. Joshua Airport | Saint Vincent and the Grenadines | SVD |
| Kinshasa - N'Djili | Congo (DRC) | FIH |
| Kiritimati (island) - Cassidy International Airport | Kiribati | CXI |
| Kirkenes | Norway | KKN |
| Kirkuk | Iraq | KIK |
| Kirkwall (Orkney) | United Kingdom | KOI |
| Kiruna | Sweden | KRN |
| Kisangani | Congo (DRC) | FKI |
| Kittilä | Finland | KTT |
| Kitwe | Zambia | KIW |
| Klagenfurt | Austria | KLU |
| Klamath Fall (OR) | USA | LMT |
| Klawock (AK) | USA | KLW |
| Kleinsee | South Africa | KLZ |
| Knock | Ireland | NOC |
| Knoxville (TN) | USA | TYS |
| Kobe | Japan | UKB |
| Kochi | Japan | KCZ |
| Köln, Köln/Bonn | Germany | CGN |
| Kodiak (AK) | USA | ADQ |
| Kohat | Pakistan | OHT |
| Kokkola/Pietarsaari | Finland | KOK |

| City/Airport | Country | IATA Code |
|---|---|---|
| Kolkata (Calcutta) - Netaji Subhas Chandra | India | CCU |
| Komatsu | Japan | KMQ |
| Kona (HI) | USA | KOA |
| Konya | Turkey | KYA |
| Korhogo | Cote d'Ivoire | HGO |
| Kos | Greece | KGS |
| Kota Kinabalu | Malaysia | BKI |
| Kotzbue (AK) | USA | OTZ |
| Kowanyama | Australia | KWM |
| Krakow (Cracow) - John Paul II International Airport | Poland | KRK |
| Kristiansand | Norway | KRS |
| Kristianstad | Sweden | KID |
| Kristiansund | Norway | KSU |
| Kuala Lumpur - International Airport | Malaysia | KUL |
| Kuala Lumpur - Sultan Abdul Aziz Shah | Malaysia | SZB |
| Kuantan | Malaysia | KUA |
| Kuching | Malaysia | KCH |
| Kumamoto | Japan | KMJ |
| Kununurra | Australia | KNX |
| Kuopio | Finland | KUO |
| Kushiro | Japan | KUH |
| Kuujjuaq (FortChimo) | Canada | YVP |
| Kuujjuarapik | Canada | YGW |
| Kuusamo | Finland | KAO |
| Kuwait - Kuwait International | Kuwait | KWI |
| Kyoto | Japan | UKY |
| Labe | Guinea | LEK |
| Labouchere Bay (AK) | USA | WLB |
| Labuan | Malaysia | LBU |
| Lac Brochet, MB | Canada | XLB |
| La Coruna | Spain | LCG |
| La Crosse (WI) | USA | LSE |
| Lae - Lae Nadzab Airport | Papua New Guinea | LAE |
| La Rochelle | France | LRH |
| Lafayette (IN) | USA | LAF |
| Lafayette, La | USA | LFT |
| Lagos - Murtala Muhammed Airport | Nigeria | LOS |
| La Grande | Canada | YGL |
| Lahore | Pakistan | LHE |
| Lake Charles (LA) | USA | LCH |
| Lake Havasu City (AZ) | USA | HII |
| Lake Tahoe (CA) | USA | TVL |
| Lakselv | Norway | LKL |
| Lambarene | Gabon | LBQ |
| Lamezia Terme | Italy | SUF |
| Lampedusa | Italy | LMP |
| Lanai City (HI) | USA | LNY |
| Lancaster (PA) | USA | LNS |
| Land's End | United Kingdom | LEQ |
| Langkawi (islands) | Malaysia | LGK |
| Lannion | France | LAI |
| Lanseria | South Africa | HLA |

| City/Airport | Country | IATA Code |
|---|---|---|
| Lansing (MI) | USA | LAN |
| La Paz - El Alto | Bolivia | LPB |
| La Paz - Leon | Mexico | LAP |
| Lappeenranta | Finland | LPP |
| Laramie (WY) | USA | LAR |
| Laredo (TX) | USA | LRD |
| Larnaca | Cyprus | LCA |
| Las Palmas | Spain | LPA |
| Las Vegas (NV) | USA | LAS |
| Latrobe (PA) | USA | LBE |
| Launceston | Australia | LST |
| Laurel/Hattisburg (MS) | USA | PIB |
| Laverton | Australia | LVO |
| Lawton (OK) | USA | LAW |
| Lazaro Cardenas | Mexico | LZC |
| Leaf Rapids | Canada | YLR |
| Learmouth (Exmouth) | Australia | LEA |
| Lebanon (NH) | USA | LEB |
| Leeds/Bradford | United Kingdom | LBA |
| Leinster | Australia | LER |
| Leipzig | Germany | LEJ |
| Lelystad | Netherlands | LEY |
| Leon | Mexico | BJX |
| Leonora | Australia | LNO |
| Lerwick/Tingwall (Shetland Islands) | United Kingdom | LWK |
| Lewiston (ID) | USA | LWS |
| Lewistown (MT) | USA | LWT |
| Lexington (KY) | USA | LEX |
| Libreville | Gabon | LBV |
| Lidkoeping | Sweden | LDK |
| Liege | Belgium | LGG |
| Lifou | Loyaute, Pazifik | LIF |
| Lihue (HI) | USA | LIH |
| Lille - Lille Airport | France | LIL |
| Lilongwe - Lilongwe International | Malawi | LLW |
| Lima - J Chavez International | Peru | LIM |
| Limassol | Cyprus | QLI |
| Limoges | France | LIG |
| Lincoln (NE) | USA | LNK |
| Lindeman Island | Australia | LDC |
| Linz - Hoersching | Austria | LNZ |
| Lisala | Congo (DRC) | LIQ |
| Lisbon - Lisboa | Portugal | LIS |
| Lismore | Australia | LSY |
| Little Rock (AR) | USA | LIT |
| Liverpool | United Kingdom | LPL |
| Lizard Island | Australia | LZR |
| Ljubljana - Brnik | Slovenia | LJU |
| Lockhart River | Australia | IRG |
| Lome | Togo | LFW |
| London | Canada | YXU |
| London Metropolitan Area | United Kingdom | LON |
| London - City Airport | United Kingdom | LCY |
| London - Gatwick | United Kingdom | LGW |
| London - Heathrow | United Kingdom | LHR |

| City/Airport | Country | IATA Code |
|---|---|---|
| London - Luton | United Kingdom | LTN |
| London - Stansted | United Kingdom | STN |
| Londonderry - Eglinton | United Kingdom | LDY |
| Long Beach (CA) | USA | LGB |
| Long Island (AK) | USA | LIJ |
| Long Island, Islip (NY) - Mac Arthur | USA | ISP |
| Longreach | Australia | LRE |
| Longview/Kilgore (TX) | USA | GGG |
| Longyearbyen - Svalbard | Svalbard/Norway | LYR |
| Loreto | Mexico | LTO |
| Lorient | France | LRT |
| Los Angeles (CA) - International | USA | LAX |
| Los Cabos | Mexico | SJD |
| Los Mochis | Mexico | LMM |
| Los Rodeos | Teneriffa/Spain | TFN |
| Losinj - Losinj Arpt | Croatia (Hrvatska) | LSZ |
| Lourdes/Tarbes | France | LDE |
| Louisville (KY) | USA | SDF |
| Luanda - 4 de Fevereiro | Angola | LAD |
| Lubbock (TX) | USA | LBB |
| Lucknow | India | LKO |
| Luederitz | Namibia | LUD |
| Luga | Malta | MLA |
| Lugano | Switzerland | LUG |
| Lulea | Sweden | LLA |
| Lumbumbashi | Congo (DRC) | FBM |
| Lusaka - Lusaka International Airport | Zambia | LUN |
| Lusisiki | South Africa | LUJ |
| Luxembourg | Luxembourg | LUX |
| Luxi - Mangshi | Yunnan, PR China | LUM |
| Luxor | Egypt | LXR |
| Lvov (Lwow, Lemberg) | Ukraine | LWO |
| Lydd - Lydd International Airport | United Kingdom | LYX |
| Lynchburg (VA) | USA | LYH |
| Lyon - Lyon-Saint Exupéry Airport | France | LYS |
| Lyons (KS) - Rice County Municipal | USA | LYO |
| Maastricht/Aachen | Netherlands | MST |
| Macapa - Alberto Alcolumbre International Airport | Brazil | MCP |
| Macau - Macau International Airport | Macau, China SAR | MFM |
| Maceio - Zumbi dos Palmares International Airport | Brazil | MCZ |
| Mackay | Australia | MKY |
| Macon (GA) | USA | MCN |
| Mactan Island - Nab | Philippines | NOP |
| Madinah (Medina) - Mohammad Bin Abdulaziz | Saudi Arabia | MED |
| Madison (WI) - Dane County Regional Airport | USA | MSN |
| Madras (Chennai) - Chennai International Airport | India | MAA |
| Madrid - Barajas Airport | Spain | MAD |
| Mahe - Seychelles International | Seychelles | SEZ |
| Mahon | Spain | MAH |
| Maitland | Australia | MTL |
| Majunga | Madagascar | MJN |

| City/Airport | Country | IATA Code |
|---|---|---|
| Makung | Taiwan | MZG |
| Malabo - Malabo International Airport | Equatorial Guinea | SSG |
| Malaga | Spain | AGP |
| Malatya | Turkey | MLX |
| Male - Velana International Airport | Maledives | MLE |
| Malindi | Kenya | MYD |
| Malmo (Malmoe) | Sweden | MMA |
| Malmo (Malmö) - Malmö Airport | Sweden | MMX |
| Man | Cote d'Ivoire | MJC |
| Managua - Augusto C Sandino | Nicaragua | MGA |
| Manaus - Eduardo Gomes International Airport | Brazil | MAO |
| Manchester | United Kingdom | MAN |
| Manchester (NH) | USA | MHT |
| Mandalay - Mandalay-Annisaton Airport | Myanmar | MDL |
| Manguna | Papua New Guinea | MFO |
| Manihi | French Polynesia | XMH |
| Manila - Ninoy Aquino International | Philippines | MNL |
| Manzanillo | Mexico | ZLO |
| Manzini - Matsapha International | Swaziland | MTS |
| Maputo - Maputo International | Mozambique | MPM |
| Mar del Plata | Argentina | MDQ |
| Maracaibo - La Chinita International | Venezuela | MAR |
| Maradi | Niger | MFQ |
| Maras | Turkey | KCM |
| Marathon (FL) | USA | MTH |
| Mardin | Turkey | MQM |
| Mare | New Caledonia | MEE |
| Margate | South Africa | MGH |
| Margerita | Venezuela | PMV |
| Maribor | Slovenia | MBX |
| Mariehamn (Maarianhamina) | Finland | MHQ |
| Maroua | Cameroon | MVR |
| Marquette (MI) | USA | MQT |
| Marrakesh - Menara Airport | Morocco | RAK |
| Marsa Alam | Egypt | RMF |
| Marsa Matrah (Marsa Matruh) | Egypt | MUH |
| Marseille - Marseille Provence Airport | France | MRS |
| Marsh Harbour | Bahamas | MHH |
| Martha's Vineyard (MA) | USA | MVY |
| Martinsburg (WV) | USA | MRB |
| Maryborough | Australia | MBH |
| Maseru - Moshoeshoe International | Lesotho | MSU |
| Mason City IA | USA | MCW |
| Masvingo | Zimbabwe | MVZ |
| Matsumoto, Nagano | Japan | MMJ |
| Matsuyama | Japan | MYJ |
| Mattoon (IL) | USA | MTO |
| Maun | Botswana | MUB |
| Maupiti | French Polynesia | MAU |
| Mauritius - S.Seewoosagur Ram International | Mauritius | MRU |
| Mayaguez | Puerto Rico | MAZ |

| City/Airport | Country | IATA Code |
|---|---|---|
| Mazatlan | Mexico | MZT |
| McAllen (TX) | USA | MFE |
| Medan - Polania Int'l (now Soewondo AFB) | Indonesia | MES |
| Medan - Kualanamu International | Indonesia | KNO |
| Medellin - José María Córdova International | Colombia | MDE |
| Medford (OR) | USA | MFR |
| Medina | Saudi Arabia | MED |
| Meekatharra | Australia | MKR |
| Melbourne - Melbourne Airport (Tullamarine) | Australia | MEL |
| Melbourne (FL) | USA | MLB |
| Melville Hall | Dominica | DOM |
| Memphis (TN) | USA | MEM |
| Mendoza | Argentina | MDZ |
| Manado | Indonesia | MDC |
| Merced (CA) | USA | MCE |
| Merida | Mexico | MID |
| Meridian (MS) | USA | MEI |
| Merimbula | Australia | MIM |
| Messina | South Africa | MEZ |
| Metlakatla (AK) | USA | MTM |
| Metz - Frescaty | France | MZM |
| Metz/Nancy Metz-Nancy-Lorraine | France | ETZ |
| Mexicali | Mexico | MXL |
| Mexico City - Mexico City International Airport | Mexico | MEX |
| Mexico City - Atizapan | Mexico | AZP |
| Mexico City - Juarez International | Mexico | MEX |
| Mexico City - Santa Lucia | Mexico | NLU |
| Mfuwe | Zambia | MFU |
| Miami (FL) | USA | MIA |
| Mianwali | Pakistan | MWD |
| Middlemount | Australia | MMM |
| Midland/Odessa (TX) | USA | MAF |
| Midway Island - Sand Island Field | US Minor Outlying Islands | MDY |
| Mikkeli | Finland | MIK |
| Milan | Italy | MIL |
| Milan - Linate | Italy | LIN |
| Milan - Malpensa | Italy | MXP |
| Milan - Orio Al Serio | Italy | BGY |
| Mildura | Australia | MQL |
| Miles City (MT) | USA | MLS |
| Milford Sound | New Zealand | MFN |
| Milwaukee (WI) | USA | MKE |
| Minatitlan | Mexico | MTT |
| Mineralnye Vody | Russia | MRV |
| Minneapolis - St. Paul International Airport (MN) | USA | MSP |
| Minot (ND) | USA | MOT |
| Minsk, International | Belarus | MSQ |
| Miri | Malaysia | MYY |
| Mirpur | Pakistan | QML |
| Missula (MT) | USA | MSO |
| Mitchell (SD) | USA | MHE |

| City/Airport | Country | IATA Code |
|---|---|---|
| Miyako Jima (Ryuku Islands) - Hirara | Japan | MMY |
| Miyazaki | Japan | KMI |
| Mkambati | South Africa | MBM |
| Moanda | Gabon | MFF |
| Mobile (AL) - Pascagoula (MS) | USA | MOB |
| Modesto (CA) | USA | MOD |
| Moenjodaro | Pakistan | MJD |
| Mogadishu | Somalia | MGQ |
| Mokuti | Namibia | OKU |
| Moline/Quad Cities (IL) | USA | MLI |
| Mombasa - Moi International | Kenya | MBA |
| Monastir | Tunisia | MIR |
| Moncton | Canada | YQM |
| Monroe (LA) | USA | MLU |
| Monrovia - Metropolitan Area | Liberia | MLW |
| Monrovia - Roberts International | Liberia | ROB |
| Montego Bay - Sangster International | Jamaica | MBJ |
| Montenegro | Brazil | QGF |
| Monterey (CA) | USA | MRY |
| Monterrey - Gen. Mariano Escobedo | Mexico | MTY |
| Monterrey - Aeropuerto Del Norte | Mexico | NTR |
| Montevideo - Carrasco International Airport | Uruguay | MVD |
| Montgomery (AL) - Montgomery Regional Airport | USA | MGM |
| Montpellier - Montpellier–Méditerranée Airport | France | MPL |
| Montreal | Canada | YMQ |
| Montreal - Dorval (Montréal-Trudeau) | Canada | YUL |
| Montreal - Mirabel | Canada | YMX |
| Montrose/Tellruide (CO) | USA | MTJ |
| Moorea | French Polynesia | MOZ |
| Moranbah | Australia | MOV |
| Moree | Australia | MRZ |
| Morelia | Mexico | MLM |
| Morgantown (WV) | USA | MGW |
| Morioka, Hanamaki | Japan | HNA |
| Moroni - Prince Said Ibrahim | Comoros (Comores) | HAH |
| Moruya | Australia | MYA |
| Moscow - Metropolitan Area | Russia | MOW |
| Moscow - Domodedovo | Russia | DME |
| Moscow - Sheremetyevo | Russia | SVO |
| Moscow - Vnukovo | Russia | VKO |
| Moses Lake (WA) | USA | MWH |
| Mossel Bay | South Africa | MZY |
| Mostar | Bosnia and Herzegovina | OMO |
| Mosul | Iraq | OSM |
| Mouila | Gabon | MJL |
| Moundou | Chad | MQQ |
| Mount Cook | New Zealand | GTN |
| Mount Gambier | Australia | MGB |
| Mount Magnet | Australia | MMG |
| Mt. Isa | Australia | ISA |
| Mt. McKinley (AK) | USA | MCL |

| City/Airport | Country | IATA Code |
|---|---|---|
| Muenchen (Munich) - Franz Josef Strauss | Germany | MUC |
| Muenster/Osnabrueck | Germany | FMO |
| Mulhouse | France | MLH |
| Multan | Pakistan | MUX |
| Murcia | Spain | MJV |
| Murmansk | Russia | MMK |
| Mus | Turkey | MSR |
| Muscat - Seeb | Oman | MCT |
| Muscle Shoals (AL) | USA | MSL |
| Muskegon (MI) | USA | MKG |
| Muzaffarabad | Pakistan | MFG |
| Mvengue | Gabon | MVB |
| Mykonos | Greece | JMK |
| Myrtle Beach (SC) - Myrtle Beach AFB | USA | MYR |
| Myrtle Beach (SC) - Grand Strand Airport | USA | CRE |
| Mysore | India | MYQ |
| Mytilene (Lesbos) | Greece | MJT |
| Mzamba | South Africa | MZF |
| Nadi | Fiji | NAN |
| Nagasaki | Japan | NGS |
| Nagoya - Komaki AFB | Japan | NGO |
| Nagpur | India | NAG |
| Nairobi | Kenya | NBO |
| Nakhichevan | Azerbaijan | NAJ |
| Nakhon Si Thammarat | Thailand | NST |
| Nancy | France | ENC |
| Nanisivik | Canada | YSR |
| Nanning | Guangxi, PR China | NNG |
| Nantes - Nantes Atlantique Airport | France | NTE |
| Nantucket (MA) | USA | ACK |
| Naples - Naples Capodichino Airport | Italy | NAP |
| Naples (FL) | USA | APF |
| Narrabri | Australia | NAA |
| Narrandera | Australia | NRA |
| Narsarsuaq | Greenland | UAK |
| Nashville (TN) | USA | BNA |
| Nassau | Bahamas | NAS |
| Natal - Augusto Severo International Airport | Brazil | NAT |
| Nausori | Fiji/Suva | SUV |
| Nawab Shah | Pakistan | WNS |
| Naxos - Naxos Airport | Greece | JNX |
| N'Djamena | Chad | NDJ |
| N'Dola | Zambia | NLA |
| Nelson | New Zealand | NSN |
| Nelspruit | South Africa | NLP |
| Nelspruit - Kruger Mpumalanga International Airport | South Africa | MQP |
| Nevis | St. Kitts and Nevis | NEV |
| New Bern (NC) | USA | EWN |
| New Haven (CT) | USA | HVN |
| New Orleans, La | USA | MSY |
| Newquay | United Kingdom | NQY |

| City/Airport | Country | IATA Code |
|---|---|---|
| New Valley - Kharga | Egypt | UVL |
| New York - John F. Kennedy (NY) | USA | JFK |
| New York - LaGuardia (NY) | USA | LGA |
| New York - Newark (NJ) | USA | EWR |
| New York (NY) | USA | NYC |
| Newburgh (NY) | USA | SWF |
| Newcastle - Belmont | Australia | BEO |
| Newcastle - Williamtown | Australia | NTL |
| Newcastle | United Kingdom | NCL |
| Newcastle | South Africa | NCS |
| Newman | Australia | ZNE |
| Newport News/Williamsburg (VA) | USA | PHF |
| N'Gaoundere | Cameroon | NGE |
| Niagara Falls International | USA | IAG |
| Niamey | Niger | NIM |
| Nice - Cote D'Azur Airport | France | NCE |
| Nicosia | Cyprus | NIC |
| Nikolaev | Ukraine | NLV |
| Niigata | Japan | KIJ |
| Nimes | France | FNI |
| Nis | Serbia | INI |
| Nizhny Novgorod - Strigino International Airport | Russia | GOJ |
| Nome (AK) | USA | OME |
| Noosa | Australia | NSA |
| Norfolk Island | Australia | NLK |
| Norfolk/Virginia Beach (VA) | USA | ORF |
| Norman Wells | Canada | YVQ |
| Norrkoeping | Sweden | NRK |
| North Bend (OR) | USA | OTH |
| North Eleuthera | Bahamas | ELH |
| Norwich | United Kingdom | NWI |
| Nottingham - East Midlands | United Kingdom | EMA |
| Nouadhibou | Mauritania | NDB |
| Nouakchott | Mauritania | NKC |
| Noumea | New Caledonia | NOU |
| Novi Sad | Serbia | QND |
| Novosibirsk - Tolmachevo Airport | Russia | OVB |
| Nürnberg (Nuremberg) | Germany | NUE |
| Nuevo Laredo | Mexico | NLD |
| Nuku'alofa - Fua'Amotu International | Tonga | TBU |
| Oakland (CA) | USA | OAK |
| Oaxaca - Xoxocotlan | Mexico | OAX |
| Odense | Denmark | ODE |
| Odessa | Ukraine | ODS |
| Oerebro | Sweden | ORB |
| Ohrid | Macedonia | OHD |
| Oita | Japan | OIT |
| Okayama | Japan | OKJ |
| Okinawa, Ryukyo Island - Naha | Japan | OKA |
| Oklahoma City (OK) - Will Rogers World | USA | OKC |
| Olbia | Italy | OLB |
| Olympic Dam | Australia | OLP |
| Omaha (NE) | USA | OMA |

| City/Airport | Country | IATA Code |
|---|---|---|
| Ondangwa | Namibia | OND |
| Ontario (CA) | USA | ONT |
| Oran (Ouahran) | Algeria | ORN |
| Orange | Australia | OAG |
| Orange County (Santa Ana) (CA) | USA | SNA |
| Oranjemund | Namibia | OMD |
| Oranjestad - Reina Beatrix International | Aruba | AUA |
| Orkney - Kirkwall | United Kingdom | KOI |
| Orlando Metropolitan Area (FL) | USA | ORL |
| Orlando - International Airport (FL) | USA | MCO |
| Orpheus Island | Australia | ORS |
| Osaka, Metropolitan Area | Japan | OSA |
| Osaka - Itami | Japan | ITM |
| Osaka - Kansai International Airport | Japan | KIX |
| Oshkosh (WI) | USA | OSH |
| Osijek | Croatia (Hrvatska) | OSI |
| Oslo - Oslo Airport, Gardermoen | Norway | OSL |
| Oslo - Fornebu | Norway | FBU |
| Oslo - Sandefjord | Norway | TRF |
| Ottawa - Hull | Canada | YOW |
| Ouadda | Central African Republic | ODA |
| Ouarzazate | Morocco | OZZ |
| Oudtshoorn | South Africa | OUH |
| Ouagadougou | Burkina Faso | OUA |
| Oujda | Morocco | OUD |
| Oulu | Finland | OUL |
| Out Skerries (Shetland) | United Kingdom | OUK |
| Oviedo | Spain | OVD |
| Owensboro (KY) | USA | OWB |
| Oxnard (CA) | USA | OXR |
| Oyem | Gabon/Loyautte | UVE |
| Paderborn/Lippstadt | Germany | PAD |
| Paducah (KY) | USA | PAH |
| Page/Lake Powell (AZ) | USA | PGA |
| Pago Pago | American Samoa | PPG |
| Pakersburg (WV) /Marietta (OH) | USA | PKB |
| Palermo - Punta Raisi | Italy | PMO |
| Palma de Mallorca | Spain | PMI |
| Palmas | Brazil | PMW |
| Palmdale/Lancaster (CA) | USA | PMD |
| Palmerston North | New Zealand | PMR |
| Palm Springs (CA) | USA | PSP |
| Panama City - Tocumen International | Panama | PTY |
| Panama City (FL) | USA | PFN |
| Panjgur | Pakistan | PJG |
| Pantelleria | Italy | PNL |
| Papeete - Faaa | French Polynesia (Tahiti) | PPT |
| Paphos | Cyprus | PFO |
| Paraburdoo | Australia | PBO |
| Paramaribo - Zanderij International | Suriname | PBM |
| Paris | France | PAR |
| Paris - Charles de Gaulle | France | CDG |
| Paris - Le Bourget | France | LBG |

| City/Airport | Country | IATA Code |
|---|---|---|
| Paris - Orly | France | ORY |
| Paro | Bhutan | PBH |
| Pasco (WA) | USA | PSC |
| Pasni | Pakistan | PSI |
| Patna | India | PAT |
| Pattaya | Thailand | PYX |
| Pau | France | PUF |
| Pellston (MI) | USA | PLN |
| Penang International | Malaysia | PEN |
| Pendelton (OR) | USA | PDT |
| Pensacola (FL) | USA | PNS |
| Peoria/Bloomington (IL) | USA | PIA |
| Pereira | Colombia | PEI |
| Perpignan | France | PGF |
| Perth International | Australia | PER |
| Perugia | Italy | PEG |
| Pescara | Italy | PSR |
| Peshawar | Pakistan | PEW |
| Petersburg (AK) | USA | PSG |
| Phalaborwa | South Africa | PHW |
| Philadelphia (PA) - International | USA | PHL |
| Phnom Penh - Pochentong | Cambodia | PNH |
| Phoenix (AZ) - Sky Harbor International | USA | PHX |
| Phuket | Thailand | HKT |
| Pierre (SD) | USA | PIR |
| Pietermaritzburg | South Africa | PZB |
| Pietersburg | South Africa | PTG |
| Pilanesberg/Sun City | South Africa | NTY |
| Pisa - Galileo Galilei | Italy | PSA |
| Pittsburgh International Airport (PA) | USA | PIT |
| Plattsburgh (NY) | USA | PLB |
| Plettenberg Bay | South Africa | PBZ |
| Pocatello (ID) | USA | PIH |
| Podgorica | Montenegro | TGD |
| Pohnpei | Micronesia | PNI |
| Pointe a Pitre | Guadeloupe | PTP |
| Pointe Noire | Congo (ROC) | PNR |
| Poitiers - Biard | France | PIS |
| Ponce | Puerto Rico | PSE |
| Ponta Delgada | Portugal | PDL |
| Pori | Finland | POR |
| Port Angeles (WA) | USA | CLM |
| Port au Prince | Haiti | PAP |
| Port Augusta | Australia | PUG |
| Port Elizabeth | South Africa | PLZ |
| Port Gentil | Gabon | POG |
| Port Harcourt | Nigeria | PHC |
| Port Hedland | Australia | PHE |
| Portland | Australia | PTJ |
| Portland (ME) | USA | PWM |
| Portland International (OR) | USA | PDX |
| Port Lincoln | Australia | PLO |
| Port Macquarie | Australia | PQQ |
| Port Menier, PQ | Canada | YPN |

| City/Airport | Country | IATA Code |
|---|---|---|
| Port Moresby - Jackson Field | Papua New Guinea | POM |
| Porto | Portugal | OPO |
| Porto Alegre - Salgado Filho International Airport | Brazil | POA |
| Port of Spain - Piarco International | Trinidad and Tobago | POS |
| Port Said | Egypt | PSD |
| Porto Santo | Portugal | PXO |
| Porto Velho | Brazil | PVH |
| Port Vila | Vanuatu | VLI |
| Poughkeepsie (NY) | USA | POU |
| Poznan, Lawica | Poland | POZ |
| Prague - Václav Havel Airport (formerly Ruzyne) | Czech Republic | PRG |
| Praia - Nelson Mandela International Airport | Cape Verde | RAI |
| Presque Island (ME) | USA | PQI |
| Pretoria - Wonderboom Apt. | South Africa | PRY |
| Preveza/Lefkas | Greece | PVK |
| Prince George | Canada | YXS |
| Prince Rupert/Digby Island | Canada | YPR |
| Pristina | Serbia | PRN |
| Prosperpine | Australia | PPP |
| Providence (RI) | USA | PVD |
| Prudhoe Bay (AK) | USA | SCC |
| Puebla | Mexico | PBC |
| Pueblo (CO) | USA | PUB |
| Puerto Escondido | Mexico | PXM |
| Puerto Ordaz | Venezuela | PZO |
| Puerto Plata | Dominican Republic | POP |
| Puerto Vallarta | Mexico | PVR |
| Pukatawagan | Canada | XPK |
| Pula | Croatia (Hrvatska) | PUY |
| Pullman (WA) | USA | PUW |
| Pune | India, Maharashtra | PNQ |
| Punta Arenas - Presidente Carlos Ibáñez del Campo | Chile | PUQ |
| Punta Cana - Punta Cana International | Dominican Republic | PUJ |
| Pu San (Busan) - Gimhae International Airport | South Korea | PUS |
| Pyongyang - Sunan International Airport | North Korea | FNJ |
| Quebec - Quebec International | Canada | YQB |
| Queenstown | Australia | UEE |
| Queenstown | New Zealand | ZQN |
| Quetta | Pakistan | UET |
| Qingdao | Shandong, PR China | TAO |
| Quimper | France | UIP |
| Quincy (IL) | USA | UIN |
| Quito - Mariscal Sucre International Airport | Ecuador | UIO |
| Rabat - Rabat-Salé Airport | Morocco | RBA |
| Rahim Yar Khan - Shaikh Zayed International Airport | Pakistan | RYK |
| Raiatea | French Polynesia | RFP |
| Rainbow Lake, AB | Canada | YOP |

| City/Airport | Country | IATA Code |
|---|---|---|
| Rajkot | India | RAJ |
| Raleigh/Durham (NC) | USA | RDU |
| Ranchi | India | IXR |
| Rangiroa | French Polynesia | RGI |
| Rangoon (Yangon) - Mingaladon | Myanmar | RGN |
| Rapid City (SD) | USA | RAP |
| Rarotonga | Cook Island | RAR |
| Ras al Khaymah (Ras al Khaimah) | United Arab Emirates | RKT |
| Rawala Kot | Pakistan | RAZ |
| Rawalpindi | Pakistan | RWP |
| Reading (PA) | USA | RDG |
| Recife - Guararapes-Gilberto Freyre International | Brazil | REC |
| Redding (CA) | USA | RDD |
| Redmond (OR) | USA | RDM |
| Reggio Calabria | Italy | REG |
| Regina | Canada | YQR |
| Reina Sofia | Teneriffa/Spain | TFS |
| Rennes | France | RNS |
| Reno (NV) | USA | RNO |
| Resolute Bay | Canada | YRB |
| Reus | Spain | REU |
| Reykjavik - Metropolitan Area | Iceland | REK |
| Reykjavik - Keflavik International | Iceland | KEF |
| Rhinelander (WI) | USA | RHI |
| Rhodos | Greece | RHO |
| Richards Bay | South Africa | RCB |
| Richmond (VA) | USA | RIC |
| Riga | Latvia | RIX |
| Rijeka | Croatia (Hrvatska) | RJK |
| Rimini | Italy | RMI |
| Rio Branco - Plácido de Castro International Airport | Brazil | RBR |
| Rio de Janeiro - Galeao | Brazil | GIG |
| Rio de Janeiro - Santos Dumont | Brazil | SDU |
| Rio de Janeiro | Brazil | RIO |
| Riyadh - King Khaled International | Saudi Arabia | RUH |
| Roanne | France | RNE |
| Roanoke (VA) | USA | ROA |
| Roatan | Honduras | RTB |
| Rochester (MN) | USA | RST |
| Rochester (NY) | USA | ROC |
| Rock Sound | Bahamas | RSD |
| Rock Springs (WY) | USA | RKS |
| Rockford (IL) | USA | RFD |
| Rockhampton | Australia | ROK |
| Rockland (ME) | USA | RKD |
| Rocky Mount - Wilson (NC) | USA | RWI |
| Rodez | France | RDZ |
| Rodrigues Island | Mauritius | RRG |
| Roenne | Denmark | RNN |
| Rome | Italy | ROM |
| Rome - Ciampino | Italy | CIA |
| Rome - Fuimicino | Italy | FCO |
| Ronneby | Sweden | RNB |

| City/Airport | Country | IATA Code |
|---|---|---|
| Rosario | Argentina | ROS |
| Rostov-on-Don - Rostov-on-Don Airport | Russia | RVI |
| Rostov-on-Don - Platov International Airport | Russia | ROV |
| Rotorua | New Zealand | ROT |
| Rotterdam | Netherlands | RTM |
| Rovaniemi | Finland | RVN |
| Rundu | Namibia | NDU |
| Ruse | Bulgaria | ROU |
| Saarbruecken | Germany | SCN |
| Sacramento (CA) | USA | SMF |
| Sado Shima | Japan | SDS |
| Saginaw/Bay City/Midland (MI) | USA | MBS |
| Saidu Sharif | Pakistan | SDT |
| Saigon (Ho Chi Minh City) - Tan Son Nhat International | Viet Nam | SGN |
| Saint Brieuc | France | SBK |
| Saint Denis - Roland Garros Airport | Reunion | RUN |
| Saint John | Canada | YSJ |
| Saipan | Northern Mariana Islands | SPN |
| Sal | Cape Verde | SID |
| Salalah | Oman | SLL |
| Salem (OR) | USA | SLE |
| Salinas (CA) | USA | SNS |
| Salinas | Ecuador | SNC |
| Salisbury | Zimbabwe | SAY |
| Salisbury (MD) | USA | SBY |
| Saloniki | Greece | SKG |
| Salta, Gen Belgrano | Argentina | SLA |
| Salt Lake City (UT) | USA | SLC |
| Salvador - Salvador International Airport | Brazil | SSA |
| Salzburg - W.A. Mozart | Austria | SZG |
| Samara - Kurumoch International Airport | Russia | KUF |
| Samarkand - Samarkand International Airport | Uzbekistan | SKD |
| Samos | Greece | SMI |
| Samsun | Turkey | SZF |
| San Andres | Colombia | ADZ |
| San Angelo (TX) | USA | SJT |
| San Antonio (TX) | USA | SAT |
| San Carlos de Bariloche | Argentina | BRC |
| San Diego - Lindberg Field International (CA) | USA | SAN |
| San Francisco - International Airport, SA | USA | SFO |
| San Jose Cabo | Mexico | SJD |
| San Jose | Costa Rica | SJO |
| San Jose (CA) | USA | SJC |
| San Juan - Luis Munoz Marin International Airport | Puerto Rico | SJU |
| San Luis Obisco (CA) | USA | SBP |
| San Luis Potosi | Mexico | SLP |
| San Pedro | Cote d'Ivoire | SPY |

| City/Airport | Country | IATA Code |
|---|---|---|
| San Pedro Sula | Honduras | SAP |
| San Salvador | Bahamas | ZSA |
| San Salvador | El Salvador | SAL |
| San Sebastian | Spain | EAS |
| Sanaa (Sana'a) - Sana'a International | Yemen | SAH |
| Sandspit | Canada | YZP |
| Santa Ana - John Wayne Airport (CA) | USA | SNA |
| Santa Barbara (CA) | USA | SBA |
| Santa Cruz de la Palma | Spain | SPC |
| Santa Cruz de la Sierra | Bolivia | SRZ |
| Santa Katarina - Mount Sinai | Egypt | SKV |
| Santa Maria | Portugal | SMA |
| Santa Maria (CA) | USA | SMX |
| Santander | Spain | SDR |
| Santa Rosa (CA) | USA | STS |
| Santa Rosa | Bolivia | SRB |
| Santa Rosa | Brazil | SRA |
| Santa Rosa | Argentina | RSA |
| Santa Rosa, Copan | Honduras | SDH |
| Santa Rosalia | Colombia | SSL |
| Santa Rosalia | Mexico | SRL |
| Santiago - Antonio Maceo Airport | Cuba | SCU |
| Santiago de Chile - Arturo Merino Benitez | Chile | SCL |
| Santiago de Compostela | Spain | SCQ |
| Santo | Vanuatu | SON |
| Santo Domingo | Dominican Republic | SDQ |
| Sao Luis - Marechal Cunha Machado International | Brazil | SLZ |
| Sao Paulo | Brazil | SAO |
| Sao Paulo - Congonhas | Brazil | CGH |
| Sao Paulo - Guarulhos | Brazil | GRU |
| Sao Paulo - Viracopos | Brazil | VCP |
| Sao Tome | Sao Tome & Principe | TMS |
| Sapporo | Hokkaido, Japan | SPK |
| Sapporo - Okadama | Hokkaido, Japan | OKD |
| Sapporo - New Chitose Airport | Japan | CTS |
| Sarajevo | Bosnia and Herzegovina | SJJ |
| Saransk - Saransk Airport | Russia | SKX |
| Sarasota/Bradenton (FL) | USA | SRQ |
| Saskatoon | Canada | YXE |
| Sassandra | Cote d'Ivoire | ZSS |
| Savannah (GA) | USA | SAV |
| Savonlinna | Finland | SVL |
| Scarborough - Crown Point International | Trinidad and Tobago | TAB |
| Scone | Australia | NSO |
| Scottsdale (AZ) | USA | SCF |
| Seattle/Tacoma (WA) | USA | SEA |
| Sehba | Libya | SEB |
| Seinaejoki | Finland | SJY |
| Selibi Phikwe | Botswana | PKW |
| Sendai | Japan | SDJ |
| Seoul - Incheon International Airport | South Korea | ICN |

| City/Airport | Country | IATA Code |
|---|---|---|
| Seoul - Kimpo | South Korea | SEL |
| Sevilla | Spain | SVQ |
| Sfax | Tunisia | SFA |
| Shamattawa, MB | Canada | ZTM |
| Shanghai - Hongqiao | China | SHA |
| Shanghai - Pu Dong | China | PVG |
| Shannon (Limerick) | Ireland | SNN |
| Sharjah | United Arab Emirates | SHJ |
| Sharm El Sheikh | Egypt | SSH |
| Sheffield, City Airport | United Kingdom | SZD |
| Sheffield, Doncaster, Robin Hood International Airport | United Kingdom | DSA |
| Shenandoah Valley/Stauton (VA) | USA | SHD |
| Shenyang | Liaoning, PR China | SHE |
| Shenzhen - Shenzhen Bao'an International | Guangdong, PR China | SZX |
| Sheridan (WY) | USA | SHR |
| Shreveport, La | USA | SHV |
| Shute Harbour | Australia | JHQ |
| Sibu | Malaysia | SBW |
| Sidney (MT) | USA | SDY |
| Silistra | Bulgaria | SLS |
| Simferopol | Ukraine | SIP |
| Sindhri | Pakistan | MPD |
| Singapore - Changi | Singapore | SIN |
| Singapore - Paya Lebar | Singapore | QPG |
| Singapore - Seletar | Singapore | XSP |
| Singleton | Australia | SIX |
| Sioux City IA | USA | SUX |
| Sioux Falls (SD) | USA | FSD |
| Sishen | South Africa | SIS |
| Sitka (AK) | USA | SIT |
| Sivas | Turkey | VAS |
| Siwa | Egypt | SEW |
| Skagway (AK) | USA | SGY |
| Skardu | Pakistan | KDU |
| Skiathos | Greece | JSI |
| Skopje | Macedonia | SKP |
| Skrydstrup | Denmark | SKS |
| Skukuza | South Africa | SZK |
| Sligo | Ireland | SXL |
| Smithers | Canada | YYD |
| Sodankylae | Finland | SOT |
| Soenderborg | Denmark | SGD |
| Soendre Stroemfjord | Greenland | SFJ |
| Sofia - Vrazhdebna | Bulgaria | SOF |
| Sogndal | Norway | SOG |
| Southampton - Eastleigh | United Kingdom | SOU |
| South Bend (IN) | USA | SBN |
| South Indian Lake, MB | Canada | XSI |
| South Molle Island | Australia | SOI |
| Southend (London) | United Kingdom | SEN |
| Split | Croatia (Hrvatska) | SPU |
| Spokane (WA) | USA | GEG |
| Springbok | South Africa | SBU |

| City/Airport | Country | IATA Code |
|---|---|---|
| Springfield (IL) | USA | SPI |
| Springfield (MO) | USA | SGF |
| Srinagar | India | SXR |
| St. Augustin, PQ | Canada | YIF |
| St. Croix | Virgin Islands (U.S.) | STX |
| St. Etienne | France | EBU |
| St. George (UT) | USA | SGU |
| St. John's | Canada | YYT |
| St. Kitts | St. Kitts and Nevis | SKB |
| St. Louis (MO) Lambert–St. Louis International Airport | USA | STL |
| St. Lucia Hewanorra | Saint Lucia | UVF |
| St. Lucia Vigle | Saint Lucia | SLU |
| St. Marteen | Netherlands Antilles | SXM |
| St. Martin | St. Martin (Guadeloupe) | SFG |
| St. Petersburg (Leningrad) - Pulkovo | Russia | LED |
| St. Pierre, NF | Canada | FSP |
| St. Thomas | Virgin Islands (U.S.) | STT |
| St. Vincent | Saint Vincent and the Grenadines | SVD |
| Stansted (London) | United Kingdom | STN |
| State College/Belefonte (PA) | USA | SCE |
| Stavanger | Norway | SVG |
| Steamboat Springs (CO) | USA | HDN |
| Stettin | Poland | SZZ |
| Stockholm Metropolitan Area | Sweden | STO |
| Stockholm - Arlanda | Sweden | ARN |
| Stockholm - Bromma | Sweden | BMA |
| Stockton (CA) | USA | SCK |
| Stornway | United Kingdom | SYY |
| Strasbourg - Strasbourg Airport | France | SXB |
| Streaky Bay | Australia | KBY |
| Stuttgart - Echterdingen | Germany | STR |
| Sui | Pakistan | SUL |
| Sukkur | Pakistan | SKZ |
| Sumburgh (Shetland) | United Kingdom | LSI |
| Sun Valley (ID) | USA | SUN |
| Sundsvall | Sweden | SDL |
| Sunshine Coast | Australia | MCY |
| Surabaya - Juanda | Indonesia | SUB |
| Surat | India | STV |
| Suva - Nausori Airport (Luvuluvu) | Fiji | SUV |
| Swakopmund | Namibia | SWP |
| Sydney - Sydney Airport | Australia | SYD |
| Sylhet | Bangladesh | ZYL |
| Syracuse (NY) | USA | SYR |
| Tabuk | Saudi Arabia | TUU |
| Taif | Saudi Arabia | TIF |
| Taipei - Chiang Kai Shek | Taiwan | TPE |
| Taipei - Sung Shan | Taiwan | TAY |
| Taiyuan | Shanxi, PR China | TYN |
| Takamatsu | Japan | TAK |
| Talkeetna (AK) | USA | TKA |
| Tallahassee (FL) | USA | TLH |
| Tallinn - Pirita Harbour | Estonia | QUF |
| Tallinn - Ulemiste | Estonia | TLL |

| City/Airport | Country | IATA Code |
|---|---|---|
| Tampa - International (FL) | USA | TPA |
| Tampere | Finland | TMP |
| Tampico - Gen. F. Javier Mina | Mexico | TAM |
| Tamworth | Australia | TMW |
| Tangier - Boukhalef | Morocco | TNG |
| Taree | Australia | TRO |
| Targovishte | Bulgaria | TGV |
| Tashkent - International | Uzbekistan | TAS |
| Tawau | Malaysia | TWU |
| Tbilisi - Novo Alexeyevka | Georgia | TBS |
| Te Anau | New Zealand | TEU |
| Teesside, Durham Tees Valley | United Kingdom | MME |
| Tegucigalpa | Honduras | TGU |
| Tehran (Teheran) - Mehrabad | Iran | THR |
| Tekirdag - Corlu | Turkey | TEQ |
| Tel Aviv - Ben Gurion International | Israel | TLV |
| Telluride (CO) | USA | TEX |
| Temora | Australia | TEM |
| Tenerife | Spain | TCI |
| Tenerife - Sur Reina Sofia | Spain | TFS |
| Tenerife - Norte Los Rodeos | Spain | TFN |
| Tennant Creek | Australia | TCA |
| Terceira | Portugal | TER |
| Teresina | Brazil | THE |
| Termez (Termes) | Uzbekistan | TMZ |
| Terrace | Canada | YXT |
| Terre Haute (IN) | USA | HUF |
| Texarkana (AR) | USA | TXK |
| Thaba'Nchu | South Africa | TCU |
| The Pas | Canada | YQD |
| Thessaloniki - Makedonia Apt. | Greece | SKG |
| Thief River Falls (MN) | USA | TVF |
| Thira | Greece | JTR |
| Thiruvananthapuram | India | TRV |
| Thisted | Denmark | TED |
| Thompson | Canada | YTH |
| Thorne Bay (AK) | USA | KTB |
| Thunder Bay | Canada | YQT |
| Thursday Island | Australia | TIS |
| Tianjin | China | TSN |
| Tijuana - Rodriguez | Mexico | TIJ |
| Tioman | Indonesia | TOD |
| Tirana - Rinas | Albania | TIA |
| Tiruchirapally | India | TRZ |
| Tivat | Montenegro | TIV |
| Tobago | Trinidad and Tobago | TAB |
| Tokushima | Japan | TKS |
| Tokyo | Japan | TYO |
| Tokyo - Haneda | Japan | HND |
| Tokyo - Narita | Japan | NRT |
| Toledo (OH) | USA | TOL |
| Tom Price | Australia | TPR |
| Toowoomba | Australia | TWB |
| Toronto - Billy Bishop Toronto City Airport | Canada | YTZ |

| City/Airport | Country | IATA Code |
|---|---|---|
| Toronto - Toronto Pearson International Airport | Canada | YYZ |
| Toronto | Canada | YTO |
| Tortola | British Virgin Islands | TOV |
| Touho | New Caledonia | TOU |
| Toulouse - Blagnac Airport | France | TLS |
| Townsville | Australia | TSV |
| Toyama | Japan | TOY |
| Trabzon | Turkey | TZX |
| Trapani | Italy | TPS |
| Traverse City (MI) | USA | TVC |
| Treasure Cay | Bahamas | TCB |
| Trenton/Princeton (NJ) | USA | TTN |
| Treviso | Italy | TSF |
| Tri-Cities Regional (TN) /VA | USA | TRI |
| Trieste | Italy | TRS |
| Tripoli - Tripoli International | Libya | TIP |
| Tromsoe | Norway | TOS |
| Trondheim | Norway | TRD |
| Tsumeb | Namibia | TSB |
| Tucson (AZ) | USA | TUS |
| Tulepo (MS) | USA | TUP |
| Tulsa (OK) | USA | TUL |
| Tunis - Carthage | Tunisia | TUN |
| Turbat | Pakistan | TUK |
| Turin | Italy | TRN |
| Turku | Finland | TKU |
| Tuscaloosa (AL) | USA | TCL |
| Tuxtla Gutierrez | Mexico | TGZ |
| Twin Falls (ID) | USA | TWF |
| Tyler (TX) | USA | TYR |
| Ua Huka | French Polynesia | UAH |
| Ua Pou | French Polynesia | UAP |
| Ube | Japan | UBJ |
| Uberaba | Brazil | UBA |
| Uberlandia - Eduardo Gomes Airport | Brazil | UDI |
| Ubon Ratchathani - Muang Ubon Airport | Thailand | UBP |
| Udaipur - Dabok Airport | India | UDR |
| Uden - Volkel Airport | Netherlands | UDE |
| Udon Thani | Thailand | UTH |
| Ufa | Russia | UFA |
| Uherske Hradiste | Czech Republic | UHE |
| Uige | Angola | UGO |
| Ujung Pandang - Hasanudin Airport | Indonesia | UPG |
| Ukhta | Russia | UCT |
| Ukiah (CA) | USA | UKI |
| Ulaanbaatar - Buyant Uhaa Airport | Mongolia | ULN |
| Ulan-Ude | Russia | UUD |
| Ulanhot | PR China | HLH |
| Ulei | Vanuatu | ULB |
| Ulsan | South Korea | USN |
| Ulundi | South Africa | ULD |
| Umea | Sweden | UME |
| Umiujaq | Canada | YUD |

| City/Airport | Country | IATA Code |
|---|---|---|
| Umtata | South Africa | UTT |
| Unalakleet (AK) | USA | UNK |
| Union Island | Saint Vincent and the Grenadines | UNI |
| Unst (Shetland Island) - Baltasound Airport | United Kingdom | UNT |
| Upala | Costa Rica | UPL |
| Upernavik - Upernavik Heliport | Greenland | JUV |
| Upington | South Africa | UTN |
| Upolu Point (HI) | USA | UPP |
| Uranium City | Canada | YBE |
| Urgench | Uzbekistan | UGC |
| Uriman | Venezuela | URM |
| Urmiehm (Orumieh) | Iran | OMH |
| Uruapan | Mexico | UPN |
| Urubupunga - Ernesto Pochler Airport | Brazil | URB |
| Uruguaiana - Ruben Berta Airport | Brazil | URG |
| Urumqi | Xinjiang, PR China | URC |
| Uruzgan | Afghanistan | URZ |
| Ushuaia - Islas Malvinas Airport | Argentina | USH |
| Utapao (Pattaya) | Thailand | UTP |
| Utica (NY) - Oneida County Airport | USA | UCA |
| Utila | Honduras | UII |
| Uummannaq | Greenland | UMD |
| Uzhgorod | Ukraine | UDJ |
| | | |
| V | | |
| Vaasa | Finland | VAA |
| Vaexjoe | Sweden | VXO |
| Vail (CO) | USA | EGE |
| Val d'Or | Canada | YVO |
| Valdez (AK) | USA | VDZ |
| Valdosta (GA) | USA | VLD |
| Valencia | Spain | VLC |
| Valencia | Venezuela | VLN |
| Valladolid | Spain | VLL |
| Valparaiso | Chile | VAP |
| Valverde | Spain | VDE |
| Van - Ferit Melen | Turkey | VAN |
| Vancouver - Vancouver International | Canada | YVR |
| Varadero | Cuba | VRA |
| Varanasi | India | VNS |
| Varkaus | Finland | VRK |
| Varna | Bulgaria | VAR |
| Vasteras | Sweden | VST |
| Velikiye Luki (Welikije Luki) | Russia | VLU |
| Venice - Marco Polo | Italy | VCE |
| Veracruz | Mexico | VER |
| Vernal (UT) | USA | VEL |
| Vero Beach/Ft. Pierce (FL) | USA | VRB |
| Verona (Brescia) Montichiari | Italy | VBS |
| Verona | Italy | VRN |
| Victoria | Canada | YYJ |
| Victoria Falls | Zimbabwe | VFA |
| Vidin | Bulgaria | VID |

| City/Airport | Country | IATA Code |
|---|---|---|
| Vientiane - Wattay | Lao PDR | VTE |
| Vigo | Spain | VGO |
| Villahermosa | Mexico | VSA |
| Vilnius | Lithuania | VNO |
| Virgin Gorda | Virgin Islands (British) | VIJ |
| Visalia (CA) | USA | VIS |
| Visby | Sweden | VBY |
| Vitoria | Spain | VIT |
| Vitoria - Eurico de Aguiar Salles Airport | Brazil | VIX |
| Vryheid | South Africa | VYD |
| Wabush | Canada | YWK |
| Waco (TX) | USA | ACT |
| Wagga | Australia | WGA |
| Walla Walla (WA) | USA | ALW |
| Wallis | Wallis and Futuna Islands | WLS |
| Walvis Bay | South Africa | WVB |
| Warrnambool | Australia | WMB |
| Warsaw - Frédéric Chopin | Poland | WAW |
| Washington DC - Baltimore Washington International | USA | BWI |
| Washington DC - Dulles International | USA | IAD |
| Washington DC - Ronald Reagan National | USA | DCA |
| Washington DC | USA | WAS |
| Waterloo IA | USA | ALO |
| Watertown (SD) | USA | ATY |
| Wausau/Stevens Point (WI) | USA | CWA |
| Weipa | Australia | WEI |
| Welkom | South Africa | WEL |
| Wellington | New Zealand | WLG |
| Wenatchee (WA) | USA | EAT |
| West Palm Beach (FL) | USA | PBI |
| West Yellowstone (MT) | USA | WYS |
| Westerland, Sylt Airport | Germany | GWT |
| Whakatane | New Zealand | WHK |
| Whale Cove, NT | Canada | YXN |
| Whangarei | New Zealand | WRE |
| White Plains (NY) | USA | HPN |
| Whitehorse | Canada | YXY |
| Whitsunday Resort | Australia | HAP |
| Whyalla | Australia | WYA |
| Wichita Falls (TX) | USA | SPS |
| Wichita (KS) | USA | ICT |
| Wick | United Kingdom | WIC |
| Wickham | Australia | WHM |
| Wien (Vienna) - Vienna International | Austria | VIE |
| Wiesbaden, Air Base | Germany | WIE |
| Wilkes Barre/Scranton (PA) | USA | AVP |
| Williamsport (PA) | USA | IPT |
| Williston (ND) | USA | ISL |
| Wilmington (NC) | USA | ILM |
| Wilna (Vilnius) | Lithuania | VNO |
| Wiluna | Australia | WUN |
| Windhoek - Eros | Namibia | ERS |

| City/Airport | Country | IATA Code |
|---|---|---|
| Windhoek - Hosea Kutako International | Namibia | WDH |
| Windsor Ontario | Canada | YQG |
| Winnipeg International | Canada | YWG |
| Wolf Point (MT) | USA | OLF |
| Wollongong | Australia | WOL |
| Woomera | Australia | UMR |
| Worcester (MA) | USA | ORH |
| Worland (WY) | USA | WRL |
| Wrangell (AK) | USA | WRG |
| Wuhan | Hubei, PR China | WUH |
| Wyndham | Australia | WYN |
| Xiamen | Fujian, PR China | XMN |
| Xi'an - Xianyang | Shaanxi, PR China | XIY |
| Yakima (WA) | USA | YKM |
| Yakutat (AK) | USA | YAK |
| Yakutsk | Russia | YKS |
| Yamagata, Junmachi | Japan | GAJ |
| Yamoussoukro | Côte d'Ivoire | ASK |
| Yanbu | Saudi Arabia | YNB |
| Yangon (Rangoon) - Mingaladon | Myanmar | RGN |
| Yaounde | Cameroon | YAO |
| Yellowknife | Canada | YZF |
| Yekaterinburg - Koltsovo Airport | Russia | SVX |
| Yichang | Hubei, PR China | YIH |
| Yokohama | Japan | YOK |
| Yuma (AZ) | USA | YUM |
| Zacatecas | Mexico | ZCL |
| Zadar | Croatia (Hrvatska) | ZAD |
| Zagreb - Zagreb Airport Pleso | Croatia (Hrvatska) | ZAG |
| Zakynthos | Greece | ZTH |
| Zaragoza | Spain | ZAZ |
| Zhob | Pakistan | PZH |
| Zinder | Niger | ZND |
| Zouerate | Mauritania | OUZ |
| Zurich (Zürich) - Kloten | Switzerland | ZRH |

# Appendix G Fault Management

In the table below:

- Sev (Severity) is mitigated by availability of an alternative media source.
- For messages with 2 severity values, the first is for a single COMM source configuration, second if additional media source(s) is available; for example, if VDL and SATCOM are available and VDL fails, then the Envoy can communicate over SATCOM.
- For items marked with an * (asterisk), if a configuration is loaded, severity is reduced to 2.
- I/R (Isolation/Recovery Cycles) represents the built-in attempts to isolate the fault and recover operation. If no recovery is possible without system interaction, the fault has 0 recovery cycles.

Additional instances of related lower priority faults are not added to the FAULT LOG until recovery or system restart resets the item causing the fault. For more information, see Section 6.2, FAULT LOG.

| ID | Name | Description | Sev | Type | I/R |
|---|---|---|---|---|---|
| 100 | SAM Application Software | Missing or Invalid Application software | 1 | Internal | 1/0 |
| 101 | DUKB Application Missing | Missing or Invalid Application software | 1 | Internal | 1/0 |
| 102 | VDLA Application Missing | Missing or Invalid Application software | 1 | Internal | 1/0 |
| 103 | VDL2 Application Missing | Missing or Invalid Application software | 1 | Internal | 1/0 |
| 104 | SAM Application CRC Mismatch | CRC calculation | 1 | Internal | 1/0 |
| 105 | DUKB Application CRC Mismatch | CRC calculation | 1 | Internal | 1/0 |
| 106 | VDLA Application CRC Mismatch | CRC calculation | 1 | Internal | 1/0 |
| 107 | VDL2 Application CRC Mismatch | CRC calculation | 1 | Internal | 1/0 |
| 108 | PM AC Configuration CRC Mismatch | Aircraft Config CRC calculation error in Personality Module | 1* | Internal | 1/0 |
| 109 | Application Incompatible | SAM and DUKB version Incompatible | 2 | Internal | 1/0 |
| 110 | Missing PM | Missing Personality Module | 1* | External | 1/0 |
| 111 | SAM to DUKB Interboard Communication | No interboard communications | 1 | Internal | 5/5 |
| 112 | Mode Options PDI CRC Failure | Invalid CRC check for MODE Options | 1 | Internal | 1/0 |
| 131 | FMC 619 Missing | ARINC 619 connection to FMC INOP | 2 | External | 30/30 |
| 132 | FMC EFIS Missing | FMC EFIS bus connection INOP | 2 | External | 30/30 |
| 133 | SATCOM 741 Missing | SATCOM 741 connection INOP | 2 | External | 30/30 |
| 134 | SATCOM 739 Missing | SATCOM 739 connection INOP | 2 | External | 30/30 |
| 135 | ARINC 619 connection missing | ARINC 619 connection INOP | 2 | External | 30/30 |
| 136 | 429 Critical Word Missing | Identify the missing critical 429 label | 2 | External | 30/30 |
| 137 | 429 Critical Word SSM | Identify the critical 429 label with SSM error | 2 | External | 5/5 |
| 144 | Keyboard Scan Test | Keyboard Scan test failure | 2 | Internal | 1/1 |
| 151 | HPI Config | HPI bus Configuration failure | 1, 2 | Internal | 1/0 |
| 152 | VDL No Radio | No communication to VDL | 1, 2 | Internal | 5/1 |
| 153 | VDL Low Power | RF Power Amplifier Low Power detected | 1, 2 | Internal | 1/0 |
| 154 | VDL VSWR High | High VSWR detected on RF | 1, 2 | Internal | 1/1 |
| 157 | VDL Tuning Parameter | VDL has missing tuning parameters | 1, 2 | Internal | 1/1 |
| 158 | Antenna Short | VDL Antenna Shorted | 1, 2 | Internal | 1/0 |
| 159 | Antenna Open | VDL Antenna Open | 1, 2 | Internal | 1/0 |
| 160 | VDL High Temp | VDL Over Temperature | -, 2 | Internal | 5/5 |
| 161 | VDL Low Temp | VDL Under Temperature | 2 | Internal | 5/5 |
| 188 | PM Configuration Version Verification | Verify PM Config Version is compatible | 1 | Internal | 1/0 |
| 189 | Verify TSAP Database exists | Verify TSAP database in PM | 2 | Internal | 1/0 |
| 190 | Verify TSAP Database CRC | Verify the TSAP Database CRC | 2 | Internal | 1/0 |
| 191 | Verify TSAP Version | Verify the TSAP Database Version is correct | 2 | Internal | 1/0 |
| 192 | All Annunciator Test Fail | Annunciator self-test failure | 2 | Internal | 3/0 |

| ID | Name | Description | Sev | Type | I/R |
|---|---|---|---|---|---|
| 193 | PM User Configuration CRC Mismatch | User Configuration CRC calculation error | 1 | Internal | 1/0 |
| 194 | DUKB to SAM Inter-Board Communications Failure | No inter-board communications | 1 | Internal | 5/5 |