



Pilot Handbook

U.S. Domestic En Route Controller Pilot Datalink Communication  
(CPDLC)

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## Table of Contents

<b>Table of Contents .....</b>	<b>2</b>
<b>1. Introduction.....</b>	<b>3</b>
<b>2. Pilot &amp; Flight Crew CPDLC Guidance .....</b>	<b>4</b>
<b>3. U.S. En Route CPDLC Deployment .....</b>	<b>6</b>
<b>4. Flight Crew/Operators En Route CPDLC Participation .....</b>	<b>7</b>
<b>5. Log On for En Route CPDLC Services.....</b>	<b>10</b>
<b>6. Initiation &amp; Management of En Route CPDLC Services.....</b>	<b>12</b>
<b>8. En Route CPDLC Route Messages .....</b>	<b>16</b>
<b>9. En Route CPDLC Altitude &amp; Speed Messages .....</b>	<b>20</b>
<b>10. Controller Uplink Cancellation.....</b>	<b>22</b>
<b>11. En Route CPDLC Termination, Transfer, &amp; Log Off.....</b>	<b>23</b>
<b>12. Emergency Messages .....</b>	<b>25</b>
<b>13. Watchlist.....</b>	<b>26</b>
<b>14. Quick Reference Card.....</b>	<b>27</b>
<b>Terms and Acronyms.....</b>	<b>30</b>
<b>ICAO Flight Plan Mask .....</b>	<b>31</b>

## 1. Introduction

The purpose of the guide is to assist pilots with basic concepts and description of En Route CPDLC services within the United States National Airspace System (NAS). While CPDLC avionics systems vary in operation and presentation of CPDLC messages, the examples provided in this document are generic in nature and used for illustrative purposes only. They must not be used in lieu of the guidance or instructions published in the manufacturer's avionics manuals or the FAA-approved Airplane Flight Manual for the operation of a specific CPDLC avionics system.

A companion to this document is a Quick Reference Card (QRC) intended for use in the aircraft to serve as a ready reference for using U.S. En Route CPDLC.

AC 90-117 furnishes guidance to operators and pilots desiring En Route CPDLC services within the U.S. NAS. Aircraft must be equipped with VDL Mode 2 multi-frequency capability to participate in En Route services. Part 91 operators do not require a Letter of Authorization for CPDLC operations within the U.S. domestic airspace. Part 121, part 135, and part 91K operators require OpSpec/MSpec A056 for CPDLC operations. Resources to assist new CPDLC operators in obtaining authorization are available on the FAA and Harris Corporation websites.

The contents of this document are taken from numerous official FAA sources concerning the Data Comm program in the U.S. NAS. These sources, some of which are listed below, are available on the Harris Corporation website and the FAA Flight Standards Service, Flight Operations Group - Data Communications website:

1. NAS Data Communications Guide v4.0
2. CPDLC End2End Description v1.1
3. CPDLC Flight Planning and Route Planning Guide v2.5
4. CPDLC Quick Reference Card for pilots
5. Frequently Asked Questions
6. Website: [www.dcis.harris.com](http://www.dcis.harris.com)

FAA Flight Standards:

[https://www.faa.gov/about/office\\_org/headquarters\\_offices/avs/offices/afx/afs/afs400/afs410/datacomm/](https://www.faa.gov/about/office_org/headquarters_offices/avs/offices/afx/afs/afs400/afs410/datacomm/)

1. AC 90-117 Data Link Communications
2. [Info 14012, Flight Plan Discrepancies and Amendment Filing Procedures](#)

## 2. Pilot & Flight Crew CPDLC Guidance

### Key Points:

- **EACH CPDLC CLEARANCE OR MESSAGE SENT BY ATC TO THE AIRCRAFT REQUIRES A RESPONSE**
  - Respond as soon as **possible** to all CPDLC messages
- **DO NOT USE FREE TEXT – Except EMERGENCY**
- Best practices, for multi-crewed aircraft:
  - Independently & silently review an uplinked CPDLC message sent to the aircraft
  - Agree on content & intent of CPDLC message
  - Confirm change & take the action: FMS or Flight Guidance Mode change, etc.
  - Confirm & agree before sending a CPDLC response, report, or request to ATC
- Responses to a CPDLC messages should be via CPDLC and responses to voice messages should be via voice.
- Air Traffic Control expects a response to CPDLC messages as **soon as possible**. This response should be within (1) minute, except when the CPDLC messages include a loadable route, in which case a response back is expected within three (3) minutes.

### When to use Accept/Wilco or Reject/Unable

Avionics systems may display either ACCEPT or WILCO for a positive response to the ATC message, and display either REJECT or UNABLE for a negative response to the ATC message. Respond REJECT/UNABLE to the CPDLC clearance when:

- The uplinked CPDLC clearance is not acceptable
- The FMS cannot load the route or load only part of the route and the flight crew was unable to resolve the clearance
- The FMS indicates inconsistencies or discontinuities with the route modification that are not addressed by En Route or terminal charts and that the flight crew is unable to resolve
- When company policies require the flight crew to obtain a new clearance

*Note: After responding with REJECT/UNABLE, use voice to clarify any loading failures, route discontinuities, or inconsistencies. Do not respond using free text.*

### When to use Standby

Select STANDBY only when a timely response is not practical. For example, when additional time is needed to assess the clearance. **STANDBY should not be a standard response to every uplink, it does not close the CPDLC message.** A CPDLC message is closed when the crew responds ACCEPT/WILCO or REJECT/UNABLE. Selecting STANDBY does not change the expected response time.

### When to use Accept or Roger

Pilots receiving a FREE TEXT message uplinked from ATC must respond ACCEPT/ROGER.



## When to use FREE TEXT

**DO NOT SEND FREE TEXT TO THE GROUND/ATC unless part of an EMERGENCY MESSAGE.** The controller working the aircraft **will not** receive a FREE TEXT message sent from the aircraft. See *Section 12. Emergency CPDLC Messages* concerning use of FREE TEXT with emergency messages sent to ATC.

## Using Pre-formatted REPORTS

Some CPDLC messages sent by ATC to the aircraft require a report back from the aircraft, for example, the CONFIRM ASSIGNED ALTITUDE (CAA) CPDLC message. These reports are pre-defined in the avionics as “REPORTS”, and for some avionics, may pre-fill with information extracted from the FMS or from the aircraft’s air data systems. Respond only using these pre-formatted REPORTs. Do not respond to the ATC CPDLC messages using FREE TEXT or append additional FREE TEXT with your response. However, if a CPDLC message is unclear or conflicting, always clarify with ATC using voice and then respond to the CPDLC message to close the message dialog.

### 3. U.S. En Route CPDLC Deployment

#### Key Points:

- En Route CPDLC is being deployed in the U.S. NAS
- ARTCC's where En Route CPDLC is in use will be identified by NOTAM and by HI & LO IFR En Route chart annotation
- The latest En Route CPDLC deployment map is located on the Harris Corporation website.  
Website: [www.dcis.harris.com](http://www.dcis.harris.com)

#### Where En Route Services are provided

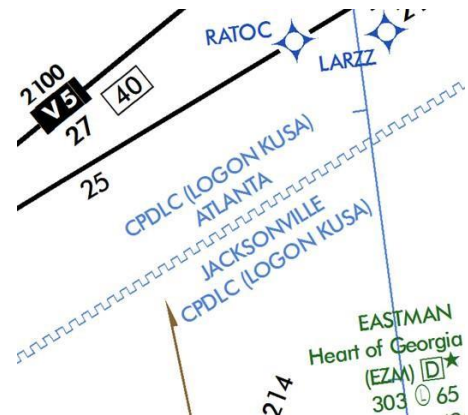
Only Air Route Traffic Control Centers (ARTCC – e.g. “Washington Center”) will provide En Route CPDLC services. CPDLC services are not provided while operating within a Terminal Radar Approach Control (TRACON) (e.g. “Potomac Approach”). If a route or altitude will enter a TRACON facility airspace, En Route CPDLC services may be terminated prior to entering the terminal airspace. Upon exiting the TRACON airspace, En Route CPDLC services will begin again with the receiving ARTCC.

#### Notification of Deployment

When an ARTCC begins 24/7 En Route CPDLC services, a NOTAM will be issued followed by an annotation on the ARTCC boundary depiction on the U.S. HI and LO IFR En Route charts with the correct CPDLC logon: “KUSA”.

#### Discretion to use CPDLC Services

Using CPDLC is at the controller's discretion. If the controller uses voice to communicate with the aircraft, pilots must respond using voice and not use CPDLC. Pilot desiring not to use En Route CPDLC services should not logon to KUSA.



## 4. Flight Crew/Operators En Route CPDLC Participation

### Key Points:

- Include in Field 7 the aircraft registration or Flight ID (approved FAA/ICAO designator)
- If no Flight ID, flights must use the tail number for Field 7
- Include "J4" in Field 10 to indicate VDL Mode 2 Capability
- Field 18 or "Other Information" field must include:
  - DAT/FANSE to signify desire for En Route CPDLC within U.S. Airspace
  - Some aircraft may require "DAT/FANSER"
    - Refer to OEM or AC-90-117 for more details
  - Aircraft Registration number (REG/) (e.g. REG/N123HS)

*Note: Harris Corporation has published a CPDLC Flight Planning and Route Planning Guide v2.5 to support En Route CPDLC.*

### Field 7 & Field 18

When filing a flight plan ensure that the aircraft's registration or your FAA/ICAO approved Flight ID are included in Field #7. The aircraft must be equipped with a FANS 1/A or FANS 1/A+ avionics system using VHF Datalink (VDL) Mode 2 and file the code "J4" in Item 10a. This is the only permitted CPDLC media type as per AC 90-117.

In Item 18, ensure that the Registration Number is included in the REG/ entry field. In addition, the pilot/operator must file either "DAT/FANSE" or "DAT/FANSER" in Item 18 to participate in U.S. domestic En Route CPDLC.

The diagram illustrates a flight plan form with the following fields and values:

- Field 3:** MESSAGE TYPE (Type de message) - FPL
- Field 7:** AIRCRAFT IDENTIFICATION (Identification de l'aéronef) - HRRS123
- Field 8:** FLIGHT RULES (Règles de vol) - SDGE3J3J4
- Field 10:** EQUIPMENT (Équipement) - SDGE3J3J4
- Field 13:** DEPARTURE AERODROME (Aérodrome de départ) - KJFK
- Field 15:** CRUISING SPEED (Vitesse croisière) - 250
- Field 16:** DESTINATION AERODROME (Aérodrome de destination) - KMCO
- Field 18:** OTHER INFORMATION (Remarques divers) - REG/N123HS DAT/1FANSE2PDC

Annotations:

- Field 7:** FLIGHT ID HRRS123
- Field 18:** Registration/Tail Number N123HS

### FANSER Aircraft

"DAT/FANSER" identifies a small group of aircraft with an FMS that is unable to load a STAR when a route CPDLC message is uplinked to the aircraft or require landing runway information to load. Operators should confirm with their OEMs concerning the need to file DAT/FANSER.

## Filing Hierarchy

Operators/pilots who file DAT/1FANSE or DAT/1FANSER will also receive Datalink Clearances (DCL) at those airports where DCL is provided. In order to identify a preference of DCL or PDC clearances, see AC 90-117, Appendix D, for filing options.

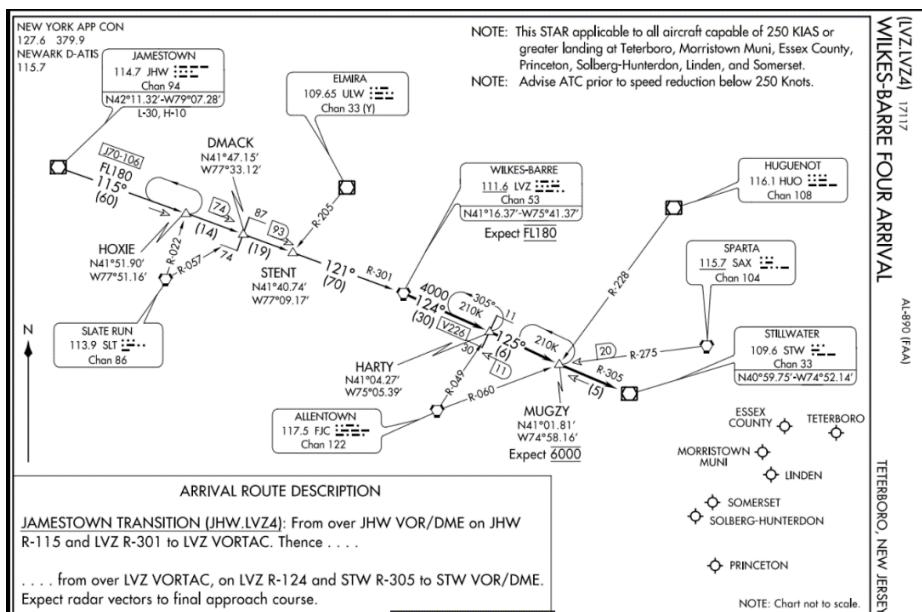
*Note: For inoperative FANS equipment remove FANSE or FANSER from Field 18 (DAT/) when filing a flight plan.*

## Filing Considerations

When filing or amending a flight plan for U.S. Domestic En Route CPDLC operations, consider the following:

1. If there is any change to a flight plan **(including aircraft/tail)**, cancel the old flight plan, receive acknowledgment of cancellation, then file a new flight plan.
2. SIDs and STARs:
  - Must be valid
  - SID/STARs must begin and/or end at the common route fix or published transition fix.

### EXAMPLE:



Using KTEB as an example, although not the only one, the Wilkes-Barre Four (LVZ4) STAR from the west has a transition starting over the Jamestown VOR (JHW). ZOB when aircraft spacing permits, often clears aircraft direct to the HOXIE intersection, the first fix beyond JHW. ZOB does this with such regularity that pilots often just file direct to HOXIE direct to LVZ. In fact, some flight planning providers even offer this as an option even though HOXIE is not a transition on the LVZ4 STAR.





**DON'T:** FILE DCT HOXIE

**DO:** FILE DCT JHW JHW.LVZ4

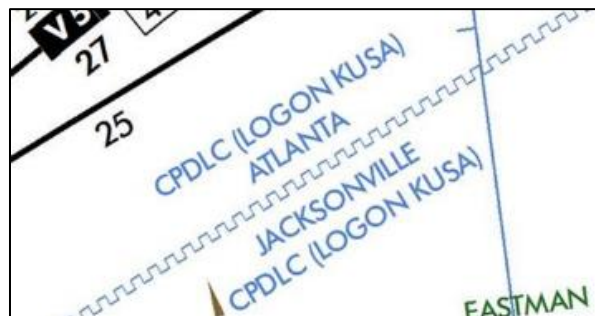
3. Avoid filing:

- NAVAID radials
  - i.e. ABQ092R, AIR111
- Airway to airway junctions
  - i.e. J4 J5 (needs a fixe between airways)
- Unpublished points (ghost fixes)
- Multiple Flight Plans

## 5. Log On for En Route CPDLC Services

### Key Points:

- **Verify Registration Number or Flight ID (as entered on Field #7 of the ICAO Flight Plan),** departure airport, and destination airport are confirmed to be entered correctly on the flight plan before logging on.
  - If the flight doesn't have a Flight ID, use aircraft registration in lieu of.
- Log on using "KUSA"
- Logon is possible up to 4 hours prior to proposed departure time or entry into U.S. airspace.
  - At DCL airports: Log on at least 30 minutes prior to filed departure time to obtain DCL.
  - At Non DCL airport(*excluding Alaska and Hawaii*): Logon is at the pilot's discretion. If network coverage is available, the logon may be attempted on the ground, otherwise, log on once airborne. If a connection is established while on the ground, CPDLC services will not be provided until airborne within an active center.
    - It's usually up to the pilot when they want to log on if they are taking off from a Non DCL airport.
    - Alaska and Hawaii are not included in KUSA. DCL Logons will receive a rejection message at these airports.
- A successful session is indicated on the Logon/Status Page by the Current Data Authority (CDA) (e.g. "ACT CTR, "ACTIVE ATC" or similar) showing "KUSA" (see OEM Guidance Material). The logon will remain accepted until the session is established.
  - For DCL this is about 30 minutes before proposed departure
  - For En Route, it is when entering active airspace
- Do not re-log on if the CDA shows "KUSA"
- To establish a CPDLC session in U.S. domestic airspace, use the single National Data Authority single identifier (KUSA). A logon is required only once per flight unless LOGON FAIL or RELOGON MESSAGE is displayed. Attempting additional logons will terminate an existing CPDLC session in En Route airspace. Unless you receive a LOGON FAIL or RELOGON MESSAGE, do not re-logon.



## Logon Verification & Procedures

Before logging on to KUSA, verify the following flight-specific information:

1. Flight identification is identical to Field 7 of the flight plan
2. Aircraft registration is identical to REG/ field in Item 18 of the flight plan.
3. Check that the Current Data Authority (CDA) shows "KUSA". Depending on the avionics system, the Current Data Authority field is shown in the "CDA", "ACT CTR", "ACTIVE CENTER", "ACTIVE ATC" field.

**DO NOT RE-LOGON if the CDA shows "KUSA"**



## 6. Initiation & Management of En Route CPDLC Services

### Key Points:

Except when departing a DCL airport with a session, start of CPDLC services begin with welcome message:

“CONFIRM CPDLC CONTACT WITH KUSA. ROGER/ACCEPT THIS MESSAGE”

- Respond to the welcome message with ROGER/ACCEPT
- CPDLC services transfer from ARTCC to ARTCC
  - Not supported while in TRACON airspace
- “NO COMM” is usually a temporary loss of datalink communications between the aircraft data comm radio and the ground within the NAS. It does not log you off KUSA.
  - Verify CDA is still “KUSA”, if so, no immediate action is required. DO NOT ATTEMPT TO LOGOFF AND RE-LOGON.
  - Follow published aircraft no comm procedures, if available. Let the aircraft data comm radio and/or ground systems resolve the issue. Await re-connection with the ground. Use voice for ATC communications until reconnection is confirmed.

### CDA & Activation of En Route CPDLC

The CDA will remain “KUSA” while operating within U.S. domestic airspace. An active CPDLC session will transfer as the aircraft flies from one ARTCC to another.

If the aircraft is departing from an airport with DCL services, the ARTCC controller may begin CPDLC messaging once the aircraft is transferred into the ARTCC airspace. In this case, no welcome message is sent to the aircraft since CPDLC services were established on the ground.

If the aircraft is not departing from a DCL airport and the aircraft has logged on to KUSA, CPDLC services will begin once the aircraft is under the control of ARTCC and the aircraft is at safe altitude to begin receiving CPDLC clearances. The aircraft will receive a welcome message.

While operating within TRACON airspace, the CDA will remain “KUSA” but CPDLC services are not supported until the aircraft re-enters ARTCC airspace. Any CPDLC messages sent from the aircraft to ATC receive the response “UNABLE” and the message “CPDLC NOT IN USE UNTIL FURTHER NOTIFICATION”.

As the flight progresses from one ARTCC facility or from one ARTCC sector to another, a CONTACT CPDLC message is uplinked to the aircraft providing the next ARTCC frequency. Respond “ROGER/ACCEPT” to the CPDLC message, set the new ATC frequency, then use standard voice procedures to establish contact with the new controller.

## NO COMM or DATALINK LOST

“NO COMM”, “DATALINK LOST”, or similar messages indicates a temporary loss of datalink communications with the ground. **Verify CDA is still “KUSA”**. If so, no immediate action is required. Follow published aircraft procedures, if available. Await re-connection with the ground and use voice for ATC communications until reconnection is confirmed. **DO NOT RE-LOG ON TO “KUSA”**.



During the period where “NO COMM” or similar message is displayed, pilots should revert to voice for all communications with ATC, if necessary. CPDLC messages cannot be sent from the aircraft to the ground and vice versa during a “NO COMM” period.

If NO COMM state continues, the active CPDLC session maybe terminated, the CDA will clear, and the logon with “KUSA” is terminated. An “ATC COMM TERMINATED” or similar message is displayed. Pilots may now attempt to re-log on to “KUSA”.



## 7. ATC Clearances and Pilot Requests Using CPDLC

### Key Points:

- ATC can use CPDLC to issue common ATC clearances and transfer of communication changes.
- ATC can request a REPORT from the aircraft.
  - Respond using the pre-formatted REPORT page
  - **DO NOT** respond using FREE TEXT
- **DO NOT send request using FREE TEXT.** These will be rejected by the ground system and are not displayed to the controller.
- **DO NOT** send a second request when you have not received a response to a previous request.

### Initial CPDLC Services

Initially, ATC may use CPDLC to send these types of messages and clearance to the aircraft:

- Transfer of Communications & Initial Check-In
- Altimeter Settings
- Altitude or Altitude with a Speed (including pilot discretion climb/descent)
- Controller Initiated Re-routes
- Direct-to-Fix clearances

### Pre-formatted CPDLC requests

- REQUEST DIRECT TO [position] – position must be on the current ATC-assigned route
- REQUEST [altitude] – Do not use block altitudes
- REQUEST VOICE CONTACT
- EMERGENCY MESSAGES

**Using any other pre-formatted REQUEST will generate an error message sent to the aircraft.** If the request is not covered by one of the four pre-formatted REQUESTs (see above), use voice to make your request.

**Send only one request at a time.** Do not send multiple requests in the same CPDLC downlink message to ATC (such as Request Direct to ABC and Request Climb to 350). The FAA ground system will respond “UNABLE” these multiple requests.

Do not use FREE TEXT as a substitute for other pre-formatted messages (e.g. CONFIRM ASSIGNED ALTITUDE (CAA)) or to send other comments, inquires, or requests to ATC. Sending a FREE TEXT CPDLC message to ATC will not be displayed to the controller and will result in the following message being sent to the aircraft:

“MESSAGE NOT DELIVERED. FREE TEXT/DUE TO REASON NOT SUPPORTED. CONTACT ATC OR RESEND REQUEST”

The flight crew must review any UNABLE message sent by ATC. If there is a FREE TEXT explanation of “DUE TO WEATHER” appended to the message, the flight crew must ACCEPT/ROGER the message to close the transaction.

### Pre-Formatted Message Exceptions

There are only two (2) pre-formatted “Due To” explanation messages that are accepted by the FAA’s ground system.

1. “Due To Weather”
2. “Due To Performance”

These may be appended to a REJECT/UNABLE response to an ATC CPDLC clearance or to CPDLC REQUEST (single altitude or direct to fix) message sent by the flight crew to ATC.

Do not append additional FREE TEXT commentary to the CPDLC REJECT/UNABLE response or REQUEST message.



### Sending ATC a Request with an Open CONTACT CPDLC Message

If the pilot sends a REQUEST to ATC with an open transfer of communications CONTACT message requesting the pilot establish contact with the same ARTCC (e.g. one Kansas City sector to another Kansas City sector), the request is forwarded to the receiving sector and will remain open and available to the next controller.

If the REQUEST is sent with an open CONTACT message to a different ARTCC (e.g. transfer of control from Kansas City ARTCC to Chicago ARTCC), the ground system cannot forward the message. The ground system will send:

UNABLE + “REQUEST AGAIN WITH NEXT ATC UNIT”

### Multiple Message Elements in a Single Request from the Aircraft

Do not send multiple requests in a single downlink. For example, sending a REQUEST DESCENT TO FL300 and REQUEST DIRECT TO PVD in the same message to ATC. The FAA ground system will respond UNABLE and send the FREE TEXT message “DOWNLINK MESSAGE NOT SUPPORTED”.

All pilot requests should be in the form a single REQUEST CPDLC message to ATC. For example, the pilot should send a REQUEST DESCENT TO FL300 and then send a separate REQUEST DIRECT TO PVD. ATC can then respond individually to each CPDLC REQUEST message.

## 8. En Route CPDLC Route Messages

### Key Points:

- Route clearances that ATC can issue via CPDLC:
  - Direct-to-fix: PROCEED DIRECT TO [position]
  - Re-route to a fix on your cleared route: CLEARED TO [position] VIA [route clearance]
  - Full route clearance: CLEARED [route clearance]
- Pilots may only request direct-to a fix if that fix is on their active flight plan.
- Load route clearance sent by ATC into the FMS.
  - Use FANS 1/A Load prompt to insert ATC uplinked clearance into the FMS.
    - Manually load STAR and STAR transitions, when required.
  - Review new route clearance
  - If acceptable, activate/execute the route clearance modification in the FMS.
  - Then, respond ACCEPT/WILCO or REJECT/UNABLE as appropriate.

### Re-route Requests

U.S. En Route CPDLC allows re-routes to be accomplished with both flight crew-initiated requests and controller initiated uplinks. Flight crew-initiated route requests are limited to “Direct-To-Fix” requests on the active flight plan.

### Push to Load Function

CPDLC allows route messages sent by ATC to be directly loaded into the FMS (“Push-to-Load”), a function that is required to use CPDLC within the U.S. NAS. The flight crew must use this capability to minimize the potential for data entry errors when executing clearances involving a loadable route.

A FREE TEXT message “REST OF ROUTE UNCHANGED” is appended to any CPDLC route clearance message that does not include the destination airport.

Re-routes required for traffic management purposes include the FREE TEXT message “TRAFFIC FLOW MANAGEMENT REROUTE”.

Except for a PROCEED DIRECT TO [position] uplink, CPDLC re-route uplinks have a FAA-produced FREE TEXT route string representing the changed portion of the CLEARED ROUTE included at the end of the route clearance message to assist in route and leg verification procedures:

----- FOD KG75M DAFLU J70 LVZ LENDY6 KJFK (Full Reroute)

----- CLEARED TO DAFLU VIA FOD KG75M DAFLU (Partial Reroute)

In the event the FAA produced route string exceeds 256 characters, the free text route will be truncated with a “./.” with the destination airport as the last piece of information (e.g. J70 LVZ ./ KJFK).



However, the route that is loaded into the FMS is the ATC cleared route. Resolve any discrepancies between this FREE TEXT route string and the loaded route with ATC via voice.

### Types of Route Clearances

There are three types of route clearances presently issued using CPDLC:

- **PROCEED DIRECT TO [position]** – Clearance to a point (fix, NAVAID, etc.) on the current ATC assigned route. When the [position] is any fix other than the destination the clearance will include the FREE TEXT CPDLC “REST OF ROUTE UNCHANGED”. Pilot action is required to execute the direct-to-fix change within the FMS.

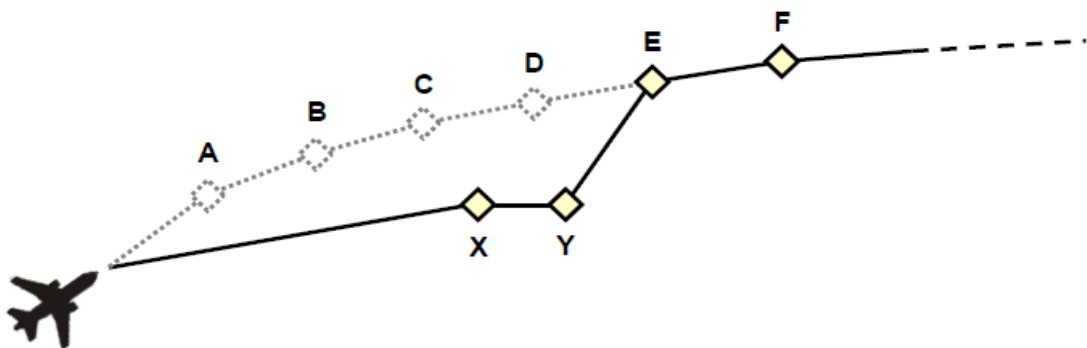


The [position] in a Direct-To-Fix uplink must be on the currently cleared route.

Example:

PROCEED DIRECT TO RBV. REST OF ROUTE UNCHANGED

- **CLEARED TO [position] VIA [route clearance]** – This is a revised route clearance to a point (fix, NAVAID) that is on the current route and ATC clearance. This CPDLC message will also include the FREE TEXT CPDLC “REST OF ROUTE UNCHANGED”.



In the figure above, ATC uplinks the clearance CLEARED TO [E] VIA [X Y] to the aircraft using CLEARED TO [position] VIA [route clearance]. There is no discontinuity at E because the uplink fix (E) is in the existing cleared flight plan.

Example:

CLEARED TO SAWED VIA ROUTE  
CLEARANCE  
REST OF ROUTE UNCHANGED  
----- CLEARED SAWED VIA VCN SBY  
SAWED

or

CLEARED TO SAWED VIA VCN SBY  
SAWED  
REST OF ROUTE UNCHANGED  
----- CLEARED SAWED VIA VCN SBY  
SAWED

*Note: Some systems may display only the message “CLEARED TO XXX VIA ROUTE CLEARANCE” and the pilot must load the route into the FMS to see/verify the modified route or re-clearance via their Nav Display. Other aircraft may display the actual uplinked route received from ATC. FAA’s FREE TEXT is intended to help resolve any ambiguity.*

- **CLEARED [route clearance]** – This clearance represents **a new route** that is different from the filed route or the previous routing issued by ATC. This CPDLC route will always include the routing to the destination airport. This uplink is a route replacement; loading this uplink will cause the FMS to delete your entire active flight plan from the aircraft to the destination and replace it with the uplinked flight plan. It may also delete performance data along with En Route wind & temperature data.

Example:

CLEARED ROUTE CLEARANCE  
----- CLEARED YAZUU EMJAY J174 ORF  
ISO J121 CHS J79 OMN.HILEY6 KMIA.

or

CLEARED YAZUU EMJAY J174 ORF ISO  
J121 CHS J79 OMN.HILEY6 KMIA.  
----- CLEARED YAZUU EMJAY J174 ORF  
ISO J121 CHS J79 OMN.HILEY6 KMIA.

*Note: Some systems may display only the message “CLEARED ROUTE CLEARANCE” and the pilot must load the route into the FMS to see/verify the new/modified route clearance on the nav display. Other aircraft may display the actual uplinked route received from ATC. FAA’s FREE TEXT is intended to help resolve any ambiguity.*

**PILOTS MUST MANUALLY LOAD THESE ROUTE ELEMENTS** (exceptions to the “Push-to-Load” functionality):

1. STAR runway-dependent transitions (normally selected by loading the approach)
2. STARs only when prompted by the CPDLC message “MANUALLY LOAD ARRIVAL [STAR Name]” (Aircraft that file “DAT/FANSER” due to known STAR loading issues)

CLEARED ROUTE CLEARANCE

**MANUALLY LOAD ARRIVAL OMN.HILEY6.**

CLEARED YAZUU EMJAY J174 ORF ISO J121 CHS J79 OMN.HILEY6 KMIA.

CLEARED ROUTE CLEARANCE  
MANUALLY LOAD ARRIVAL  
OMN.HILEY6.  
----- CLEARED YAZUU EMJAY J174 ORF  
ISO J121 CHS J79 OMN.HILEY6 KMIA.

After using the “Push-to-Load” functionality to load CPDLC route clearance, pilots may need to update or re-initialize performance, route wind/temperature data, and airport/alternate data in the FMS.

If no load prompt is displayed on the FMS (e.g. no “LOAD”, “APPLY”, “INSERT” or “ACTIVATE” prompt displayed), this may indicate a partial clearance load, or that a load failure exists. It is possible that the route sent has an unresolvable discontinuity, a partial load occurred, or a failure exists within the system. The crew may select STANDBY and attempt to resolve the discontinuity using approved procedures. Otherwise, respond REJECT/UNABLE to the CPDLC message sent by ATC and revert to voice.

If the fix cleared to in the route clearance is too close to the aircraft’s position, or behind the current position, contact ATC via voice for further guidance **before accepting or rejecting the clearance.**

## 9. En Route CPDLC Altitude & Speed Messages

### Key Points:

- Altitude clearances may be issued by ATC via CPDLC
  - Climb Via & Descend Via clearances are not issued using CPDLC
  - DCL may include a Climb Via clearance (but recall that SIDs must be manually inserted).
- Pilots may request **a single altitude** as a final, or as a climb or descent
- DO NOT use FREE TEXT to request an altitude
- CPDLC will be used to send the current local altimeter setting when below FL180 or assigned an altitude that is below FL180. You must ACCEPT/WILCO this altimeter setting CPDLC message
- ATC may send a CONFIRM ASSIGNED ALTITUDE (CAA) CPDLC message.
  - Pilots must use the FANS 1/A REPORT function to send this report
  - DO NOT respond using FREE TEXT

### Types of Altitude and Speed Messages

ATC may send the following CPDLC altitude instructions to an aircraft:


- MAINTAIN [altitude]
- CLIMB TO AND MAINTAIN [altitude]
- DESCEND TO AND MAINTAIN [altitude]
- EXPEDITE CLIMB TO [altitude]
- EXPEDITE DESCENT TO [altitude]
- IMMEDIATELY CLIMB TO [altitude]
- IMMEDIATELY DESCEND TO [altitude]
- CROSS [position] AT AND MAINTAIN [altitude]
- CROSS [position] AT AND MAINTAIN [altitude] AT [speed]

ATC may include “AT PILOTS DISCRETION” to an uplinked altitude message.

Pilots/Flight Crews may send the following CPDLC altitude REQUESTS to ATC:

- REQUEST [altitude] – Single altitude only. Cannot request a block altitude
- REQUEST CLIMB TO [altitude]
- REQUEST DESCENT TO [altitude]

*NOTE: Some aircraft may only have a single flight crew selectable altitude request. The avionics will send the appropriate clearance request e.g. REQUEST CLIMB TO [altitude] or REQUEST DESCENT TO [altitude] based on aircraft automation.*



Pilots **may not** append “AT PILOTS DISCRETION” to an altitude REQUEST message sent to ATC using the FANS 1/A REQUEST page. However, pilots may use these preformatted message explanations:

- “Due to Weather”
- “Due to Performance”

**DO NOT USE ANY OTHER PRE-FORMATED MESSAGES OR ADD FREE TEXT TO THE REQUEST.** Revert to voice with any other request or explanation.

If the aircraft is below FL180 or assigned an altitude below FL180, ATC will send a CPDLC altimeter setting message. Pilots must ACCEPT/ROGER the CPDLC message.

The En Route CPDLC provided altimeter setting is not to be used for final approach. Use normal altimeter setting procedures when conducting approach maneuvers within TRACON or Tower airspace. In the event a Remote Altimeter Setting Source (RASS) is required for operations into a facility’s airspace/approach flight crews should use approved procedures in obtaining the appropriate RASS before commencing such operations.

When a controller requires a verification of assigned altitude, the controller may send a CONFIRM ASSIGNED ALTITUDE (CAA) request to the aircraft. The flight crew will select the requested REPORT and respond with an ASSIGNED ALTITUDE report indicating their assigned altitude, which may be the altitude set in the altitude pre-selector.

**DO NOT USE FREE TEXT TO REPORT ASSIGNED ALTITUDE.**

ATC will not use CPDLC to issue “Climb Via” or “Descend Via” clearances, which are not currently supported by the CPDLC message set defined by the ICAO Global Data Link Manual. Pilots should expect “Climb Via” and “Descend Via” clearances via voice.

## 10. Controller Uplink Cancellation

### Key Points:

- ATC will cancel a CPDLC clearance issued in error using voice.
- Phraseology:

DISREGARD CPDLC (type) CLEARANCE (description of clearance) AND SEND AN UNABLE (clearance)

*“American Fifty-Two, disregard CPDLC altitude clearance to flight level three five zero and send an unable. Climb and maintain flight level three one zero.”*

*“Delta Four Twenty-Three, disregard CPDLC route clearance direct Memphis and send an unable. Cleared direct Nashville, direct Memphis, rest of route unchanged.”*

In rare circumstances, a controller may need to override a CPDLC clearance sent to the aircraft and issue alternate control instructions. The CPDLC clearance being overridden may not have been received on the flight deck at the time of this voice communication. This phraseology tells the pilot exactly which clearance requires an UNABLE response.

## 11. En Route CPDLC Termination, Transfer, & Log Off

### Key Points:

- When En Route CPDLC is not in use by an ARTCC, aircraft receives message:

CPDLC NOT IN USE UNTIL FURTHER NOTIFICATION

- CDA will remain “KUSA” on Logon/status page
- No CPDLC messages except EMERGENCY REPORTS can be sent
- CPDLC sessions are automatically terminated by FAA when flight will no longer need CPDLC services.
- CPDLC sessions are automatically transferred between the U.S. domestic airspace border and international border when CPDLC is used in both airspaces.
- If CPDLC is not in use in the receiving airspace or the aircraft is not eligible for CPDLC services, CPDLC services are terminated at handoff.

### Non CPDLC Equipped Airspace

Except when operating in TRACON airspace or non-domestic airspace, aircraft are automatically notified when En Route CPDLC is not in use by an ARTCC and the following CPDLC message is sent to the aircraft:

CPDLC NOT IN USE UNTIL FURTHER NOTIFICATION

Flight crews have the option to terminate the use of CPDLC by logging off from “KUSA”, providing they have accepted/rejected all pending clearances that require a response. This also applies to military aircraft entering Special Use Airspace (SUA).

All accepted CPDLC clearances up to that point remain in force unless ATC issues an amended clearance.

### Aircraft Outbound from the U.S.

The FAA ground system will initiate a CPDLC transfer to an adjacent CPDLC enabled external facility (e.g. CZEG - Edmonton Center, Canada) automatically and without flight crew action. The FAA ground system sends a Next Data Authority (NDA) message to notify the aircraft avionics of the identity of the next Air Traffic Service Unit (ATSU) permitted to establish a CPDLC connection, for example, CZEG. When the aircraft is near the next ATSU’s airspace, a CONTACT CPDLC message is sent to the pilot(s). The next ATSU, CZEG, will establish connection with the aircraft and will be designated as the CDA.

If the aircraft enters adjacent Non-U.S. airspace (e.g. Mexico) where CPDLC services are not provided, or if the aircraft enters oceanic airspace but did not file as Satellite Communication (SATCOM) equipped in the flight plan, then flight crews can expect a termination of CPDLC services upon handoff via voice or via a CONTACT CPDLC message. Any future CPDLC connection must be initiated by the flight crew if desired.



## **Aircraft Inbound to the U.S.**

The FAA will coordinate with the adjacent FIRs and ensure that as soon as En Route CPDLC is in use at any ARTCC, NDA processing will occur in the adjacent FIR so the aircraft will automatically log on to KUSA and KUSA will become CDA upon transfer of control. The CPDLC welcome message is sent to the aircraft.

*Note: During the initial 2019 En Route CPDLC rollout, in some cases the CDA session with the adjacent FIR will be terminated prior to the NDA session being setup with the aircraft, because the first CPDLC enabled ARTCC is not a boundary ARTCC. In this case, the flight crew will receive an indication that the CPDLC session is terminated, rather than a change in CDA. The previous logon to KUSA will be removed from the avionics in some aircraft. When this occurs, the flight crew will need to manually log on to KUSA. When the aircraft approaches a CPDLC enabled ARTCC, session initiation will occur. The aircraft may never receive a session if they do not fly into a CPDLC enabled ARTCC.*



## 12. Emergency Messages

### Key Points:

- **VOICE REMAINS PRIMARY FOR EMERGENCY COMMUNICATIONS**
- Pilots can send a CPDLC EMERGENCY REPORT to ATC.
  - FREE TEXT can be used only with EMERGENCY messages, but only as a one-way aircraft to ground link (e.g. in case of loss of VHF voice radio capability).
- ATC will receive the CPDLC EMERGENCY REPORT, but will not acknowledge it using CPDLC.
- Pilot & controller will revert to voice to resolve the emergency.

### Emergency CPDLC Messages

The flight crew may send the following EMERGENCY CPDLC messages to ATC:

- PAN PAN
- MAYDAY MAYDAY
- [remainingfuel] OF FUEL REMAINING AND [remainingsouls] SOULS ON BOARD
- CANCEL EMERGENCY
- DIVERTING TO [position] VIA [routeclearance]
- OFFSETTING [distanceoffset] [direction] OF ROUTE
- DESCENDING TO [altitude]
- [freetext]



**FREE TEXT is permitted when sending an EMERGENCY REPORT. This is an exception to the general rule and anticipates situations where VHF voice radios may be unusable.**

When an emergency downlink is received, the En Route Controller can display and review the emergency message but is not able to acknowledge the emergency downlink via CPDLC. Flight crews can expect voice contact from the controller and both parties should use standard operating procedures to resolve the emergency condition.

If an aircraft is transiting airspace where a CPDLC session is not active, the emergency message will be made available to a supervisor of the En Route facility. In addition, the National CPDLC site will receive an alert that will be provided to the affected facility notifying that an Emergency downlink has been received.

## 13. Watchlist

### Overview

The Data Comm En Route Watchlist is used to track aircraft that are participating in US Domestic En Route CPDLC to ensure that aircraft operators are using the correct media and addressing issues with individual aircraft to ensure high performing En Route CPDLC service.

### Criteria to be added to watchlist

The following criteria are used for watchlist additions:

- 1. Site has documented 3 tickets (any issue) with a flight = “Repeat Offender”**
  - a. Associated Automation Issue Management System (AIMS) tickets
  - b. These tickets are submitted when a problem is encountered with CPDLC
- 2. Alternate Media Usage: (2) instances within 30 days = “Alternate Media Usage”**
  - a. An “instance” is defined as an individual tail using POA and/or SAT >50% of the flight, counted by each separate flight within a 24hr period
- 3. Any known Avionics Issue = “Known Issue”**
  - a. These avionics issues are known to the program to cause issues with En Route CPDLC
  - b. i.e. VDR Deafness, Pegasus I, etc.
- 4. Tail exhibits poor performance as an outlier to the rest of the operation = “Outlier”**

**Note:** Should a tail, that is already on the watchlist, meet any of the above criteria, that tail will be added to the blocked list.

### Removal

In order to be removed from the watchlist, a tail must perform without meeting any of the above criteria for 30 days.

## 14. Quick Reference Card

Below is the Quick Reference Card (QRC) which is a short and concise document that lists the best practices for using En Route CPDLC. This Quick Reference Card was designed to be referenced on the go, on an iPad or mobile device for pilots.

## En Route CPDLC Quick Reference Guide

### Flight Plan Requirements

- ✦ Verify Reg Number or Flight ID in Item 7
- ✦ Include in Item 10a "J4" to indicate VDL Mode 2 capability
- ✦ Verify REG/ and CODE/ in Item 18
- ✦ Include in Item 18 for En Route CPDLC:
  - "DAT/FANSE", or
  - "DAT/FANSER" for aircraft with STAR loading issues
  - May substitute "DAT/1FANSE2PDC" or "DAT/1PDCFANSE"

### On CPDLC LOGON STATUS PAGE/MENU

- ✦ Verify
  - Registration Number
  - Flight ID
- ✦ LOAD Flight Plan:
  - Departure Airport
  - Destination Airport
  - Route
  - SID/ODP & Dept. Runway
  - STAR

### Logon for DCL or CPDLC Services

- ✦ Log on using "KUSA"
  - DCL Airports: EDT - 30 minutes
  - Other Airports: EDT - 5 minutes

*If network coverage available, log on is accepted on the ground. Otherwise, log on is accepted once airborne and within network coverage.*

- ✦ Successful log on – CDA/ATC CTR shows "KUSA"
- ✦ Do not re-log on if CDA/ATC CTR shows "KUSA"

### Initiation & Management of En Route CPDLC Services

- ✦ Start of in-flight CPDLC services begins with welcome message:
 

"CONFIRM CPDLC CONTACT WITH  
KUSA. ROGER/ACCEPT THIS MESSAGE"

*Except when departing a DCL airport*
- ✦ Respond to the welcome message with  
ROGER/ACCEPT  
CPDLC services transfer from ARTCC to ARTCC  
*Suspended while operating in TRACON airspace*

### "NO COMM" or "DATALINK LOST"

*These indicate a temporary loss of datalink communications with the ground.*

- ✦ Verify CDA/ACT CTR is still "KUSA"
- ✦ If CDA/ACT CTR is "KUSA", no immediate action is required. DO NOT RE-LOGON
- ✦ Follow published aircraft procedures, if available. Await re-connection with the ground. Use voice for ATC communications until reconnection is confirmed
- ✦ If the NO COMM state continues for 16 minutes, then the active CPDLC session will terminate and the CDA will clear
- ✦ If CDA/ACT CTR does not show "KUSA", attempt re-log on. If not successful, contact ATC via voice

### Recommended Pilot/Flight Crew CPDLC Procedures

- ✦ Every CPDLC message sent by ATC requires a response
- ✦ Respond as soon as possible to all CPDLC messages
- ✦ Respond appropriately:
  - ACCEPT/WILCO/ROGER
  - REJECT/UNABLE
  - STANDBY

*If STANDBY selected, follow with a  
ACCEPT/REJECT or WILCO/UNABLE  
response*

  - Select REPORT
- ✦ When appropriate, for multi-crewed aircraft:
  - Independently & silently review an uplinked CPDLC message sent to the aircraft
  - Agree on content & intent of CPDLC message
  - Confirm change & take the action: FMS or Flight Guidance Mode change, etc.
  - Confirm & agree before sending a CPDLC response, report, or request to ATC

### ATC CPDLC Reports

- ✦ ATC can request a REPORT using CPDLC (e.g. CONFIRM ASSIGNED ALTITUDE)
- ✦ Respond using the pre-formatted REPORT page

#### Pilot Requests Using CPDLC

- + Send only these pre-formatted REQUESTS via CPDLC to ATC
  - REQUEST [altitude] – request a single altitude  
*Do not request block altitudes*
  - REQUEST VOICE CONTACT
  - REQUEST DIRECT TO [position] *position must be on the current ATC assigned route.*
  - EMERGENCY MESSAGES
- + DO NOT send any other pre-formatted REQUEST  
*They are not currently supported*
- + Send ONLY ONE REQUEST with each CPDLC message

#### CPDLC Route Messages

- + Route clearances issue via CPDLC:
  - PROCEED DIRECT TO [position]  
*Direct-to-fix*
  - CLEARED TO [position] VIA [route/clearance]  
*Re-Route to a fix on your current cleared route*
  - CLEARED [route/clearance]  
*Full Route Clearance – Replaces entire flight plan*
- + Load route clearance sent by ATC into the FMS
  - Select LOAD, APPLY, or INSERT new route into FMS
  - Manually insert Departure Procedures
  - Manually insert Arrival Procedures, when required
- + Review new route clearance
- + If acceptable, activate the new route clearance in the FMS, respond ACCEPT/WILCO
- + If not acceptable, respond REJECT/UNABLE

#### HELPFUL REMINDERS:

- NEVER USE FREE TEXT EXCEPT FOR AN EMERGENCY
- VOICE REMAINS PRIMARY FOR EMERGENCY COMMUNICATIONS
- ALWAYS REVERT TO VOICE TO CLARIFY IF THERE IS CONFUSION

#### CPDLC Altitude Messages

- + Use CPDLC to request a single altitude
- + ACCEPT/WILCO an altimeter setting CPDLC message
- + Respond to a CONFIRM ASSIGNED ALTITUDE REPORT request:
  - o Select & send ALTITUDE REPORT

#### CPDLC Termination, Transfer, & Log Off

- + “CPDLC NOT IN USE UNTIL FURTHER NOTIFICATION”
  - Indicates En Route CPDLC is not in use
  - CDA/ACT CTR remains “KUSA”
  - No CPDLC messages except EMERGENCY REPORTS can be sent
- + CPDLC sessions are automatically transferred between the U.S. domestic airspace and international FIR when CPDLC is used in both airspaces
- + If CPDLC is not in use in the receiving FIR, or the aircraft is not eligible for CPDLC services, CPDLC services are terminated at handoff

#### CPDLC Emergency Messages

- + **VOICE REMAINS PRIMARY FOR EMERGENCY COMMUNICATIONS**
- + Pilots may send a CPDLC EMERGENCY REPORT to ATC if voice is not be available
- + ATC will receive the CPDLC report but will not acknowledge it using CPDLC. ATC will attempt to contact the aircraft via voice
- + FREE TEXT can be used only with EMERGENCY messages, but only as a one-way aircraft to ground link – e.g., in case of loss of VHF voice radio capability

## Terms and Acronyms

### Acronym Definition

ACARS	Aircraft Communications Addressing and Reporting System
ACID	Aircraft Identification (Code)
ACK	Acknowledge
ADAR/PDAR	Adapted Departure-Arrival Route/Preferential Departure-Arrival Route
ADR/PDR	Adapted Departure Route/ Preferential Departure Route
ANSP	Air Navigation Service Provider
AOC	Airline Operations Center
ARTCC	Air Route Traffic Control Centers
ATC	Air Traffic Control
ATS	Air Traffic Services
ATSU	Air Traffic Services Unit
CAA	Confirm Assigned Altitude
CAF	Cleared As Filed
CDA	Current Data Authority
CPDLC	Controller-Pilot Data Link Communication
CSP	Communication Service Provider
DAT	Data Application information
DCIT	Data Comm Implementation Team
DCL	Departure Clearance
DCNS	Data Communications Network Service
DM	Departure Message
DP	Departure Procedure
DPP	Departure Procedure information (SID/Climb via and Climb out)
ERAM	En Route Automation Modernization
ERR	Error indicator
FAA	Federal Aviation Administration
FANS	Future Air Navigation System
FIR	Flight Information Region
FLID	Flight Identification
FMS	Flight Management System
FPL/FP	Flight Plan
FRC	Full Route Clearance
IATA	International Air Transport Association
IC	Initial Contact
ICAO	International Civil Aviation Organization
ID	Identification
IFR	Instrument Flight Rules
NAS	National Airspace System
NAVAID	Navigational Aid
NDA	Next Data Authority
PDC	Pre-Departure Clearance
REG	Registration
SATCOM	Satellite Communication
SID	Standard Instrument Departure
STAR	Standard Terminal Arrival Route
STBY	Standby indicator
TDLS	Tower Data Link System
TFM	Traffic Flow Management
TMU	Traffic Management Unit
TOC	Transfer of Communication
TRACON	Terminal Radar Approach Control
UM	Uplink Message
VDL	VHF Data Link
VHF	Very High Frequency

## ICAO Flight Plan Mask

PRIORITY Priorité FF		ADDRESSEE(S) Destinataire(s)	
FILING TIME Heure de dépôt		ORIGINATOR Expéditeur	
SPECIFIC IDENTIFICATION OF ADDRESSEE(S) AND/OR ORIGINATOR Identification précise du(des) destinataire(s) et/ou de l'expéditeur			
3 MESSAGE TYPE Type de message (FPL)	7 AIRCRAFT IDENTIFICATION Identification de l'aéronef H R R S 1 2 3	8 FLIGHT RULES Règles de vol	TYPE OF FLIGHT Type de vol
9 NUMBER Nombre	TYPE OF AIRCRAFT Type d'aéronef	WAKE TURBULENCE CAT. Cat. de turbulence de sillage	10 EQUIPMENT Équipement SDGE3J3J4
13 DEPARTURE AERODROME Aérodrome de départ K J F K	TIME Heure		
15 CRUISING SPEED Vitesse croisière	LEVEL Niveau	ROUTE Roule	
16 DESTINATION AERODROME Aérodrome de destination K M C O		TOTAL EET Durée totale estimée HR MIN	ALTN AERODROME Aérodrome de dégagement
18 OTHER INFORMATION Renseignements divers REG/N123HS DAT/1FANSE2PDC NAV/D1		2ND. ALTN AERODROME 2 <sup>e</sup> aérodrome de dégagement	
SUPPLEMENTARY INFORMATION (NOT TO BE TRANSMITTED IN FPL MESSAGES) Renseignements complémentaires (À NE PAS TRANSMETTRE DANS LES MESSAGES DE PLAN DE VOL DÉPOSÉ)			
19 ENDURANCE Autonomie E /	PERSONS ON BOARD Personnes à bord P /	EMERGENCY RADIO Radio de secours R / U V E	
SURVIVAL EQUIPMENT/Équipement de survie POLAR Polaire DESERT Désert MARITIME Maritime JUNGLE Jungle S / P D M J		JACKETS/Gilets de sauvetage LIGHT Lampes FLUORES Fluores UHF VHF J / L F U V	
DINGHIES/Canots NUMBER Nombre CAPACITY Capacité COVER Couverture COLOUR Couleur D / C			
AIRCRAFT COLOUR AND MARKINGS Couleur et marques de l'aéronef			
REMARKS Remarques N			
PILOT-IN-COMMAND Pilote commandant de bord C			
FILED BY/Déposé par			
SPACE RESERVED FOR ADDITIONAL REQUIREMENTS Espace réservé à des fins supplémentaires			