

# ALERT BULLETIN

AB 2023:18/11-2

10/4/2023

2002290, 2004683, 2008429, 2019030

TO: FAA (AFS-400)

INFO: FAA (AVP-1, ANG-1, AVP-200, AFS-900, AFS-280, AFS-100, AFS-200, Director of Air Traffic Operations - WSA, CSA, ESA (North and South)), A4A, ALPA, AOPA, APA, ASAP, ATSAP, ATSG, CAPA, ICAO, ICASS, IFALPA, NAFI, NATCA, NBAA, NTSB, RAA, SWAPA

FROM: Becky L. Hooley, Director  
NASA Aviation Safety Reporting System

SUBJ: CPDLC Domestic Operational Issues

We recently received ASRS reports describing a safety concern that may involve your area of operational responsibility. We do not have sufficient details to assess either the factual accuracy or possible gravity of the report. It is our policy to relay the reported information to the appropriate authority for evaluation and any necessary follow-up. We feel you should be aware of the following:

ASRS has received numerous reports from controllers, flight crews and dispatchers describing issues associated with the domestic Controller Pilot Data Link Communications (CPDLC) system.

(ACN 2002290) Captain reported the flight crew received a domestic CPDLC departure climb via clearance and mis-read the cleared altitude on the CPDLC format, resulting in an altitude deviation. ATC confirmed the cleared altitude on the SID with the flight crew, then re-cleared the flight to a higher altitude.

(ACN 2004683) Air carrier flight crew reported receiving three CPDLC messages in less than two minutes during the arrival phase. The flight crew flew the routing and the descent clearances but failed to transmit the acknowledgment message to ATC.

(ACN 2008429) Tower Controller reported a flight crew was confused about the departure clearance they received via CPDLC due to the confusing format.

(ACN 2019030) An air carrier pilot reported they received a reroute via CPDLC. They failed to read the whole message and loaded the route incorrectly causing them to deviate off course.

To properly assess the usefulness of our alert message service, we would appreciate it if you would take the time to give us your feedback on the value of the information that we have provided. Please contact Dr. Becky Hooley at (408) 541-2854 or email at [becky.l.hooley@nasa.gov](mailto:becky.l.hooley@nasa.gov).



Aviation Safety Reporting System  
P.O. Box 189 | Moffett Field, CA | 94035-0189



## ACN 2002290

### DATE / TIME

Date of Occurrence	202305
Local Time Of Day	1201 to 1800

### PLACE

Locale	A90.TRACON
State	NH
Altitude - MSL	2300

### AIRCRAFT / EQUIPMENT X

ATC / Advisory - TRACON	A90
Make Model Name	Light Transport, Low Wing, 2 Turbojet Eng
Operating Under FAR Part	91

### COMPONENT 1

Aircraft Component	Air/Ground Communication
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### COMPONENT 2

Aircraft Component	MCP
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### PERSON 1

Function - Air Traffic Control	Departure
Function - Flight Crew	Captain
Function - Flight Crew	Pilot Not Flying
ASRS Report Number	2002290

### EVENTS

Anomaly	ATC Issue - All Types
Anomaly	Conflict - Airborne Conflict
Anomaly	Deviation - Altitude - Excursion From Assigned Altitude
Anomaly	Deviation - Altitude - Overshoot
Anomaly	Deviation / Discrepancy - Procedural - Clearance
Anomaly	Deviation / Discrepancy - Procedural - Published Material / Policy
Detector - Automation	Aircraft Other Automation
Detector - Person	Air Traffic Control
Result - Flight Crew	Requested ATC Assistance / Clarification
Result - Air Traffic Control	Issued New Clearance

### NARRATIVE 1

We [had] a CPDLC (Controller Pilot Data-Link Communications) Pre-Departure Clearance, "CLEARED TO TEB ARPT BLZZR5 THEN AS FILED, CLIMB VIA SID, EXPECT 13000 ft." We both misread the clearances and understood it to be except 13,000 ft. We set the altitude preselector to 13,000 [ft]. When contacting Departure, I checked in with present altitude of 2300 [ft.] climbing to 13,000 [ft]. We received a TA with traffic that was above us. We thought it was due to climb rate, so we reduced the climb to avoid any further alerts. The Controller then asked what altitude we were climbing to and I repeated 13,000 ft. She then said we were given 5000 ft. and to continue climb to 13,000 [ft].

Suggest adding, "TOP ALTITUDE XXXXX," to the, "CLIMB VIA SID, TOP ALTITUDE 5000, THEN EXPECT," or eliminate, "EXPECT ALTITUDE," altogether, or change to, "REQUESTED ALTITUDE 10 MINS AFTER DEPARTURE." CPDLC Communications should be able to detect incorrect altitude in the ALT PRESELECTOR. Also, Controller should have caught that I was climbing to wrong altitude on the check in. We had just made a flight from ZZZZ. On their SID's, it requires you to check in with, "CALLSIGN, SID, CURRENT ALTITUDE, CLEARED ALTITUDE." Maybe we can add this domestically. Thanks for helping improve the system and eliminate opportunities for errors.

## **SYNOPSIS**

Captain reported the flight crew received a domestic CPDLC departure climb via clearance and mis-read the cleared altitude on the CPDLC format, resulting in an altitude deviation. ATC confirmed the cleared altitude on the SID with the flight crew, then re-cleared the flight to a higher altitude.

## ACN 2004683

### DATE / TIME

Date of Occurrence	202305
Local Time Of Day	0601 to 1200

### PLACE

Locale	ZAU.ARTCC
State	IL
Altitude - MSL	20000

### AIRCRAFT / EQUIPMENT X

ATC / Advisory - Center	ZAU
Make Model Name	Commercial Fixed Wing
Operating Under FAR Part	121

### PERSON 1

Function - Flight Crew	Captain
Function - Flight Crew	Pilot Flying
ASRS Report Number	2004683

### PERSON 2

Function - Flight Crew	First Officer
Function - Flight Crew	Pilot Not Flying
ASRS Report Number	2004671

### EVENTS

Anomaly	ATC Issue - All Types
Anomaly	Deviation - Altitude - Crossing Restriction Not Met
Anomaly	Deviation - Track / Heading - All Types
Anomaly	Deviation / Discrepancy - Procedural - Clearance
Anomaly	Deviation / Discrepancy - Procedural - Published Material / Policy
Detector - Person	Flight Crew
Result - Flight Crew	Overcame Equipment Problem

### NARRATIVE 1

In descent to MDW, we were handed off to a new ATC frequency via CPDLC acknowledged and checked in. MDW Center then sent us three CPDLC messages in less than two minutes. We received and acknowledged the first message to descend and maintain FL210. We heard the chime again and saw cross MEGGZ at 11,000 ft. I verified MEGGZ at 11,000 ft. in the FMC and on the MCP (Mode Control Panel) and thought that I acknowledged the CPDLC. We did not see the clearance to proceed direct MEGGZ which was sent also but in a separate message. We also had the ACARS chime in the midst of this for landing data as we were late to accomplish the Descent Checklist.

As we were descending through FL200, ATC inquired if we had received the direct MEGGZ and the cross MEGGZ at 11,000 ft. messages, because ATC was not showing an acknowledgment from us. We responded that we had received the crossing MEGGZ at 11,000 ft., but not the direct to MEGGZ. When we reviewed the CPDLC log page, we saw the direct to message which we hadn't acknowledged, and we saw that we hadn't actually acknowledged the descent to cross MEGGZ at 11,000 ft. either.

First, with expectation bias, I was not thorough when I heard the chime and saw the ATC message to ensure I didn't have more than one open ATC message. I also missed verifying on second page of the notification that I accepted. We should have been finished with receiving landing data prior to this stage of flight. Two recommendations regarding CPDLC; the ATC message should remain or flash if a message wasn't acknowledged, and if there is any way that the audible chime could be different from an ACARS chime that would also be helpful.

## **NARRATIVE 2**

About 20 miles south of PANGG through FL200, MDW Center called and asked if we received via CPDLC direct to MEGGZ and 11,000 ft. crossing restriction. We said that we received the crossing restriction but not the direct to MEGGZ. At the time of the communication, we were direct to PANGG, MEGGZ was next point on the arrival. We were set up to cross MEGGZ at 11,000 ft.

When we looked back through the log, we noticed that the two clearances were sent separately and at the same time. As a crew we acknowledged the crossing restriction but did not select ACCEPT on page 2. We failed to see and respond to the direct to MEGGZ clearance. After the ATC prompt we accepted the crossing restriction that we were already performing and then proceeded to MEGGZ. No further incident.

Need to continue to page 2 and accept. Need to make sure there are no new messages in the log. Aircraft should have an "ATC message" voice notification or something other than the standard ACARS tone. In a descent when we are picking up weather and landing information, it is hard to differentiate between all the tones and becomes a distraction.

## **SYNOPSIS**

Air carrier flight crew reported receiving three CPDLC messages in less than two minutes during the arrival phase. The flight crew flew the routing and the descent clearances but failed to transmit the acknowledgment message to ATC.

## ACN 2008429

### DATE / TIME

Date of Occurrence 202306  
Local Time Of Day 0001 to 0600

### PLACE

Locale ZZZ.Airport  
State US  
Altitude - AGL 0

### AIRCRAFT / EQUIPMENT X

ATC / Advisory - Tower ZZZ  
Make Model Name B737 Undifferentiated or Other Model  
Operating Under FAR Part 121

### COMPONENT 1

Aircraft Component Data Transmission and Automatic Calling

### PERSON 1

Function - Air Traffic Control Flight Data / Clearance Delivery  
ASRS Report Number 2008429

### EVENTS

Anomaly Aircraft Equipment Problem - Less Severe  
Anomaly ATC Issue - All Types  
Anomaly Deviation / Discrepancy - Procedural - Published  
Material / Policy  
Detector - Person Air Traffic Control  
Detector - Person Flight Crew  
Result - Flight Crew Requested ATC Assistance / Clarification  
Result - Air Traffic Control Provided Assistance

### NARRATIVE 1

CPDLC (Controller Pilot Data-Link Communications) clearance issue where the crew is confused by the format. Aircraft X called me at Clearance Delivery asking why they had climb via SID and no SID. I explained to them the format and hypothesized exactly what they had, describing the three pages, and where each element lies. They said they saw it now, had both missed it, and thanked me for clarifying. The difference in what is presented to us (ATC) versus what is presented to them (Flight Crews) is as varied as a child knowledge and a post graduate degree. There is inherent risk in over complicating technology in a safety related system, when a very large gap in technology and trainability exists. Feel free to share as you see fit. Change the CPDLC departure clearance format so it is intuitive and makes sense for the flight crews' flow, not for the engineers (easy assumption) who designed it.

### SYNOPSIS

Tower Controller reported a flight crew was confused about the departure clearance they received via CPDLC due to the confusing format.

## ACN 2019030

### DATE / TIME

Date of Occurrence	202307
Local Time Of Day	0601 to 1200

### PLACE

Locale	ZZZ.ARTCC
State	US

### AIRCRAFT / EQUIPMENT X

ATC / Advisory - Center	ZZZ
Make Model Name	B737-800
Operating Under FAR Part	121

### PERSON 1

Function - Flight Crew	Captain
Function - Flight Crew	Pilot Flying
ASRS Report Number	2019030

### EVENTS

Anomaly	Deviation - Track / Heading - All Types
Anomaly	Deviation / Discrepancy - Procedural - Clearance
Detector - Person	Air Traffic Control
Result - Flight Crew	Became Reoriented
Result - Flight Crew	Requested ATC Assistance / Clarification
Result - Flight Crew	Returned To Clearance
Result - Air Traffic Control	Issued New Clearance
Result - Air Traffic Control	Provided Assistance

### NARRATIVE 1

ATC issued a revised clearance via CPDLC. Clearance was - load new route to ZZZ. Rest of route unchanged. Free text stated ZZZZZ.ZZZ.../ZZZ1. I did not notice the route portion of the message because it was so short, and thought the clearance was only to proceed direct to ZZZ. First Officer (FO) did not notice the error either and programmed the FMC for direct ZZZ with abeams as I directed, without ZZZZZ. ATC noticed we had turned to ZZZ and not ZZZZZ, and asked if we were proceeding direct to ZZZ. He stated that he must not have sent the message correctly and then verbally cleared us Direct to ZZZ. I believe he was trying to be kind and let us off the hook. In seeing the CPDLC message "load new route to ZZZ" I simply assumed it was to go just direct ZZZ and failed to read all of the message and use the LOAD prompt to load the FMC from the CPDLC clearance. I wanted to manually program the FMC with the Direct in order to utilize the abeam waypoints function. Expectation Bias.

In the future I will be certain to read ALL of the incoming CPDLC message, ask for confirmation from other pilot and to use the Load new ROUTE function and then reverify the clearance from the CPDLC against the FMC before executing the new route in the FMC, using the pilot monitoring (PM) to verify the new clearance loaded correct.

### SYNOPSIS

An air carrier pilot reported they received a reroute via CPDLC. They failed to read the whole message and loaded the route incorrectly causing them to deviate off course.