Federal Aviation Administration

55054003 EN ROUTE RADAR ASSOCIATE CONTROLLER TRAINING PART C: ADVANCED CONCEPTS

Lesson 16: CPDLC Operations

Version: 1.0 2022.08

PAGE INTENTIONALLY LEFT BLANK

LESSON PLAN DATA SHEET

Course Name	En Route Radar Associate Controller Training Part C: Advanced Concepts
Course Number	55054003
Lesson Title	CPDLC Operations
Duration	2 hours, 30 minutes (includes lesson, part-task exercise, and ELT)
Version	1.0 2022.08
Reference(s)	JO 7110.65, Air Traffic Control; JO 7110.125, Controller Pilot Data Link Communications (CPDLC) in the ERAM Environment; TI 6110.100, En Route Automation Modernization R-Position User Manual; TI 6110.101, En Route Automation Modernization RA-Position User Manual; TI 6110.108, En Route Automation Modernization Quick Reference Card; A056, Data Link Communications Compliance Guide
Prerequisites	NONE
Handout(s)	⊙ Part-Task Exercise ⊙ TI 6110.108, ERAM Quick Reference Controller Card
Exercise / Activity	Refer to handout for: ⊙ Part-Task Exercise: CPDLC Operations
Scenario	⊙ Run scenario 55054003_L16_S## in TTL
Assessments	⊙ YES - Written
Materials and Equipment	⊙ Pencil and/or pen
Other Pertinent Information	⊙ **Ensure lesson materials are downloaded to the classroom computer** ⊙ This lesson is based on ERAM EAE410 ⊙ The lesson has been reviewed and reflects current orders and manuals as of April 2022

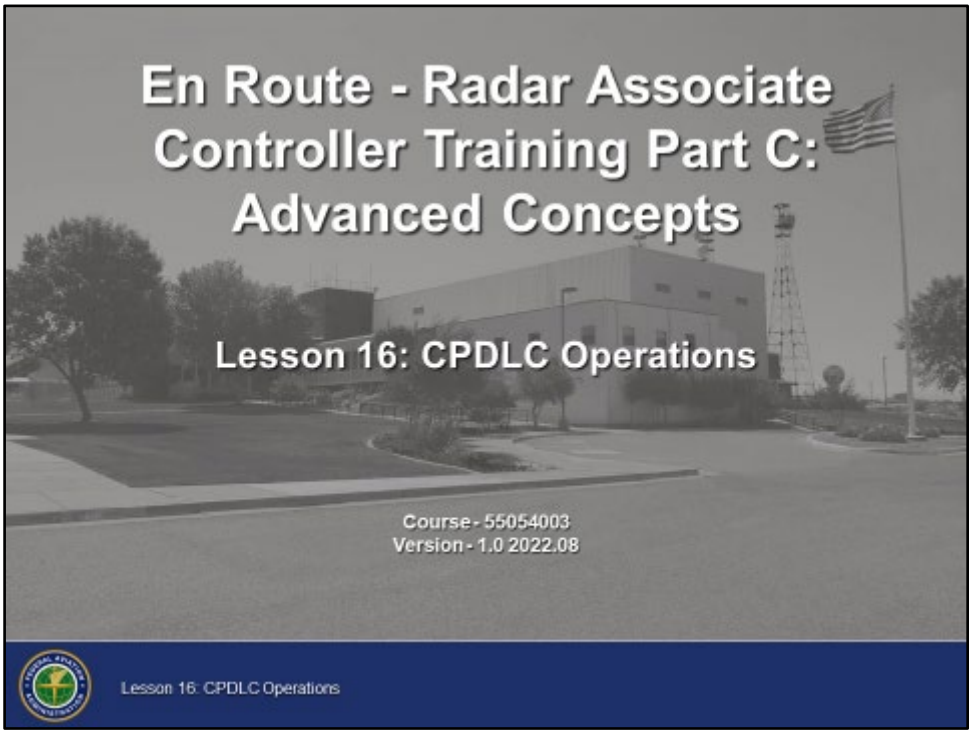
LESSON ICON LEGEND

	Description
	The Activity icon indicates an exercise, lab, or hands-on activity.
	The Discussion Question icon signals a discussion question to be asked to the students.
	The Handout icon indicates a handout is to be distributed to the students.
	The Instructor Note icon is in hidden text and indicates text that is for the instructor only.
	The Multimedia icon indicates a video or audio clip is in the presentation.
	The Phraseology icon indicates that phraseology is in the content.
	The WBT icon indicates a component of web-based training.
	The Click icon indicates a PPT slide with click-based functionality to present additional information.
	The Definition icon indicates a published definition.

PAGE INTENTIONALLY LEFT BLANK

LESSON INTRODUCTION

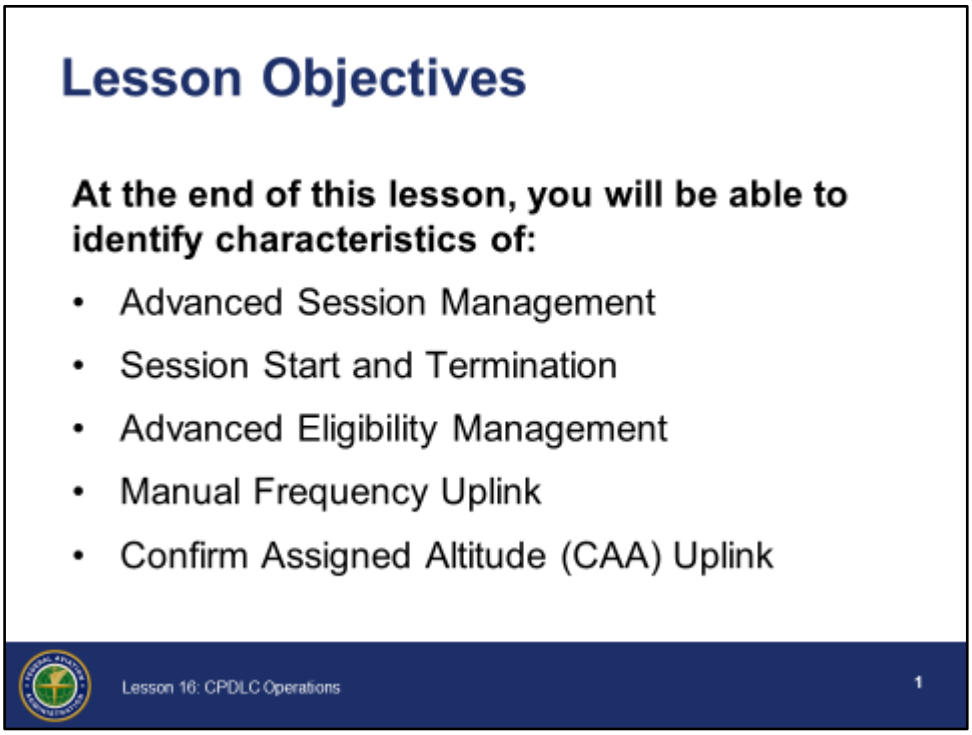
Overview



This lesson builds on the concepts of sessions and eligibility that were presented in Lesson 5. Also introduced are manual frequency uplink and Confirm Assigned Altitude (CAA) uplink.

LESSON INTRODUCTION *(CONT'D)*

Lesson Objectives

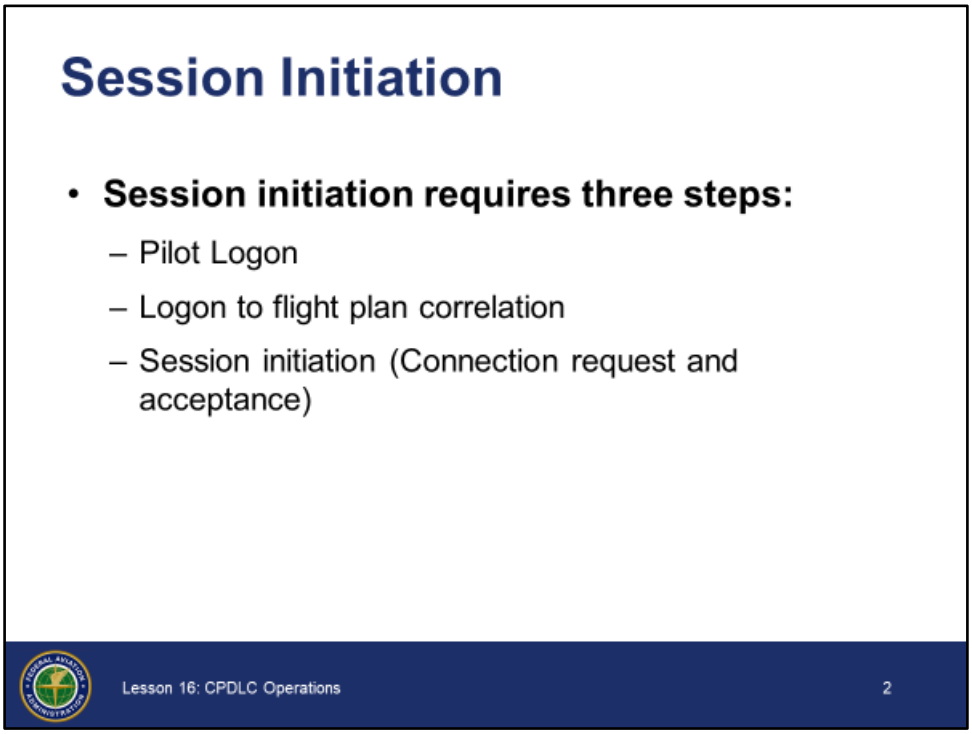


- At the end of this lesson, you will be able to identify characteristics of:
  - Advanced Session Management
  - Session Start and Termination
  - Advanced Eligibility Management
  - Manual Frequency Uplink
  - Confirm Assigned Altitude (CAA) Uplink

NOTE: There will be a graded end-of-lesson test upon completion of the lesson. The passing score is 70%. If you do not achieve a score of 70%, you will be provided study time and one retake of an alternate end-of-lesson test.

Session Initiation

TI 6110.101, sec. 6



- CPDLC sessions are typically started automatically after a pilot logs on to the system. After a session is established, the aircraft is then able to receive clearances via Data Link.
- Most session initiation and termination processing occurs automatically and does not require any controller involvement
- Session initiation requires three steps:
  - Pilot logon
  - Logon to flight plan correlation
  - Session initiation (connection request and acceptance)
- The system does provide manual options to start and terminate a session as well as to obtain session, correlation, and eligibility information

ADVANCED SESSION MANAGEMENT *(CONT'D)*

Aircraft Logon

TI 6110.101, sec. 6

- A CPDLC logon is initiated by the pilot at Terminal Data Link System (TDLS) equipped airports, or elsewhere within CPDLC coverage
- Pilots have a logon screen which they use to fill out flight information
  - When the pilot submits the logon request, aircraft avionics add additional technical information needed for logon processing, then
  - The logon request is evaluated at the active National Application Processor (NAP) to make sure all necessary information has been submitted and is valid, then
  - The logon can be accepted or rejected
    - A pilot will be informed of a rejection but not given a reason
- If a logon is rejected, the pilot may contact ATC to determine the reason
  - The Logon Query view on the AT Specialist Workstation (ATSW) can be used to determine the reason a logon was rejected

Logon / Flight Plan Correlation

TI 6110.101, sec. 6

A056, Appendix A

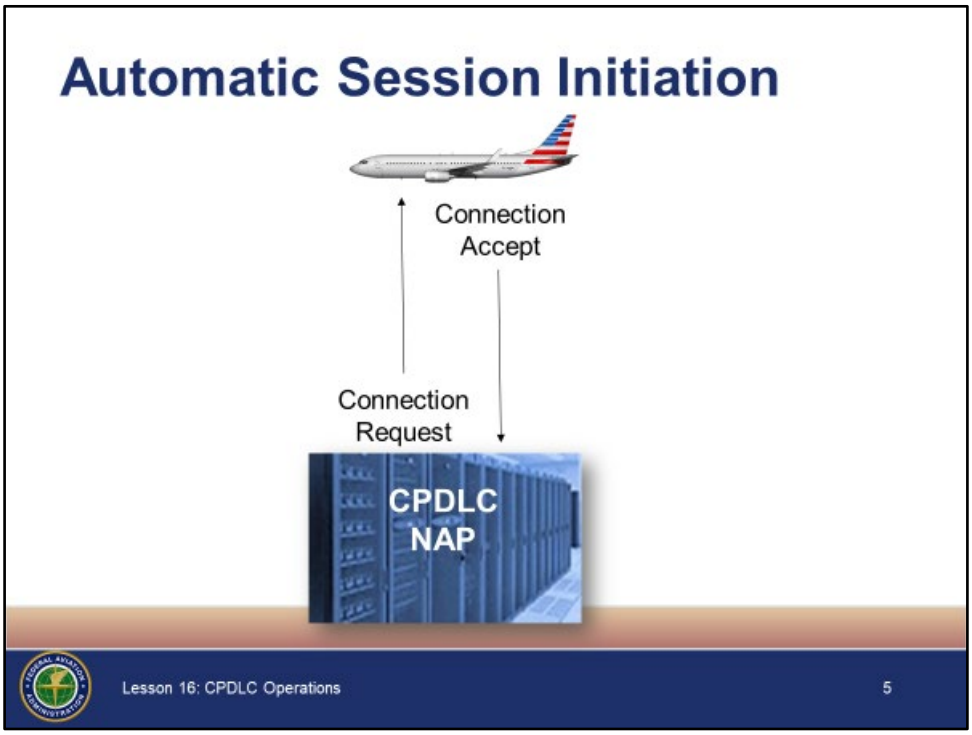
- After a logon is accepted, the system will match the logon to the correct flight plan by comparing flight data in the flight plan (i.e., ACID, tail number, departure airport) to the information provided in the logon
- The purpose of correlation is to ensure the correct aircraft is associated with the correct flight plan and consequently receives CPDLC messages intended for that aircraft

  Example: If the tail number in the logon request matches the tail number of an aircraft with a Current Data Authority (CDA) session, correlation would fail.

ADVANCED SESSION MANAGEMENT *(CONT'D)*

Automatic Session Initiation

TI 6110.101, sec. 6.1.3



- Automatic session initiation is triggered by various events
  - Once triggered, the ground system sends a Connection Request message to the aircraft and the aircraft responds with a Connection Accept message
    - At that point, the session is established as a Next Data Authority (NDA) session
    - The system will automatically uplink a message to the aircraft intended to establish the Current Data Authority (CDA) session
    - When the pilot responds to the uplink with ROGER, the CDA session will be established

ADVANCED SESSION MANAGEMENT *(CONT'D)*

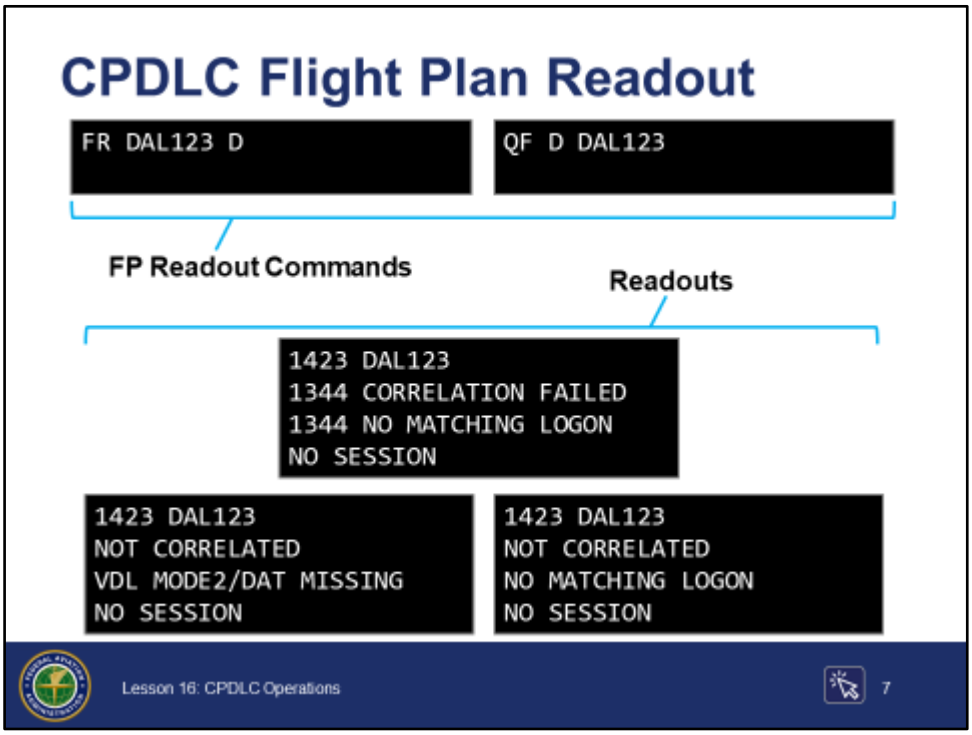
Logical Data Authority (LDA)

TI 6110.101, sec. 6

- Once the CDA session is established, the active NAP will assign Logical Data Authority (LDA) to the one facility allowed to communicate with the aircraft using CPDLC
  - The LDA can be assigned to one of the following:
    - TDLS Tower
    - ARTCC
    - The active NAP, if neither a TDLS Tower nor an ARTCC currently qualifies (e.g., a departure in TRACON airspace)
  - If LDA is assigned to an ARTCC, the ARTCC will initially assign eligibility to the sector with track control

CPDLC Flight Plan Readout

TI 6110.101, sec. 6.2.3.3



- A controller can display limited correlation and session information using a CPDLC flight plan readout command

  Syntax: FR <FLID> D

  QF D <FLID>

  - The QF Command entered from the RA Position displays the information on the corresponding R Position Response Area

- The readout can display up to four lines of information
  - Line 1 includes the time the readout command was entered and the specified aircraft identification
  - Line 2 provides the Logon to Flight Plan correlation status. The status can be CORRELATED, CORRELATION FAILED, or NOT CORRELATED
  - Additional content depends on the correlation status

Continued on next page

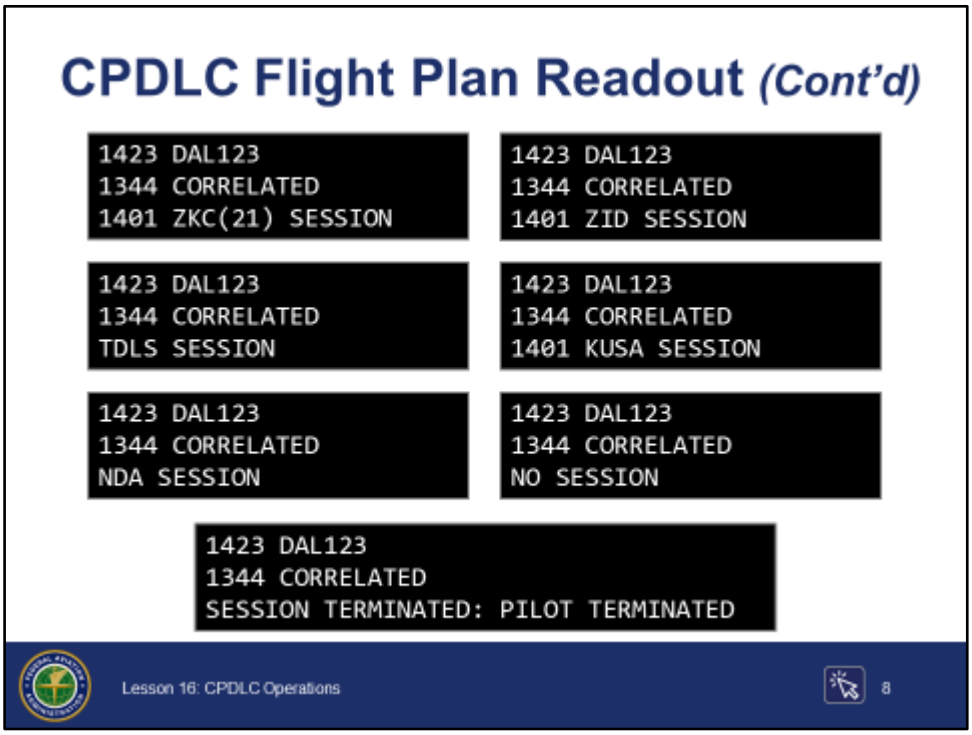
CPDLC Flight Plan Readout (Cont'd)

TI 6110.101, sec. 6.3.3.3

- Line 3
  - If correlation failed, the reason for failure will be displayed
  - If no correlation has been attempted, one of the following will be displayed:
    - VDL MODE2/DAT MISSING if the aircraft's flight plan does not show the aircraft is CPDLC equipped
    - NO MATCHING LOGON if the aircraft's flight plan indicates the aircraft is CPDLC equipped but no logon request has been received
  - If the status is CORRELATED, session information will be displayed
- Line 4
  - If there is no correlation, NO SESSION will be displayed

CPDLC Flight Plan Readout (Cont'd)

TI 6110.101, sec. 6.3.3.3



⊙ There are various session conditions reported as part of the Flight Plan Readout command with the CPDLC option

- A CDA session with LDA assigned to an ARTCC and the ARTCC has assigned eligibility to a sector
  - The readout also displays the correlation time and the time that eligibility was assigned to the specified sector
- A CDA session with LDA assigned to an adjacent ARTCC
  - The readout also displays the correlation time and the time that LDA was assigned
- A CDA session with LDA assigned to TDLS
  - The readout also displays the correlation time

Continued on next page

ADVANCED SESSION MANAGEMENT *(CONT'D)*

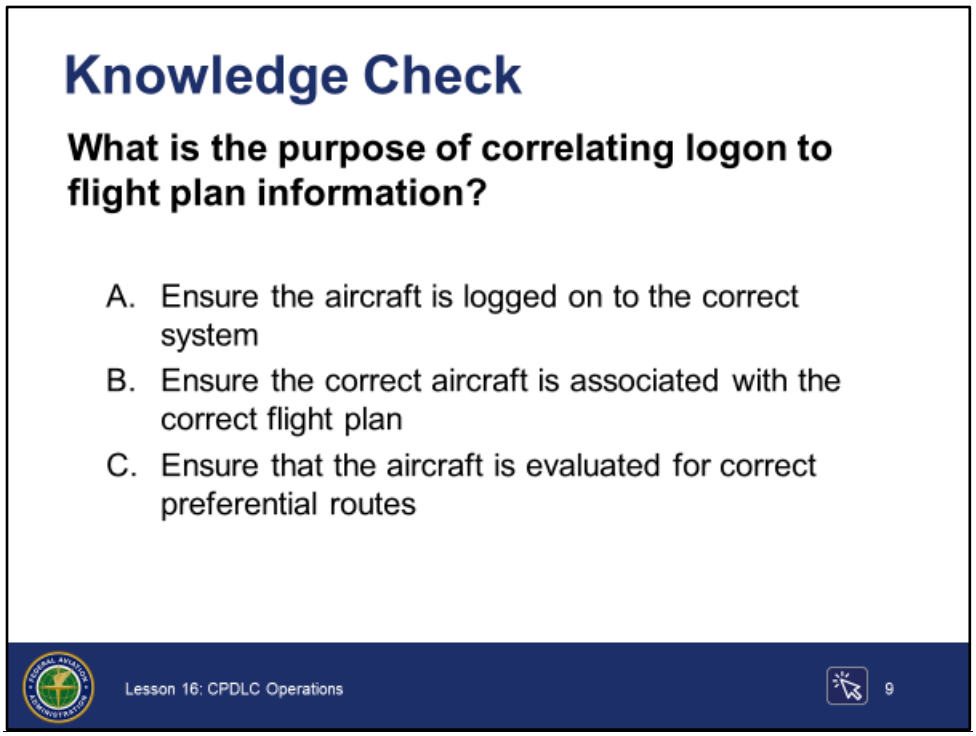
CPDLC Flight Plan Readout (Cont'd)

TI 6110.101, sec. 6.3.3.3

- A CDA session with LDA assigned to the active NAP
  - The readout also displays the correlation time and the time LDA was assigned to the active NAP
- An NDA session
  - The readout also displays the correlation time
- No session is established
  - The readout also displays the correlation time

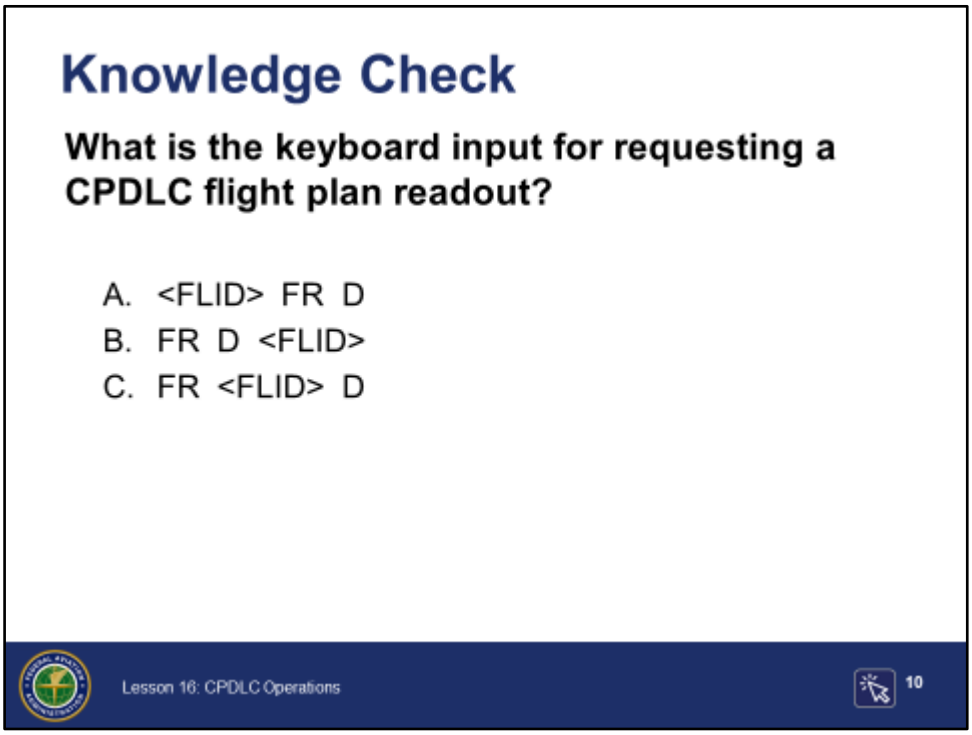
  NOTE: If a session has been terminated, NO SESSION will be replaced by SESSION TERMINATED followed by the termination reason.
- If a session has been terminated, the readout will show SESSION TERMINATED followed by the termination reason

Knowledge Check



Question: What is the purpose of correlating logon to flight plan information?

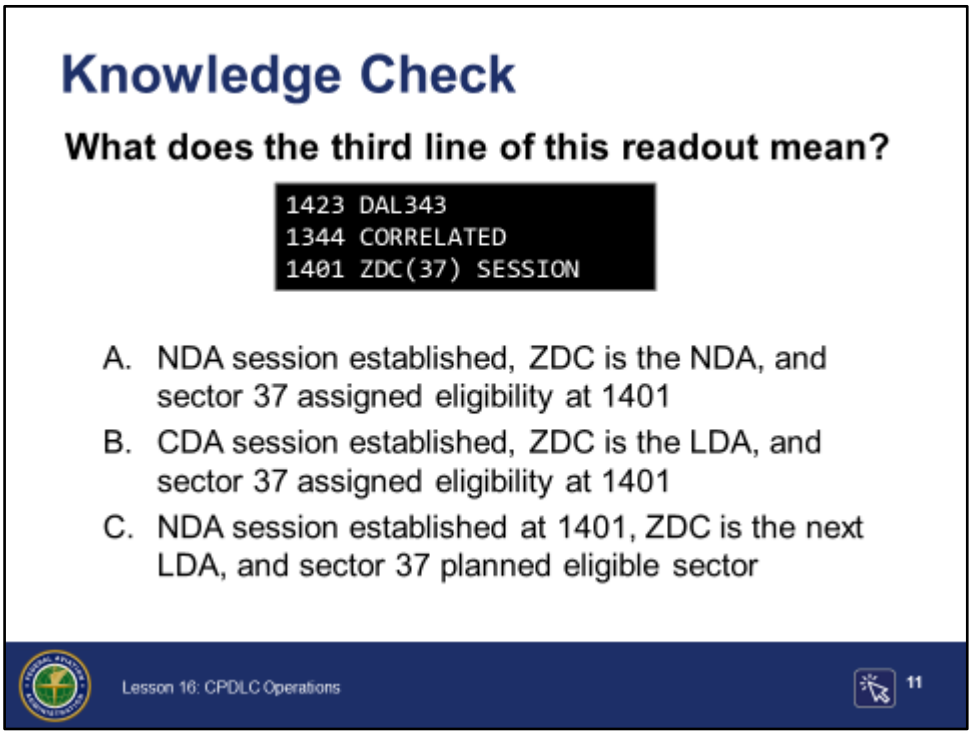
Knowledge Check



Question: What is the keyboard input for requesting a CPDLC flight plan readout?

ADVANCED SESSION MANAGEMENT *(CONT'D)*

Knowledge Check

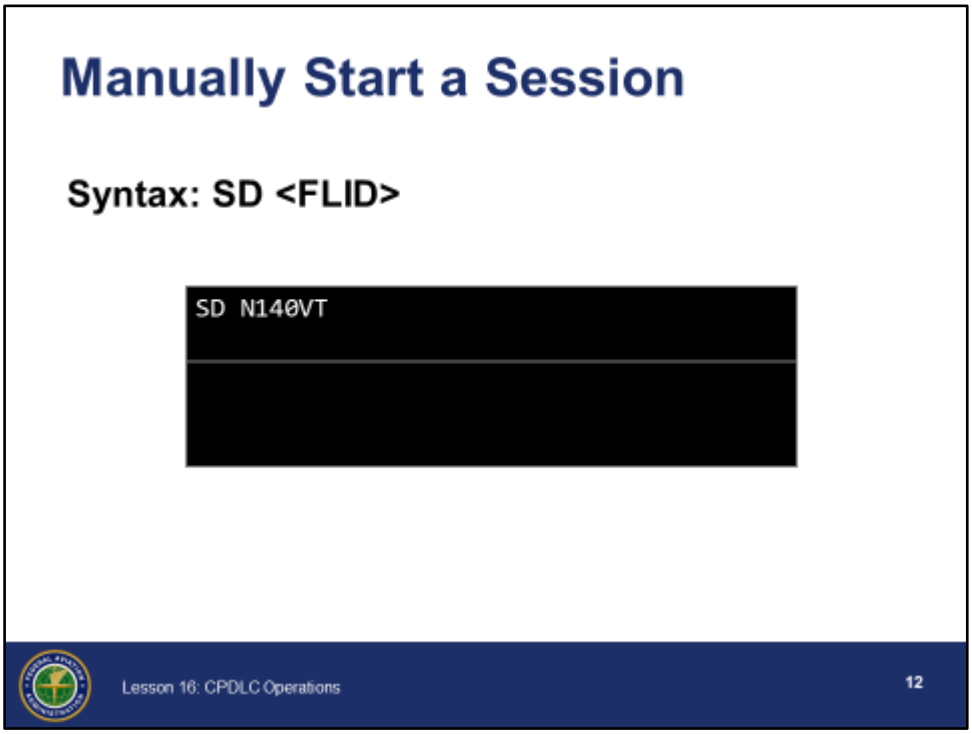


Question: What does the third line of this readout mean?

SESSION START AND TERMINATION

Manually Start a Session

TI 6110.101, secs. 6.1.4, 6.2.3.8



- Although most sessions start automatically, there may be times a controller will want to manually start a session
- The command to do so can be entered from either the R or RA position

  Syntax: SD <FLID>

  Example: A situation where manual session initiation might be used is a departure from a Non-TDLS airport climbing out of TRACON airspace. The system is designed to wait until the aircraft climbs past a facility adapted altitude before automatically starting the session.
- An appropriate error response is displayed if the command is rejected

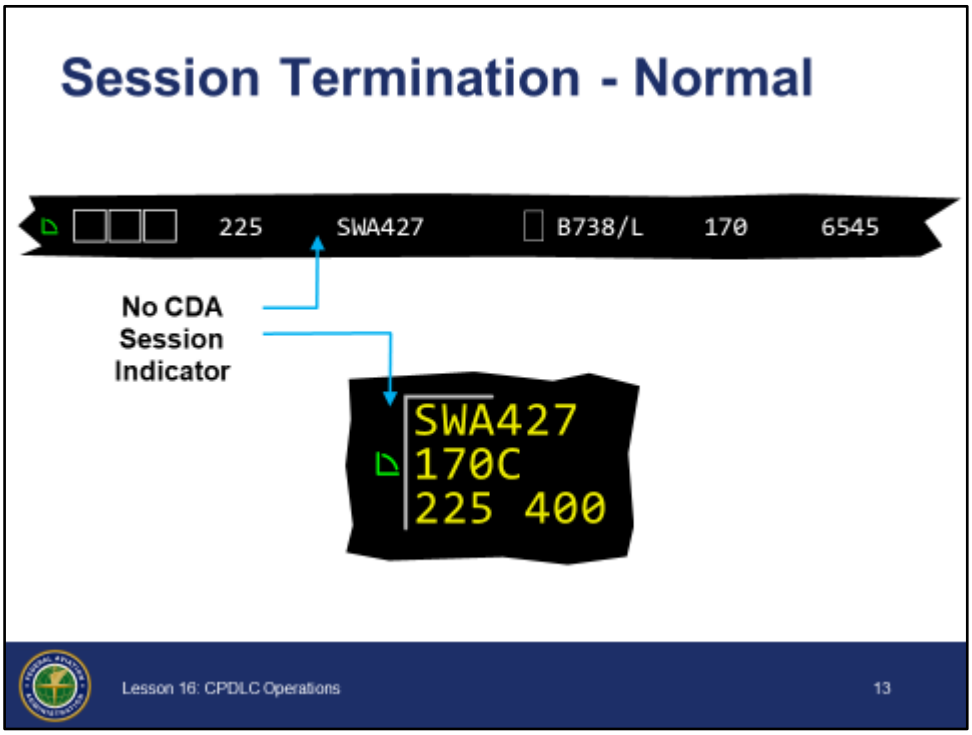
  Examples: Aircraft Logon Not Correlated

  Not Your Control

SESSION START AND TERMINATION *(CONT'D)*

Session Termination - Normal

TI 6110.101, sec. 6.1.8.1



- Most sessions are terminated automatically by the system
  - In most cases, the automatic session termination will be considered normal since it will occur as a result of anticipated behavior

    Example: An arrival exiting en route airspace and entering TRACON airspace and landing at an airport within that TRACON.
- When terminated normally, the CDA Session With Eligibility indicator will simply disappear from the FDB and the ACL
- The common key triggers for normal automatic termination are:
  - Receipt of a WILCO following a CPDLC Transfer of Communication (TOC) to an approach control facility when the flight will not re-enter en route airspace based on predicted trajectory or local adaptation (e.g., landing aircraft)
  - Receipt of a WILCO to a manual frequency uplink independent of track control transfer, when the controller specified termination of the CPDLC session

Continued on next page

SESSION START AND TERMINATION *(CONT'D)*

Session Termination - Normal (Cont'd)

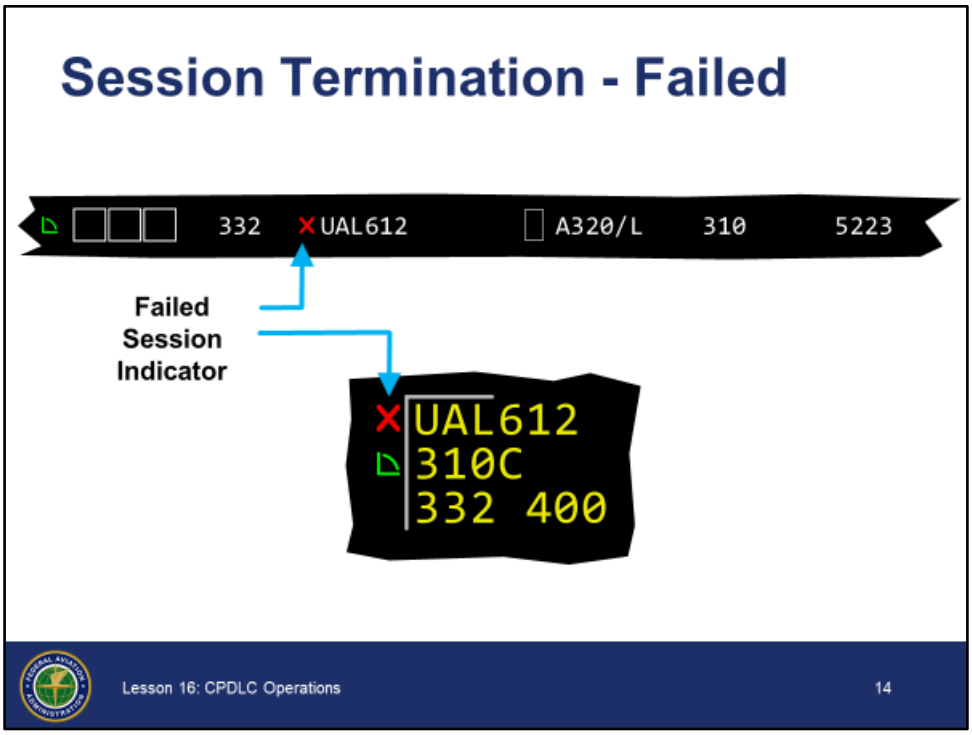
TI 6110.101, sec. 6.1.8.1

- Entering an amendment that changes the assigned altitude of the aircraft to VFR
  - The system will require a logic check override with additional text that the aircraft CPDLC session will be terminated
- When an aircraft's flight plan is deleted:
  - Controller will receive an additional prompt to confirm that the session will be terminated:
    - If RS or QX command is used, or
    - If RX command is used and the local ARTCC is the LDA
  - The RS, QX, or RX commands will be rejected if any of the following conditions exists:
    - Open controller initiated uplink
    - Unacknowledged abnormal uplink
    - Unacknowledged Initial Contact (IC) Mismatch
    - Unacknowledged emergency Pilot Initiated Downlink (PID) condition
- In addition to automatic session termination, a controller with eligibility can manually terminate a session from the RA or R position
  - If a controller manually terminates a session, and the flight has no open controller initiated uplinks, session termination will be considered normal and the CDA Session With Eligibility indicator will simply disappear from the FDB and the ACL
- When the controller enters an amendment to change the ACID of a flight with a CPDLC session:
  - The system will require a logic check override with additional text indicating that the aircraft CPDLC session will be terminated

SESSION START AND TERMINATION *(CONT'D)*

Session Termination - Failed

TI 6110.101, secs. 6.1.8, 6.1.8.1, 6.1.8.2.1



- Some abnormal conditions will result in automatic session termination
  - This is considered a failed session
  - When a failed session occurs, the CDA Session With Eligibility indicator will be replaced with a red "X" on both the FDB and the ACL (i.e., the red "X" is only displayed at the sector with eligibility)
    - The red "X" is called the Failed Session indicator
- Controller initiated triggers for an automatic failed session are a flight plan amendment to change any of the following:
  - Assigned altitude of an aircraft to VFR
  - ACID of a flight
  - Field 18 DAT/ code removal that indicates eligible for en route CPDLC
  - Removal of CPDLC equipment designator(s) from a flight plan

NOTE: Any changes will require confirmation.

Continued on next page

SESSION START AND TERMINATION *(CONT'D)*

Session Termination - Failed (Cont'd)

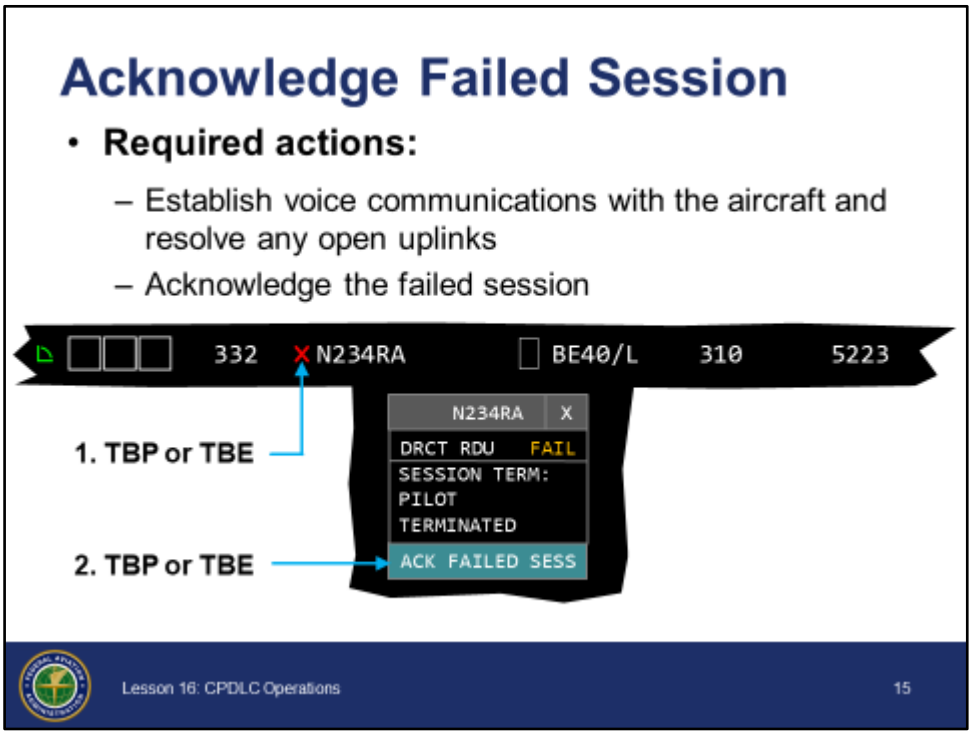
TI 6110.101, secs. 6.1.8, 6.1.8.2.1

- The VFR altitude and ACID amendment commands will be rejected if any of the following conditions exist:
  - Open controller initiated uplink
  - Unacknowledged abnormal uplink
  - Unacknowledged IC Mismatch
  - Unacknowledged emergency PID condition
- Sessions can also be manually terminated by a pilot, a controller, or by authorized Air Traffic personnel using an ATSW
  - Any manually terminated session by a pilot or an ATSW will result in a failed session
  - If open uplinks exist, any manually terminated session by the controller with eligibility will result in a failed session
    - The command requires confirmation
- A pilot submitting a logon request containing the same exact information as a current session will result in a failed session

SESSION START AND TERMINATION *(CONT'D)*

Acknowledge Failed Session

TI 6110.101, secs. 6.1.2.4, 6.2.1



- When a session fails, CPDLC will automatically close any open uplinks and set them to a status of FAIL

  NOTE: Uplinks may remain open on the flight deck.

- When a CPDLC session is unexpectedly lost with an aircraft, and voice communication had not previously been established, the controller must ensure voice communication is established and maintained with that aircraft

- Once voice communication is established, the controller must acknowledge the Failed Session indicator by:

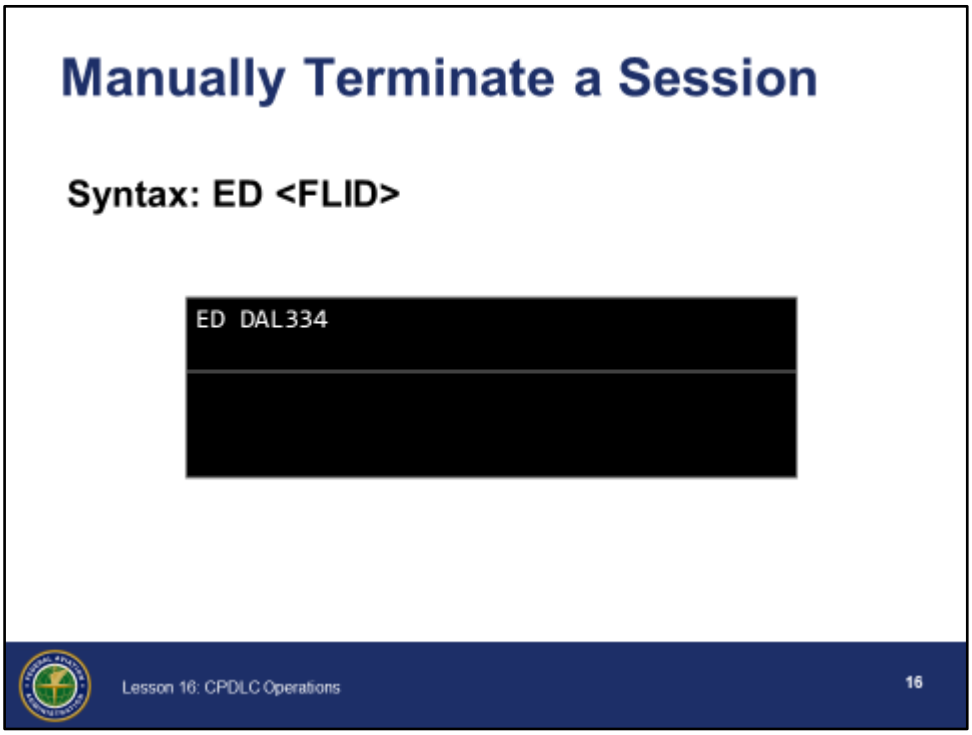
  - Trackball Pick (TBP) or Trackball Enter (TBE) on the Failed Session indicator
  - TBP or TBE on the ACK FAILED SESS pick area

  NOTE: The reason for session termination is displayed.

SESSION START AND TERMINATION *(CONT'D)*

Manually Terminate a Session

TI 6110.101, sec. 6.2.3.2



- The command to manually terminate a session can be entered from either the RA or R position

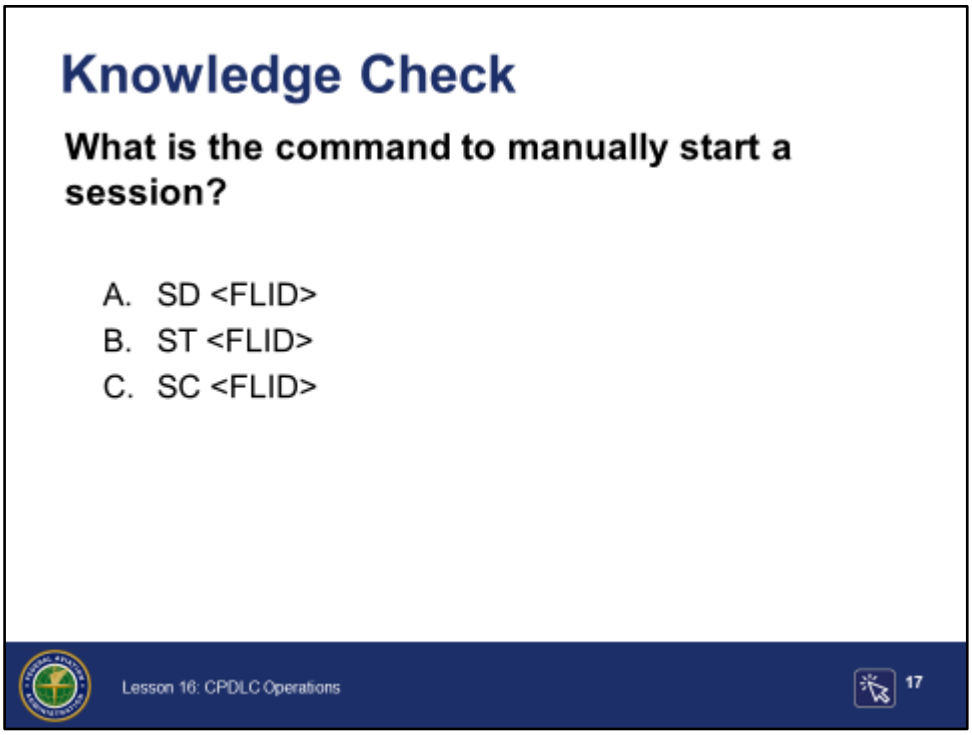
  Syntax: ED <FLID>

- A manual termination command will be rejected if any of the following conditions exist:
  - There is no session established
  - TOC or Uplink Frequency (UF) is in progress
  - Unacknowledged abnormal uplink
  - Unacknowledged IC Mismatch
  - Unacknowledged emergency PID condition
  - The requesting sector does not have CPDLC eligibility
- Unless otherwise coordinated, the last controller working the aircraft before it exits the continental U.S. must ensure the CPDLC session is terminated upon transfer of communication to any non-US or Advanced Technologies and Oceanic Procedures (ATOP) facility

  NOTE: Coordination must be accomplished with the sector having eligibility prior to terminating a CPDLC session from any other position or adapted ATSW.

SESSION START AND TERMINATION *(CONT'D)*

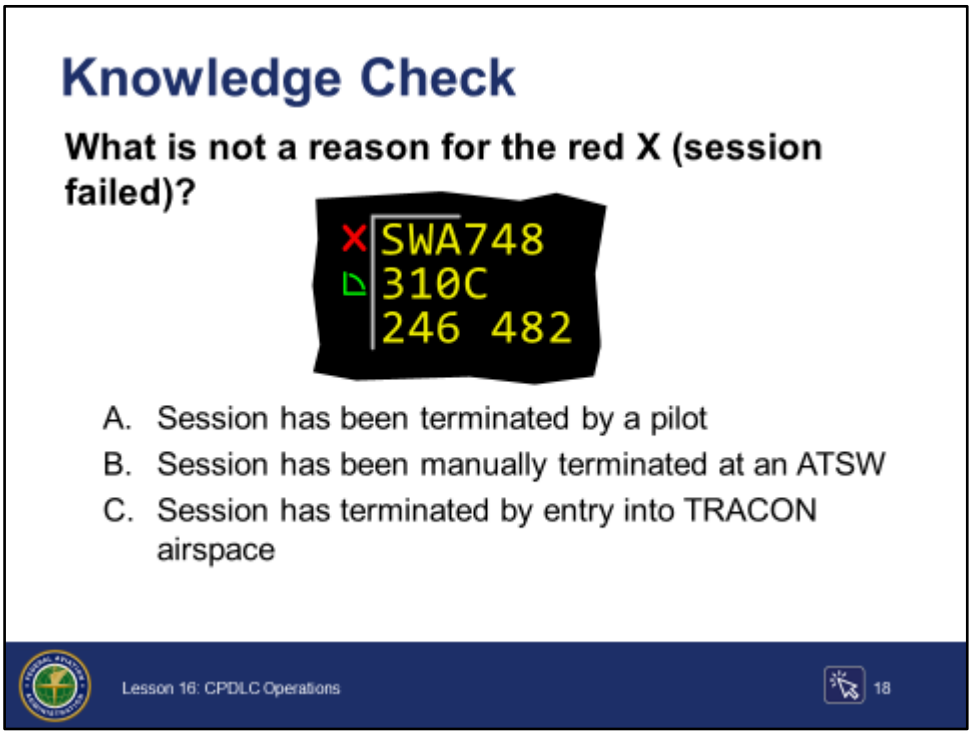
Knowledge Check



Question: What is the command to manually start a session?

SESSION START AND TERMINATION *(CONT'D)*

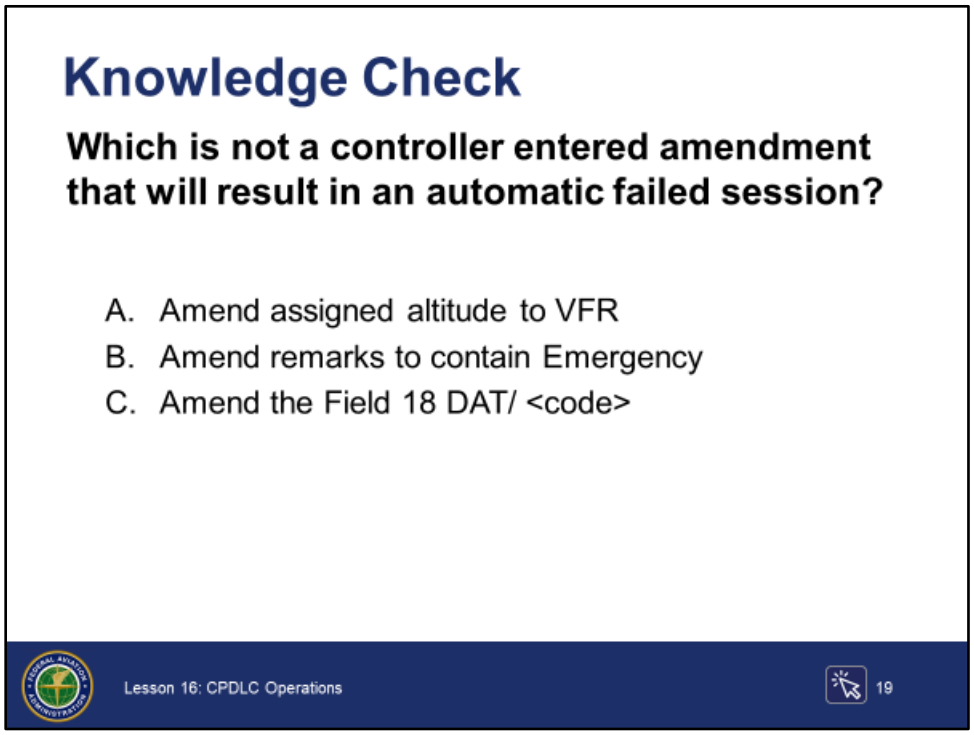
Knowledge Check



Question: What is not a reason for the red X (session failed)?

SESSION START AND TERMINATION *(CONT'D)*

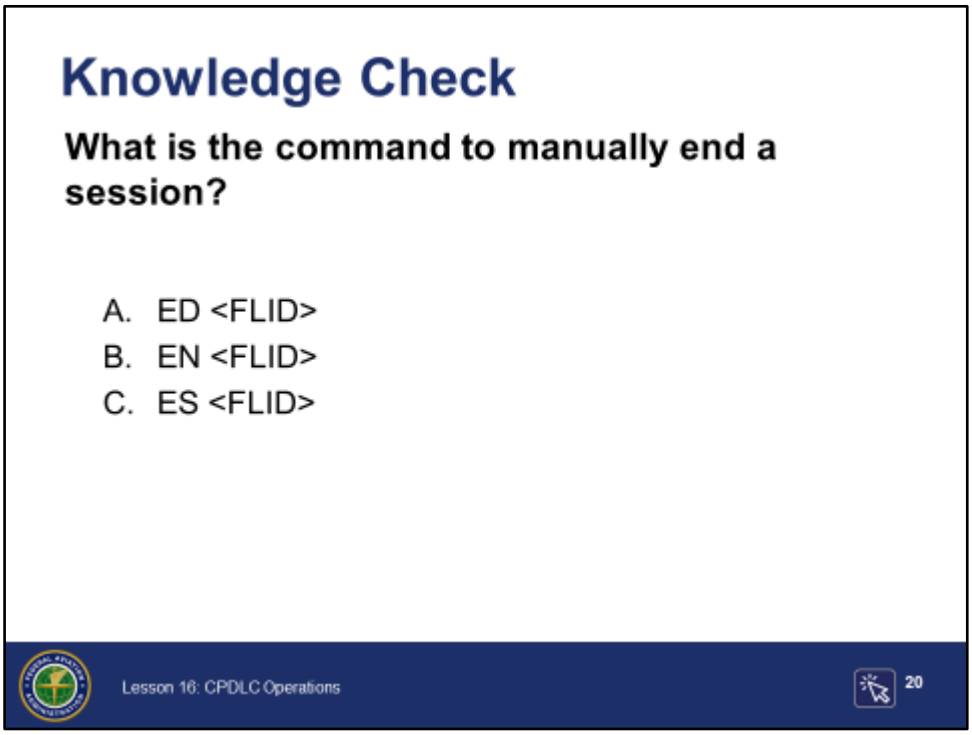
Knowledge Check



Question: Which is not a controller entered amendment that will result in an automatic failed session?

SESSION START AND TERMINATION *(CONT'D)*

Knowledge Check

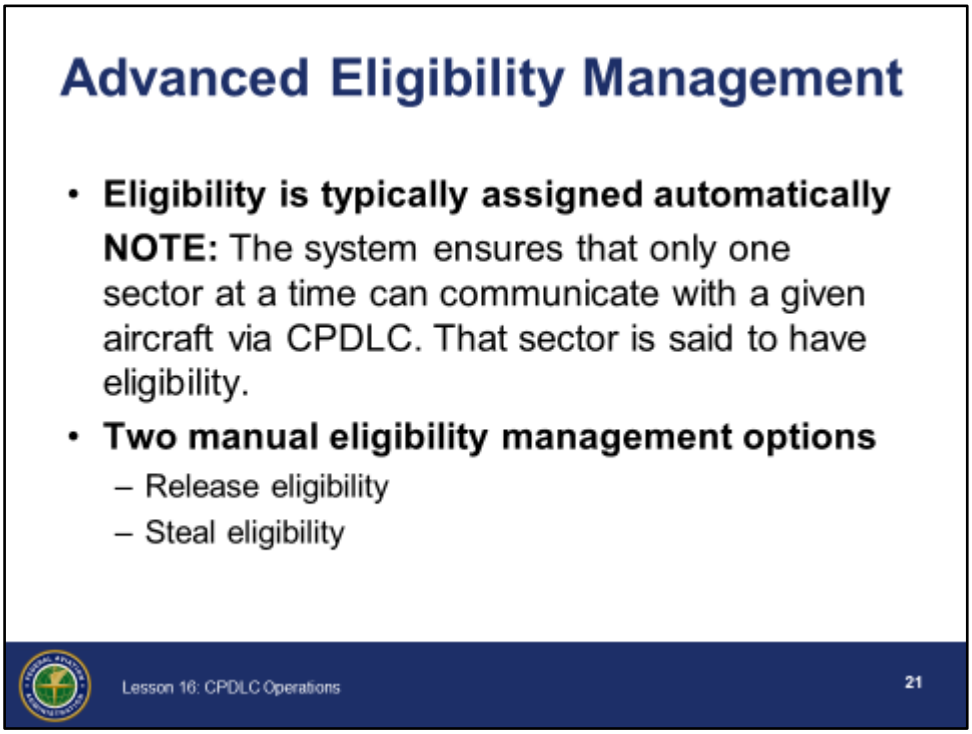


Question: What is the command to manually end a session?

ADVANCED ELIGIBILITY MANAGEMENT

Advanced Eligibility Management

TI 6110.101, sec. 6.1, 6.2.3.7, 6.2.3.9



- Eligibility is typically assigned automatically

  NOTE: The system ensures that only one sector at a time can communicate with a given aircraft via CPDLC. That sector is said to have eligibility.

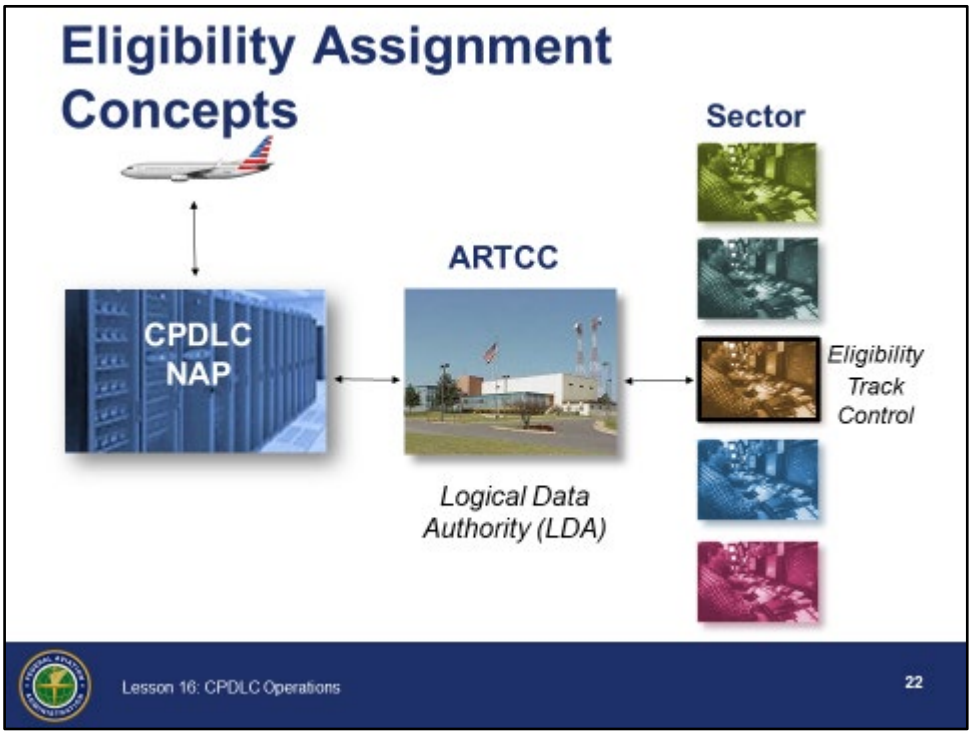
- Controllers have two manual eligibility management options:
  - Release eligibility
    - Give up eligibility at their sector and allow the system to automatically reassign as appropriate
  - Steal eligibility
    - Manually assigns eligibility to their sector

    NOTE: Stealing eligibility is not the same thing as stealing track control. They are separate actions and have different results.

ADVANCED ELIGIBILITY MANAGEMENT *(CONT'D)*

Eligibility Assignment Concepts

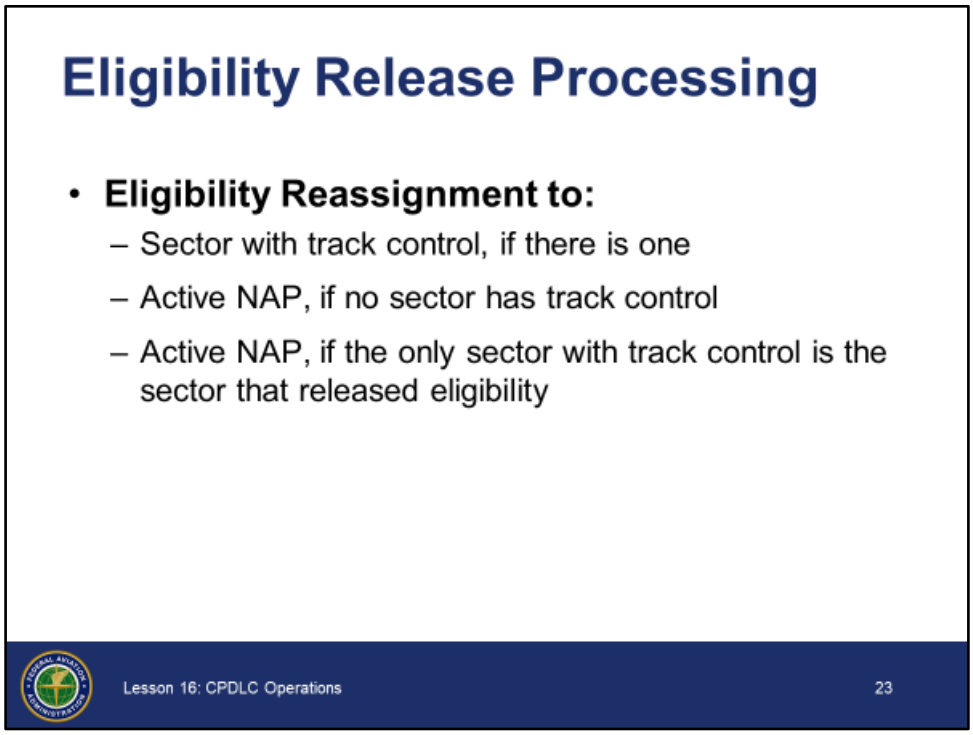
TI 6110.101, sec. 6



- The active NAP assigns LDA to an ARTCC
  - The ARTCC with LDA is the only facility that can communicate with the aircraft via CPDLC
- The ARTCC designated as having LDA assigns eligibility to the appropriate sector at the facility
  - The sector with track control will typically be assigned eligibility
  - Eligibility will then transfer automatically to the appropriate sector following receipt of a WILCO response to a TOC
    - When the WILCO to a TOC has not arrived and the receiving sector is closed and no other local sector has track control, eligibility will be transferred to the closed sector
      - This allows for the closed sector to process any pending downlink responses from the aircraft, including an ASSIGNED ALTITUDE response that results in an IC mismatch
  - After a WILCO response to an interfacility TOC, LDA returns momentarily to the active NAP which then passes on to the next ARTCC

Eligibility Release Processing

TI 6110.101, secs. 6.1.6.2, 6.1.6.5



- A controller may release eligibility at their sector and allow the system to automatically reassign as appropriate

  Examples: Dual track control at different facilities

  Failed automated handoffs to an adjacent facility

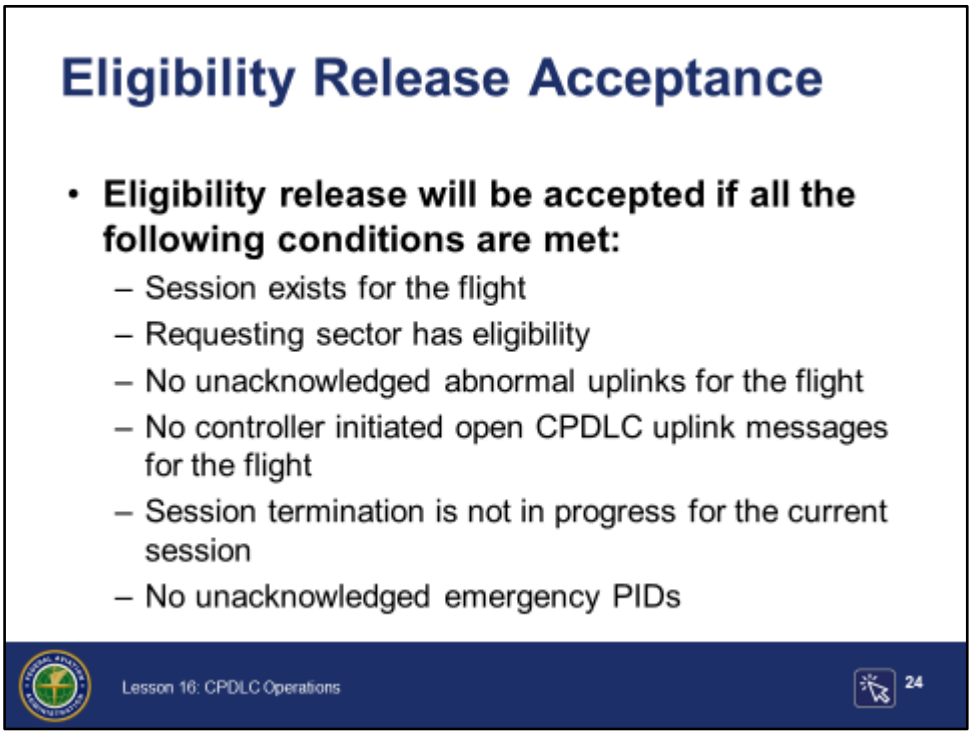
- Eligibility will be reassigned to:
  - Sector with track control, if there is one
  - Active NAP, if no sector has track control
  - Active NAP, if the only sector with track control is the sector that released eligibility

ADVANCED ELIGIBILITY MANAGEMENT *(CONT'D)*

Eligibility Release Acceptance

TI 6110.101, sec. 6.2.3.7

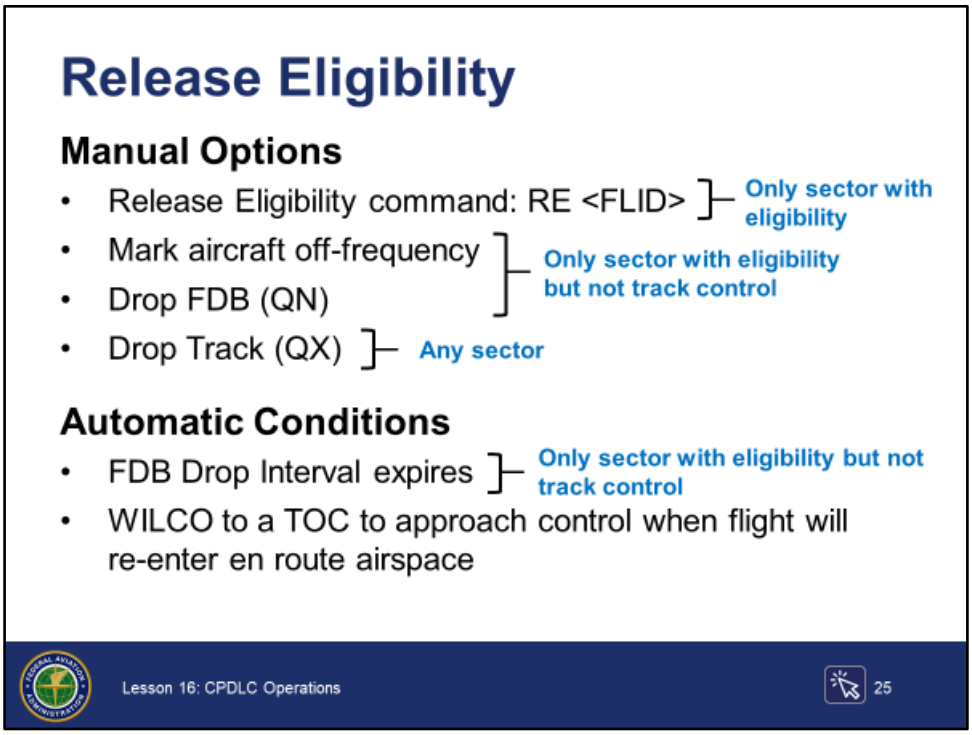
TI 6110.100, secs. 6.3.7, 11.2.2.1.3



- Eligibility release will be accepted if all the following conditions are met:
  - Session exists for the flight
  - Requesting sector has eligibility
  - No unacknowledged abnormal uplinks for the flight
  - No controller initiated open CPDLC uplink messages for the flight
  - Session termination is not in progress for the current session
  - No unacknowledged emergency PIDs
- If the eligibility release succeeds, any open system initiated uplinks (e.g., automatic altimeter settings) will be forwarded to the next eligible sector if it is within the same facility

Release Eligibility Options

TI 6110.101, sec. 6.1.6.2



- There are four options for manually releasing eligibility and two conditions that will cause eligibility to be automatically released
- Manual options
  - For sector with eligibility:
    - Release Eligibility command

      Syntax: RE <FLID>
  - For sector with eligibility, but not track control:
    - Mark the aircraft off frequency (i.e., VCI)
    - Drop the FDB (QN)

      Syntax: <FLID>

      NOTE: Suppressing (QN) or dropping a track without track control releases CPDLC eligibility. QN is automatically implied to be at the beginning of the command, i.e., QN <FLID>.
  - Any sector:
    - Drop the Track (QX). This includes the QX /R command.

Continued on next page

ADVANCED ELIGIBILITY MANAGEMENT *(CONT'D)*

Release Eligibility Options (Cont'd)

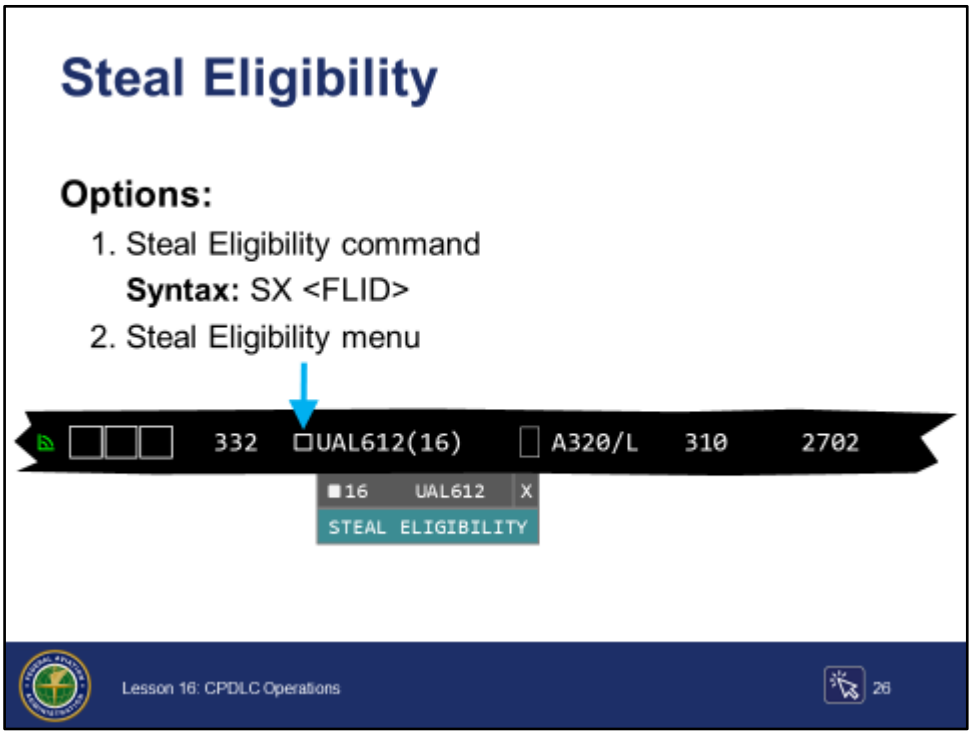
TI 6110.101, sec. 6.1.6.2

⊙ Automatic conditions

- The FDB is dropped automatically after the drop interval expires at a sector with eligibility, but not track control
- A WILCO response is received following a TOC to a TRACON, but the aircraft will reenter en route airspace

Steal Eligibility

TI 6110.101, sec. 6.1.6.3



- A sector can steal eligibility from another sector in the same facility
- Interfacility steals are not permitted
- There are two options to steal eligibility:
  - Steal Eligibility command

    Syntax: SX <FLID>
  - Steal Eligibility menu
    - The menu includes a header showing what sector currently has eligibility and a Steal Eligibility pick area

Continued on next page

ADVANCED ELIGIBILITY MANAGEMENT *(CONT'D)*

Steal Eligibility (Cont'd)

TI 6110.101, sec. 6.1.6.3

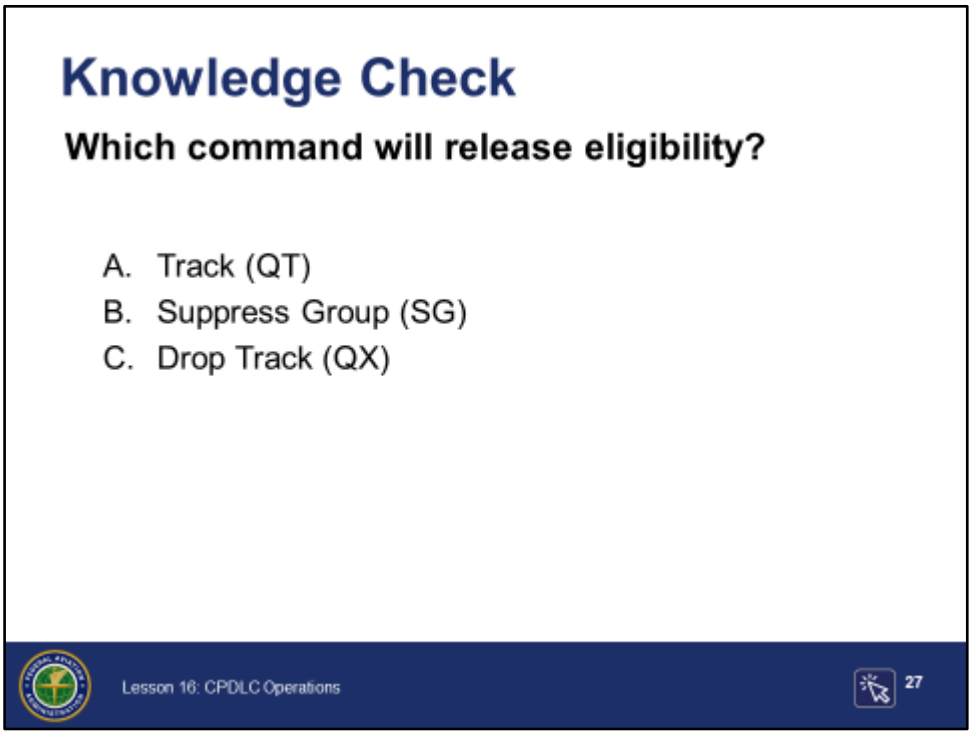
- To use the menu:
  1. TBP or TBE on the CDA Session indicator to open the menu
  2. TBP or TBE on the Steal Eligibility pick area
  3. If there are any open uplinks, a Confirmation prompt will be displayed and must be acknowledged

NOTE: All open messages will be transferred to the stealing sector.

- An aircraft must be marked on frequency for a steal eligibility command to be accepted
- If the aircraft is not marked on frequency and the controller selects the CDA Session indicator, the Steal Eligibility menu will open but will only show the header
- Controllers should coordinate before stealing eligibility
- An attempt to steal eligibility will be rejected if any of the following conditions exist:
  - Unacknowledged IC mismatch
  - Unacknowledged abnormal uplink
  - Unacknowledged emergency PID
  - Session termination is in progress
  - TOC is in progress

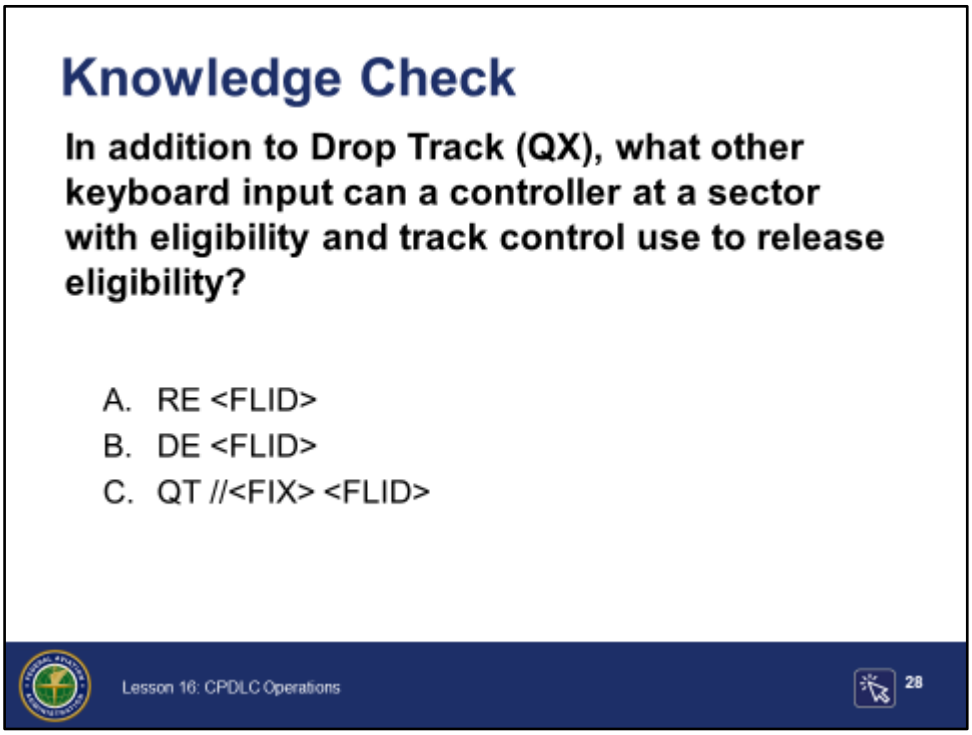
ADVANCED ELIGIBILITY MANAGEMENT *(CONT'D)*

Knowledge Check



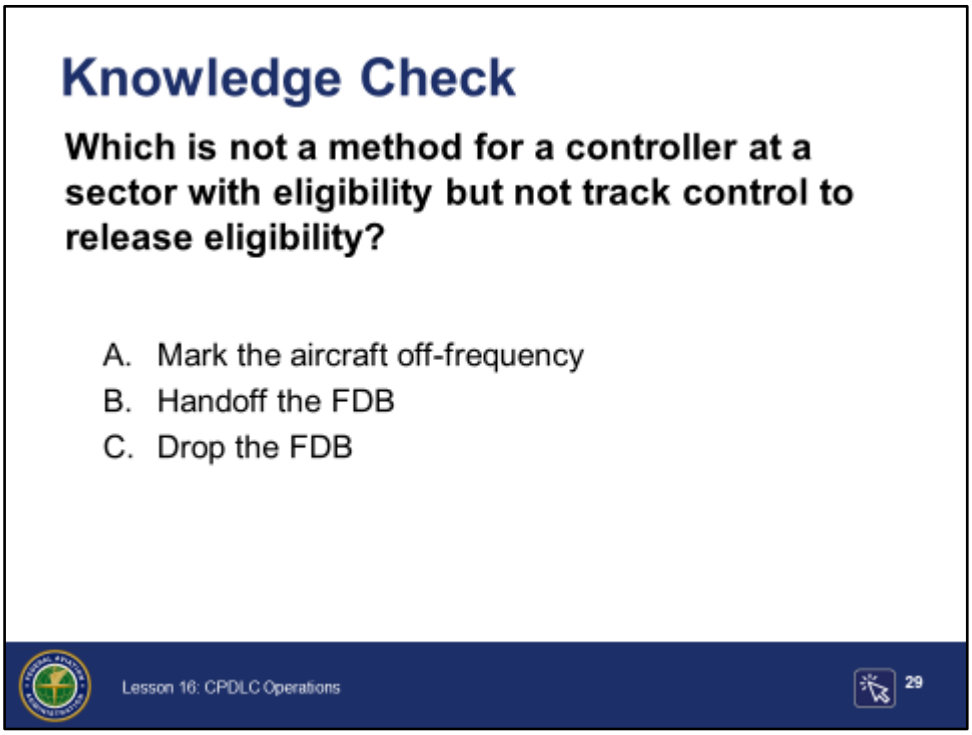
Question: Which command will release eligibility?

Knowledge Check



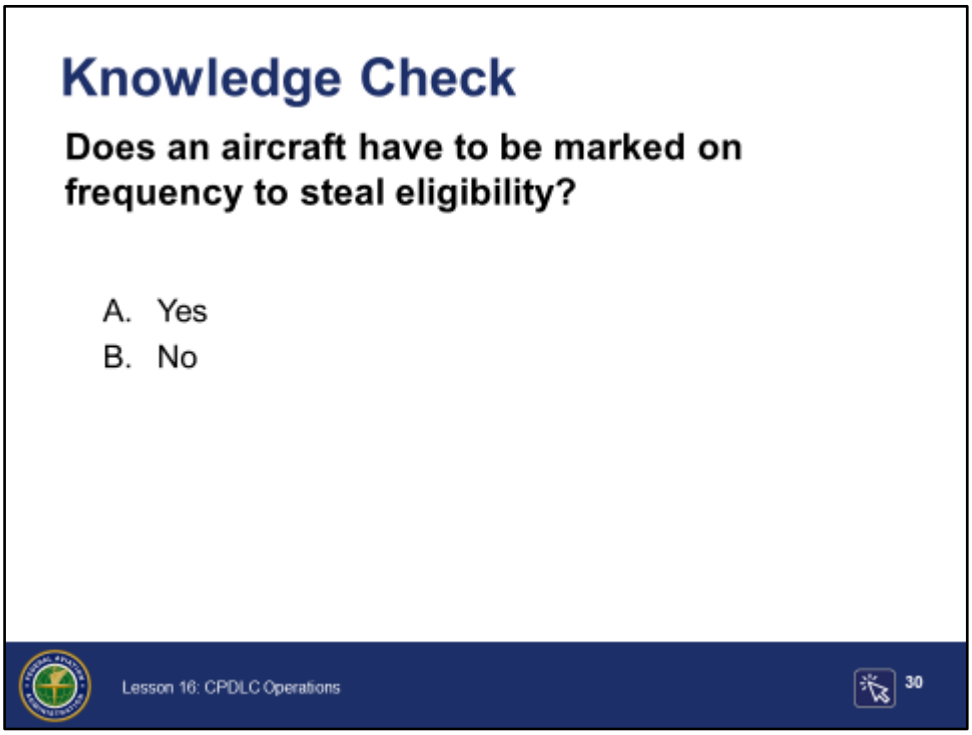
Question: In addition to Drop Track (QX), what other keyboard input can a controller at a sector with eligibility and track control use to release eligibility?

Knowledge Check



Question: Which is not a method for a controller at a sector with eligibility but not track control to release eligibility?

Knowledge Check

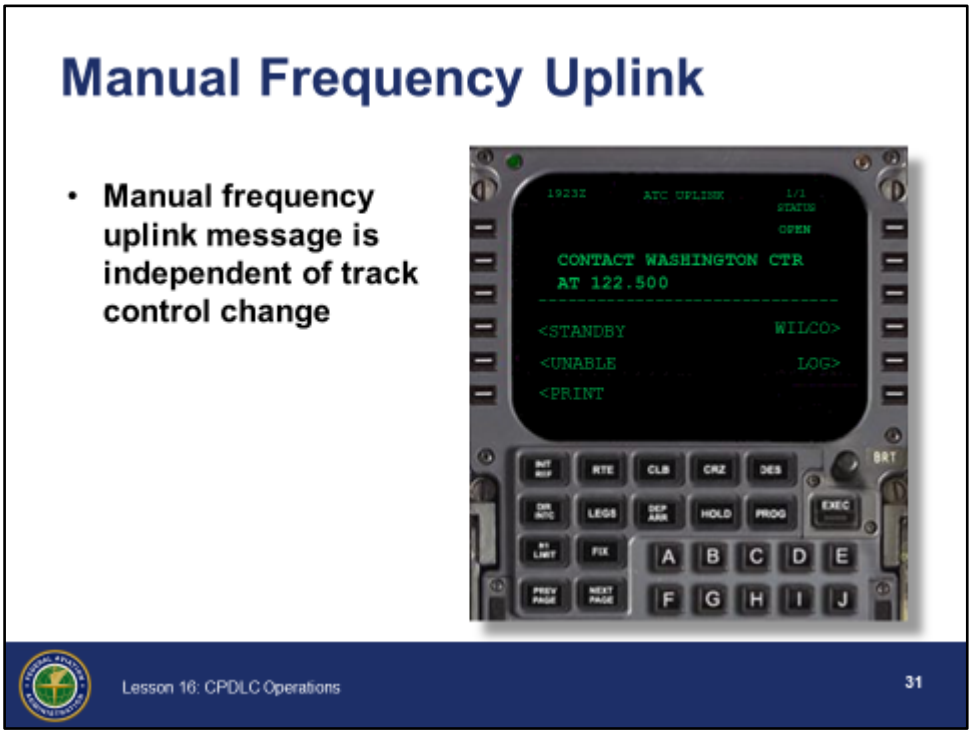


Question: Does an aircraft have to be marked on frequency to steal eligibility?

MANUAL FREQUENCY UPLINK

Manual Frequency Uplink

TI 6110.101, secs. 6.2.3.12, 8.7.2

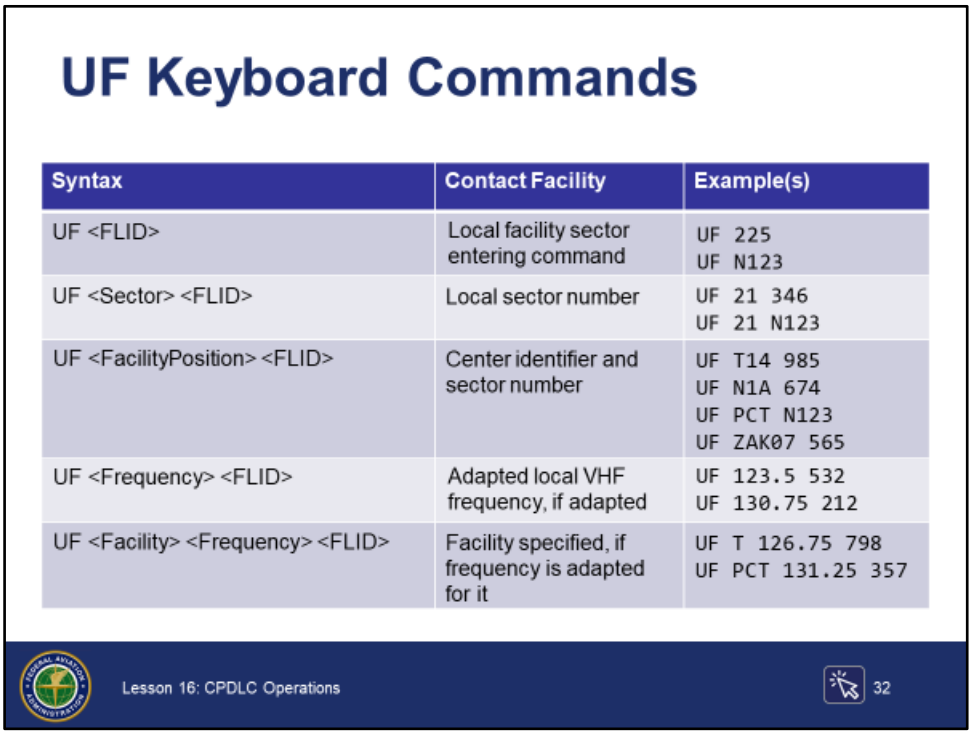


- The system provides an option to manually uplink a frequency message independent of handoff and track control change
  - A manual frequency uplink will include a controller determined frequency along with the CONTACT instruction
    - Frequency selection logic will be used to automatically determine the appropriate frequency if a sector, facility, or combination of facility and sector are included in the command
    - A controller can also manually specify a frequency
  - An open frequency uplink will prevent any other uplinks to the aircraft

MANUAL FREQUENCY UPLINKS *(CONT'D)*

UF Keyboard Commands

TI 6110.101, sec. 6.2.3.12



- The Uplink Frequency command is UF
  - If the command requires an output routing field, it may contain any of the following:
    - Local sector number (e.g., 07, 32)
    - ARTCC identifier and sector number (e.g., T14, N34)
    - TRACON identifier or position identifier (e.g., PCT, P1A, S2E)
    - ATOP identifier and position (e.g., ZAK07)
    - Non-US facility identifier and position (e.g., LJA23)
- The frequency for local sectors, adjacent ARTCCs, and TRACONs can be any adapted VHF frequency between 118.00 and 136.97

  Format: ddd.d(d)

  Example: `132.3`

  NOTE: The period is mandatory, and the last digit is optional.

Continued on next page

MANUAL FREQUENCY UPLINKS *(CONT'D)*

UF Keyboard Commands (Cont'd)

TI 6110.101, sec. 6.2.3.12

- For ATOP and non-US facilities, both VHF and HF frequencies are supported
- The HF frequency range is 2850 through 28000 KHz

  Format: dddd(d)

  Example: 21964

  NOTE: There is no period.
- Frequency selection logic is based on the contents of the command
- UF <FLID> - Uplinks the frequency for the sector entering the command when the sector is adapted to use a single frequency

  Examples: `UF 225`

  `UF N123`
- UF <Sector> <FLID> - Uplinks the frequency adapted for the specified local sector when that sector is adapted to use a single frequency

  Examples: `UF 21 346`

  `UF 21 N123`
- UF <FacilityPosition> <FLID> - Uplinks the frequency adapted for the specified adjacent facility and sector. If a facility has a frequency adapted for a generic position (e.g., undirected handoff), no sector or position needs to be specified.

  Examples: `UF T14 985`

  `UF N1A 674`

  `UF PCT N123`

  `UF ZAK07 565`
- UF <Frequency> <FLID> - Uplinks the specified frequency, if adapted for the local facility

  Examples: `UF 123.5 532`

  `UF 130.75 212`

Continued on next page

MANUAL FREQUENCY UPLINKS *(CONT'D)*

UF Keyboard Commands (Cont'd)

TI 6110.101, secs. 6.2.3.12, 8.7.2

⊙ UF <Facility> <Frequency> <FLID> - Uplinks the specified frequency if adapted for the specified facility

Examples: `UF T 126.75 798`

`UF PCT 131.25 357`

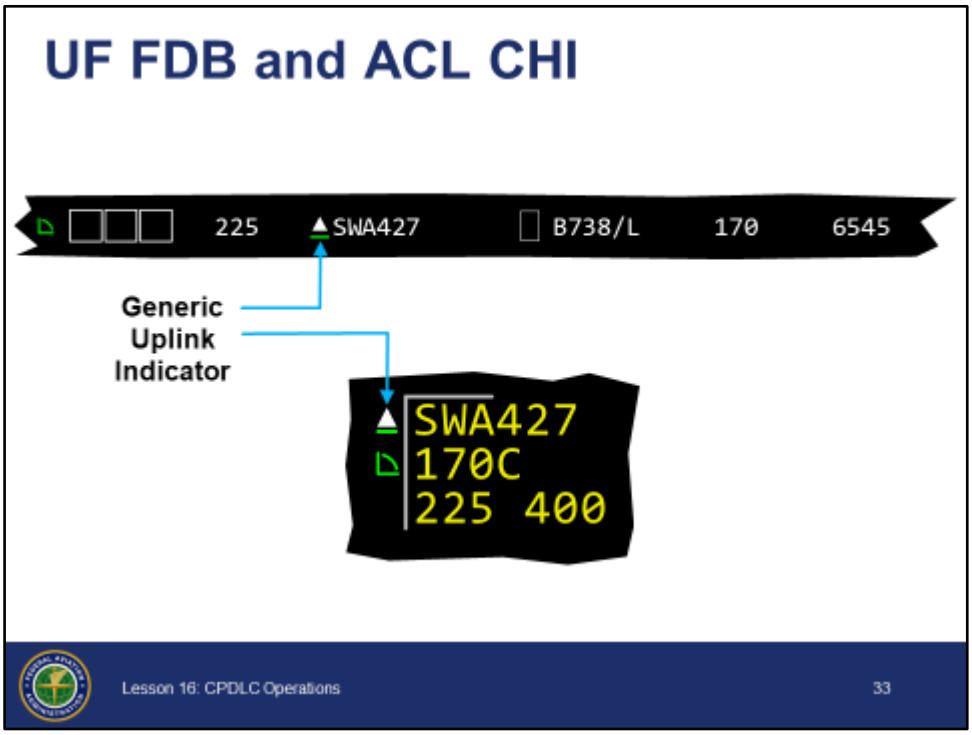
⊙ A UF command will be rejected if any of the following conditions exist:

- Any open controller initiated uplinks
- IC in progress or an unacknowledged IC mismatch
- Unacknowledged abnormal uplink
- Unacknowledged emergency PID
- Session termination in progress
- System cannot determine what frequency to use

MANUAL FREQUENCY UPLINKS *(CONT'D)*

UF FDB and ACL Computer Human Interface (CHI)

TI 6110.101, secs. 6.2.2, 6.2.2.1, 6.2.2.1.1

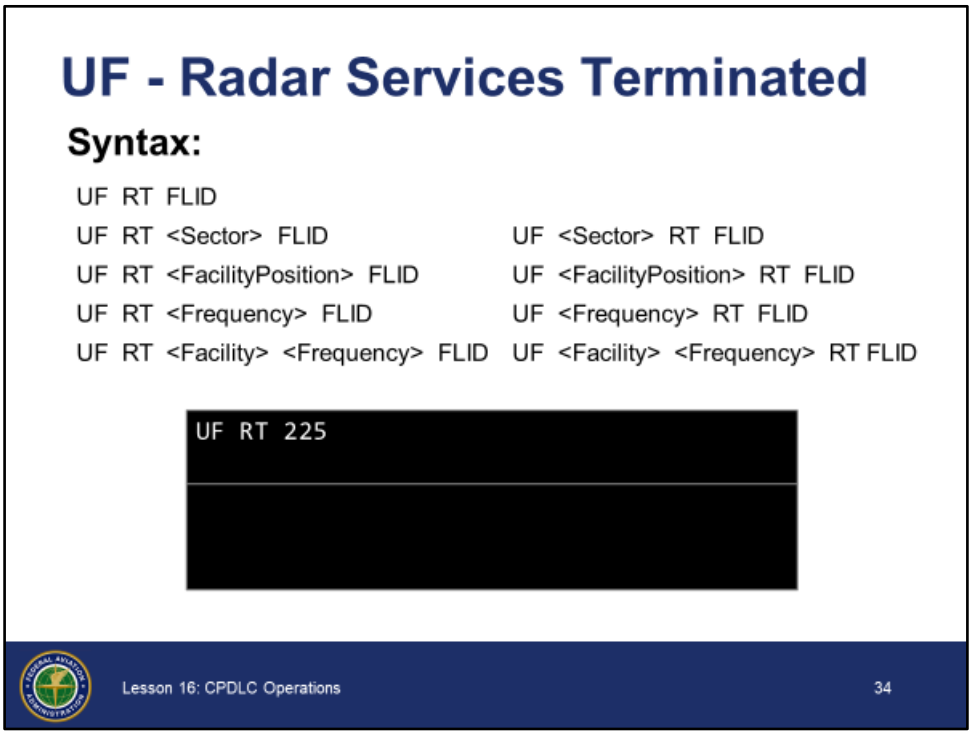


- When a UF message is accepted and the frequency uplink is open, a Generic Uplink indicator will be displayed in the FDB and ACL

MANUAL FREQUENCY UPLINKS *(CONT'D)*

UF - Radar Services Terminated

TI 6110.101, sec. 6.2.3.12

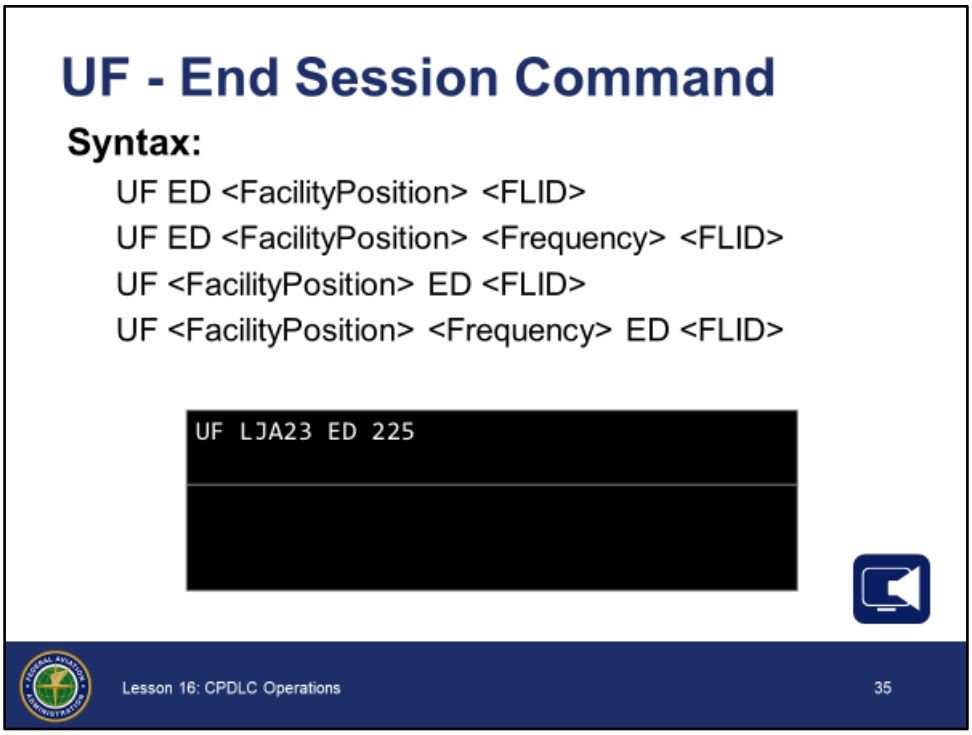


- The UF command with the RT option allows a controller to use CPDLC to inform a pilot that Radar Services are being terminated
- When the RT option is used, the text RADAR SERVICES TERMINATED is added to the end of the frequency uplink
- The UF command syntax remains as previously described
  - The RT parameter can be inserted either immediately after the UF or right before the FLID

MANUAL FREQUENCY UPLINKS *(CONT'D)*

UF - End Session Command

TI 6110.101, secs. 6.1.8.2, 6.1.8.2.1



- ERAM does not support automated handoffs to ATOP and non-US facilities
- When transferring control to ATOP or non-US facilities, use the UF command to transfer an aircraft's voice frequency
  - Unless otherwise coordinated, the end session (ED) parameter must be included

Continued on next page

MANUAL FREQUENCY UPLINKS *(CONT'D)*

UF - End Session Command (Cont'd)

JO 7110.125 par. 8.k

TI 6110.101, secs. 6.1.8.2, 6.1.8.2.1

- The UF message supports the use of both VHF and HF frequencies when the specified facility is a non-US facility or ATOP
- The optional ED parameter can be inserted either after the UF or before the FLID
- End Session command - No frequency specified:

  Syntax: UF <FacilityPosition> ED <FLID>

  UF ED <FacilityPosition> FLID

  Examples: `UF ZAK ED 225`

  `UF ZAK07 ED 225`

  `UF ED LJA 225`

  `UF ED LJA23 225`

- End Session command - Frequency specified:

  Syntax: UF <Facility> <Frequency> ED <FLID>

  UF ED <Facility> <Frequency> FLID

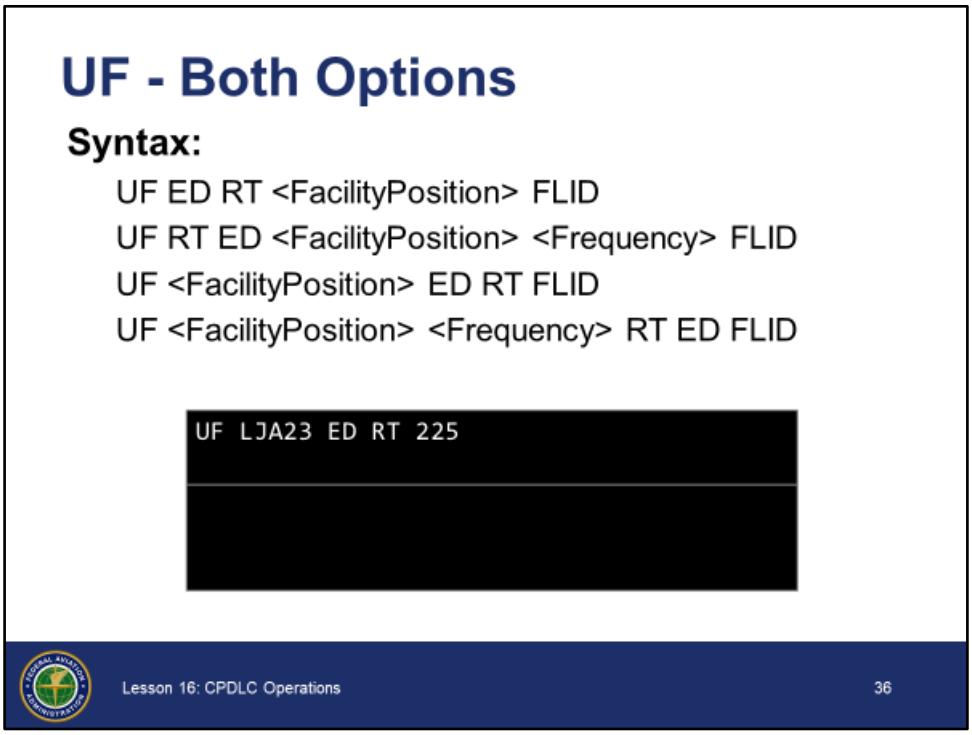
  Examples: `UF ZAK 126.75 ED 225`

  `UF LJA 13348 ED 225`

MANUAL FREQUENCY UPLINKS *(CONT'D)*

UF - Both Options

TI 6110.101, sec. 6.2.3.12



- The UF command can include both the ED and RT optional parameters at the same time
  - If both parameters are specified, the uplink message will include the text RADAR SERVICES TERMINATED END SERVICE and the session will be terminated upon receipt of a WILCO response from the pilot
- The RT and ED parameters must be entered together either immediately after the UF or right before the FLID
  - The order of the two parameters does not matter

Syntax: UF ED RT <FacilityPosition> FLID

UF RT ED <FacilityPosition> <Frequency> FLID

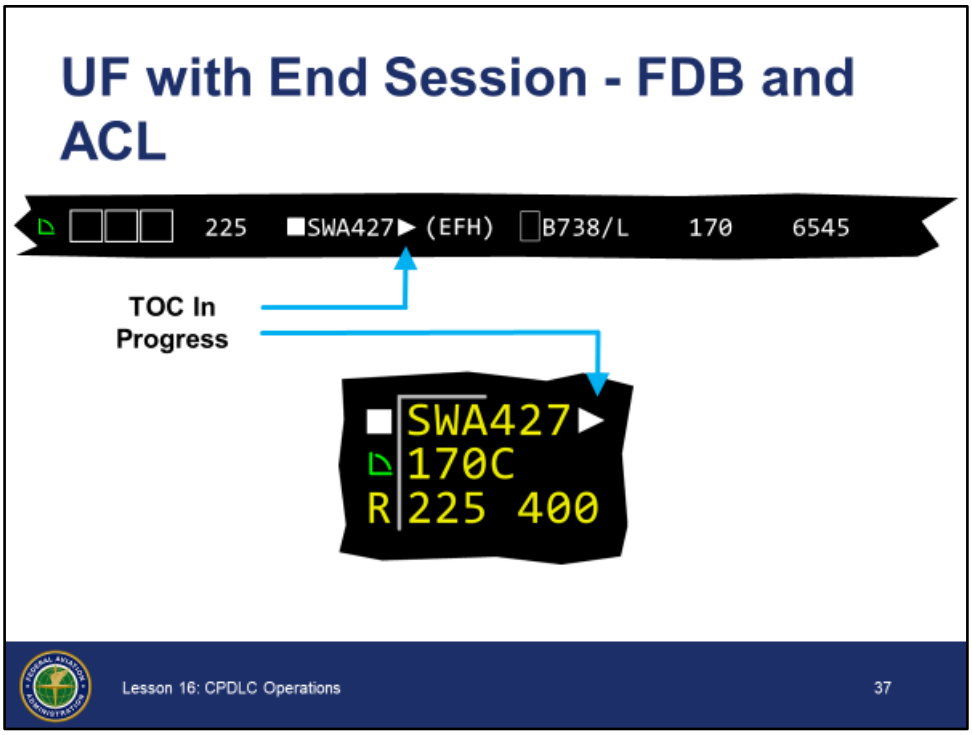
UF <FacilityPosition> ED RT FLID

UF <FacilityPosition> <Frequency> RT ED FLID

MANUAL FREQUENCY UPLINKS *(CONT'D)*

UF with End Session - FDB and ACL

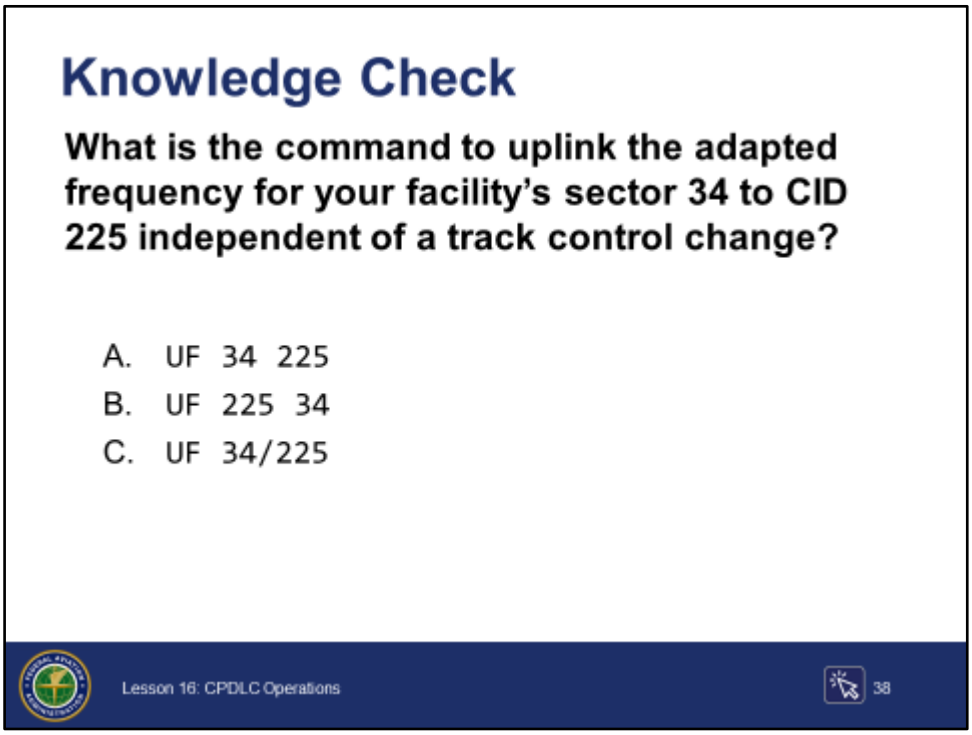
TI 6110.101, sec. 6.2.3.12



- When a UF message that includes an end session (ED) parameter is accepted, a TOC In Progress indicator will be displayed in the FDB and ACL
  - When a WILCO response is received, the TOC In Progress, VCI, and CDA Session With Eligibility indicators will be removed

MANUAL FREQUENCY UPLINKS *(CONT'D)*

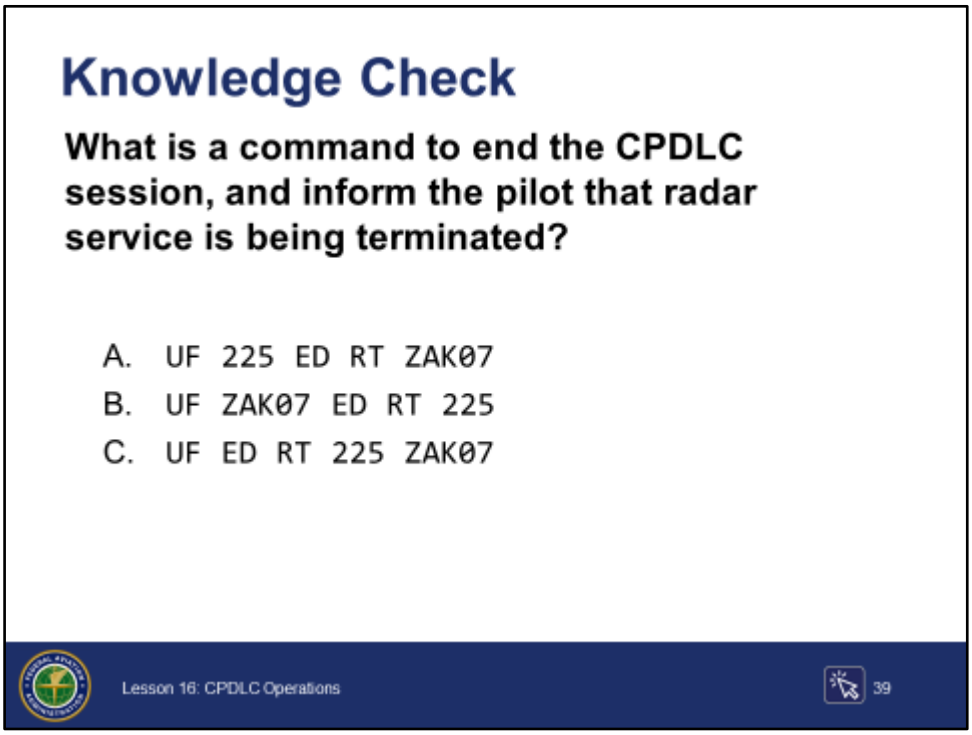
Knowledge Check



Question: What is the command to uplink the adapted frequency for your facility's sector 34 to CID 225 independent of a track control change?

MANUAL FREQUENCY UPLINKS *(CONT'D)*

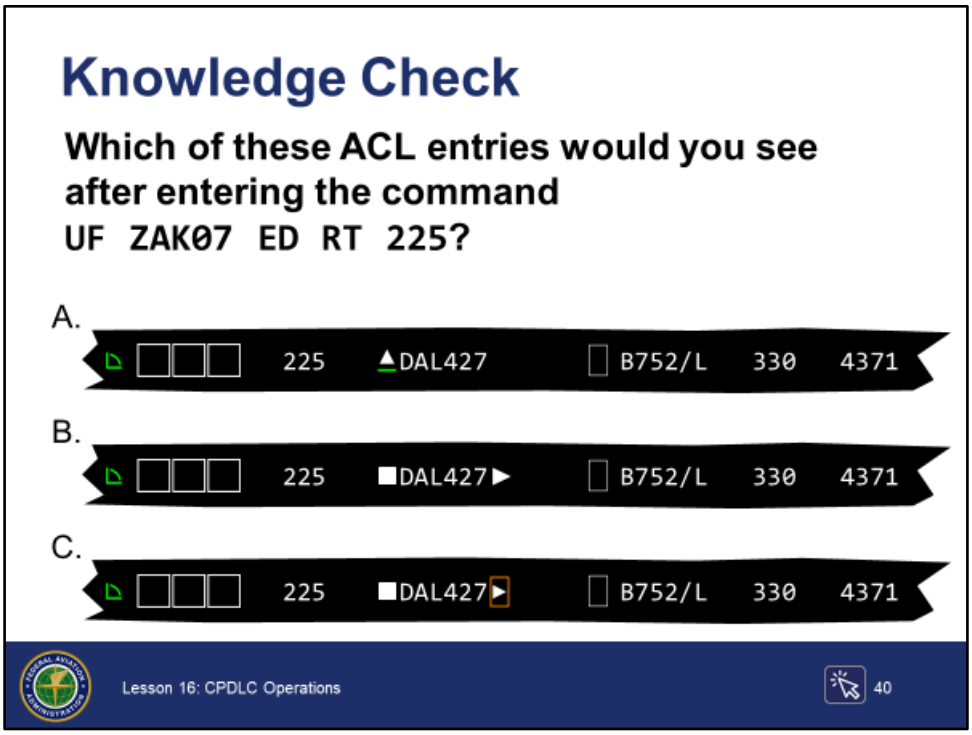
Knowledge Check



Question: What is a command to end the CPDLC session, and inform the pilot that radar service is being terminated?

MANUAL FREQUENCY UPLINKS *(CONT'D)*

Knowledge Check

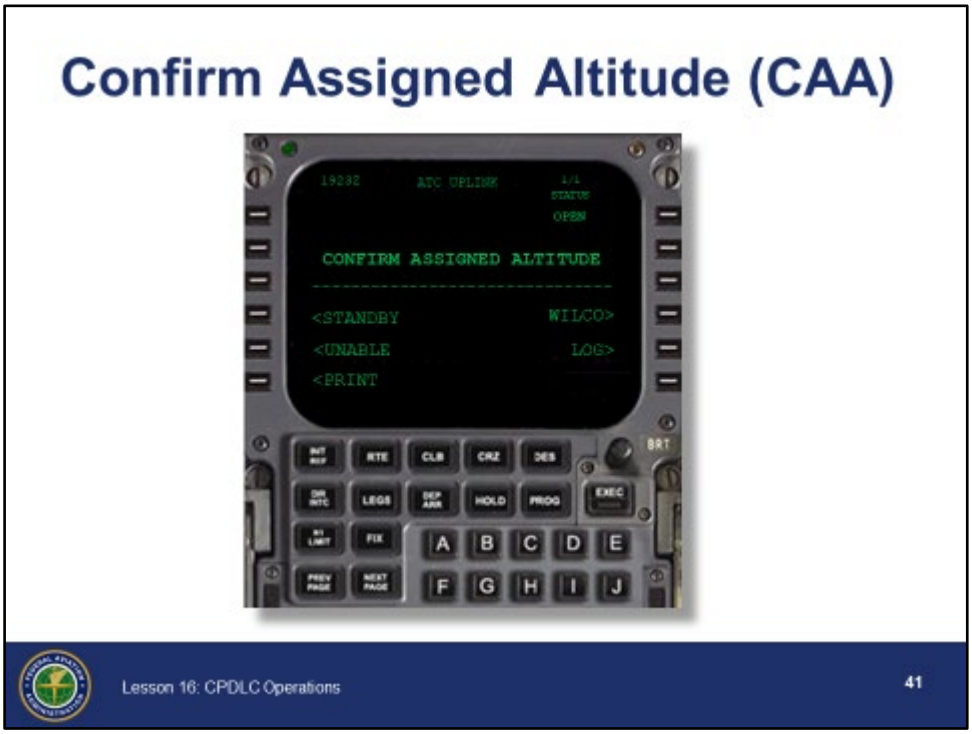


Question: Which of these ACL entries would you see after entering the command `UF ZAK07 ED RT 225`?

CONFIRM ASSIGNED ALTITUDE (CAA) UPLINK

Confirm Assigned Altitude (CAA) Uplink

TI 6110.101, secs. 6.2.3.13, 12.2



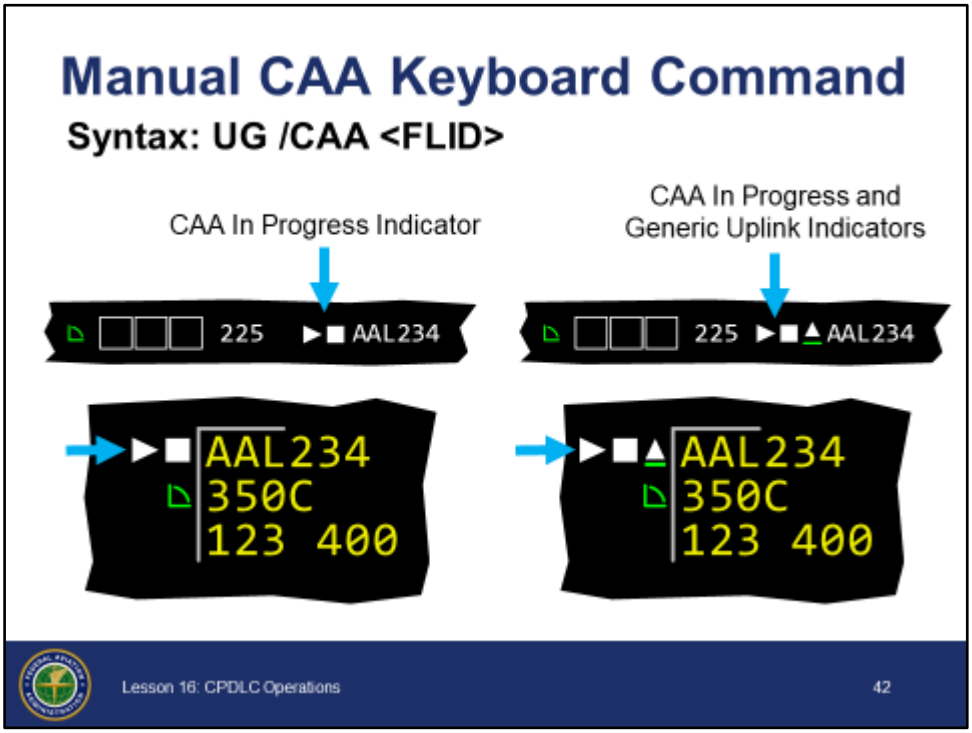
- A controller can manually uplink a Confirm Assigned Altitude (CAA) message to an aircraft
  - The aircraft will downlink their cleared altitude and the system will compare it to the altitude displayed in the FDB
    - If the altitudes don't match, mismatch coding will be displayed

CONFIRM ASSIGNED ALTITUDE (CAA) UPLINK
(CONT'D)

Manual CAA Keyboard Command

TI 6110.101, secs. 6.1, 6.2.2.1, 6.2.2.1.1, 6.2.3.13, 7.1.4, 7.3, 12.4, and Figure 7-8

TI 6110.100, sec. 6.3.13



- The Uplink Generic (UG) command is used to uplink the CAA message

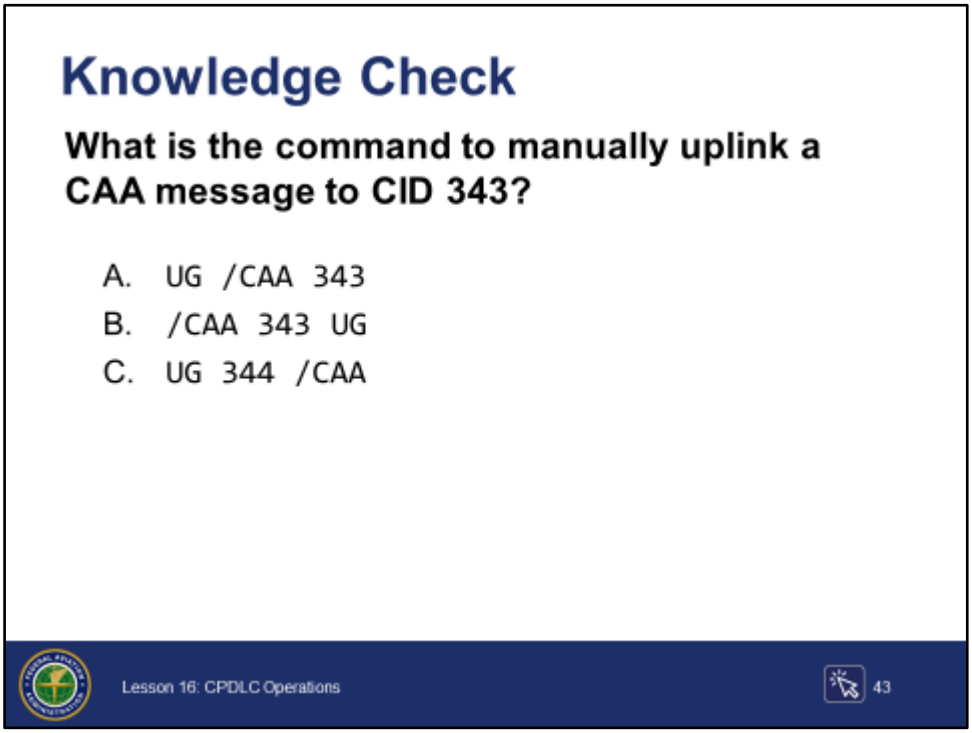
  Syntax: UG /CAA <FLID>

- A UG command will be rejected for any of the following conditions:
  - TOC in progress
  - IC in progress or an unacknowledged IC mismatch
  - Unacknowledged abnormal uplink
  - Unacknowledged emergency PID
  - Session termination in progress
  - Assigned procedure altitude (P in the altitude field of the FDB)
- The CAA In Progress indicator will be displayed while the CAA uplink is open
- The CAA In Progress indicator will always be to the left of any other indicators

  Example: A Generic Uplink in progress and/or a normal PID indicator

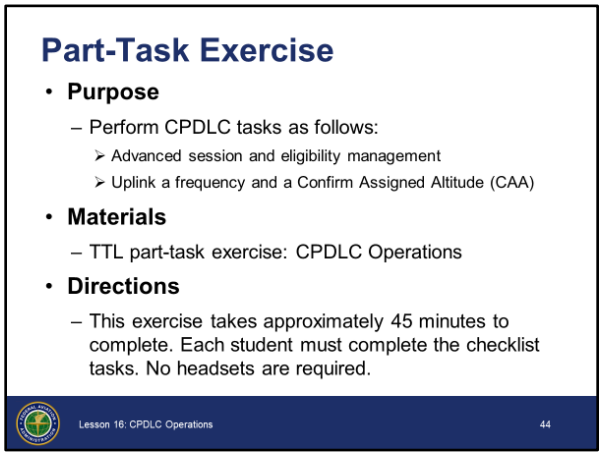
CONFIRM ASSIGNED ALTITUDE (CAA) UPLINK
(CONT'D)

Knowledge Check



Question: What is the command to manually uplink a CAA message to CID 343?

PART-TASK EXERCISE: CPDLC OPERATIONS



Purpose

Perform CPDLC tasks as follows:

- Advanced session and eligibility management
- Uplink a frequency and a Confirm Assigned Altitude (CAA)

Materials

Handout:

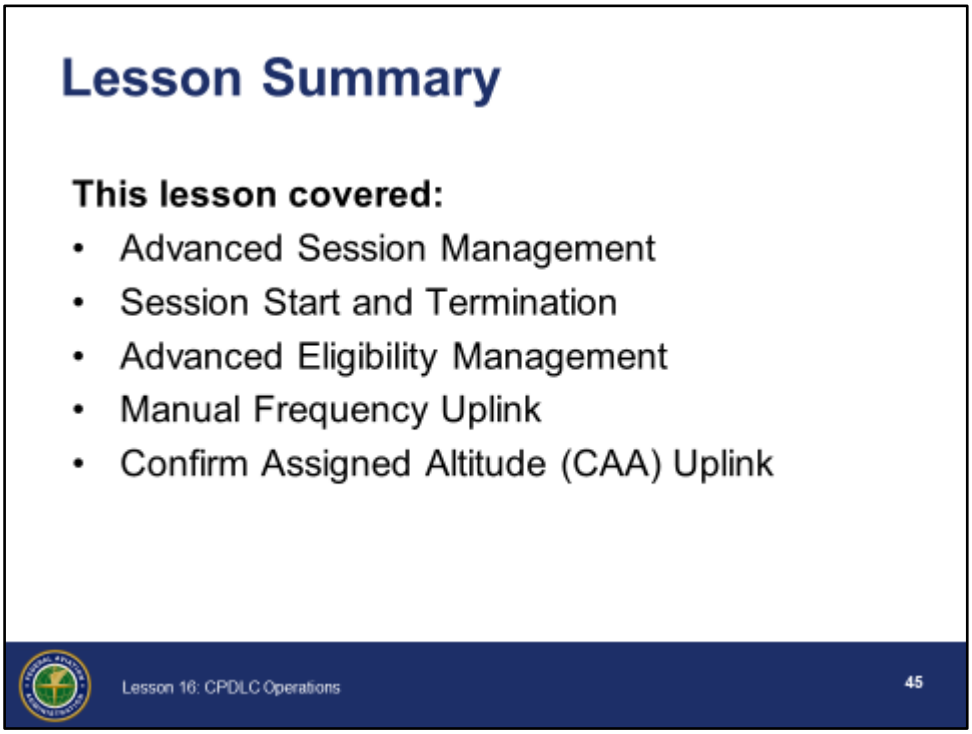
- TTL part-task exercise: CPDLC Operations
- TTL scenario

Directions

This exercise takes approximately 45 minutes to complete. Each student must complete the checklist tasks. No headsets are required.

CONCLUSION

Lesson Summary



This lesson covered:

- Advanced Session Management
  - Session Initiation
  - Aircraft logon
  - Logon / flight plan correlation
  - Automatic session initiation
  - Logical Data Authority (LDA)
  - CPDLC flight plan readout
- Session Start and Termination
  - Manually start a session
  - Session termination - Normal
  - Session termination - Failed

Continued on next page

CONCLUSION *(CONT'D)*

Lesson Summary (Cont'd)

- Acknowledge failed session
- Manually terminate a session

⊙ Advanced Eligibility Management

- Eligibility assignment concepts
- Eligibility release processing
- Eligibility release acceptance
- Release eligibility options
- Steal eligibility

⊙ Manual Frequency Uplink (UF)

- Keyboard commands
- FDB and ACL CHI
- Radar services terminated
- End Session command
- Both options
- End Session - FDB and ACL

⊙ Confirm Assigned Altitude (CAA) Uplink

- Manual CAA keyboard commands
- CAA In Progress indicator