Federal Aviation Administration

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

Lesson 12: Radar Handoff and Point Out

Version: 1.0 2022.08

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LESSON PLAN DATA SHEET

Course Name	Radar Associate Controller Training Part C: Advanced Concepts
Course Number	55054003
Lesson Title	Radar Handoff and Point Out
Duration	2 hours, 45 minutes (includes lesson, part-task exercise, and ELT)
Version	1.0 2022.08
Reference(s)	JO 7110.65, Air Traffic Control; JO 7210.3, Facility Operation and Administration; TI 6110.100, En Route Automation Modernization (ERAM) Air Traffic Manual (ATM): R-Position User Manual; TI 6110.101, En Route Automation Modernization (ERAM) Air Traffic Manual (ATM): RA-Position User Manual; TI 6110.108, ERAM Reference Card; TI 6110.141, En Route Automation Modernization (ERAM) System Adaptation Manual (SAM): Local Data Panels; ERAM EDSM SRS 210.04 V1B2
Prerequisites	NONE
Handout(s)	⊙ Part-Task Exercise ⊙ TI 6110.108, ERAM Quick Reference Controller Card
Exercise / Activity	Refer to handout for: ⊙ Part-Task Exercise: Radar Handoff and Point Out
Scenario	⊙ Run scenario 55054003_L12_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.

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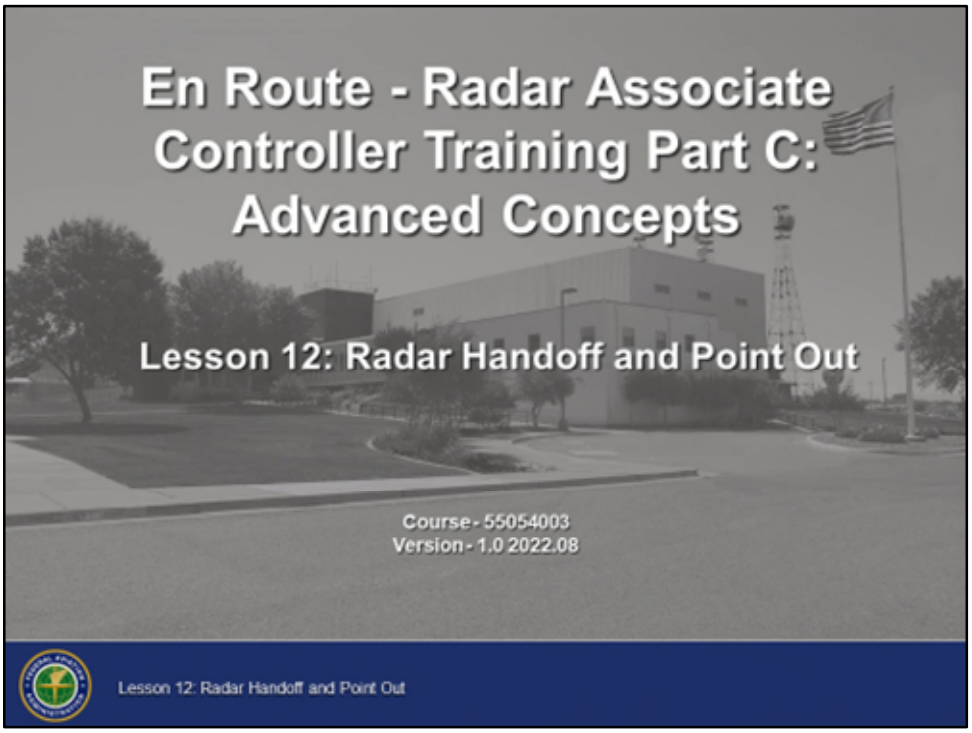
LESSON INTRODUCTION

Overview

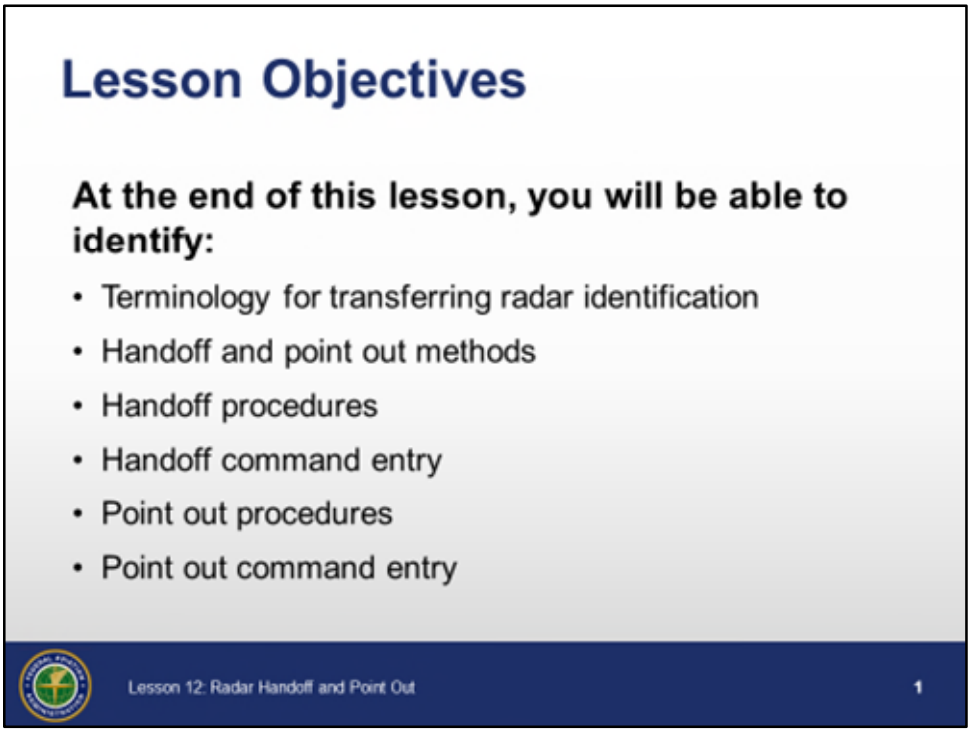


When making a handoff or point out, established procedures must be followed to ensure that both the transferring and receiving controllers are referring to the same target.

This lesson covers procedures used to transfer aircraft radar identification from one controller to another.

LESSON INTRODUCTION *(CONT'D)*

Lesson Objectives



At the end of this lesson, you will be able to identify:

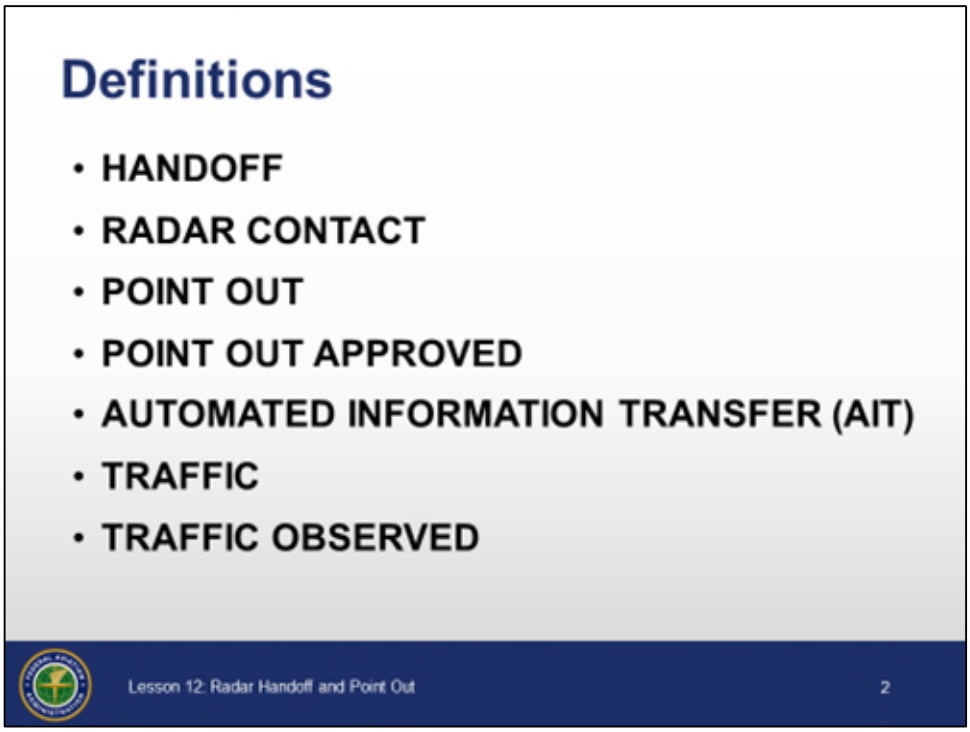
- Terminology for transferring radar identification
- Handoff and point out methods
- Handoff procedures
- Handoff command entry
- Point out procedures
- Point out command entry

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.

TEMINOLOGY FOR TRANSFERRING RADAR IDENTIFICATION

Definitions

JO 7110.65, pars. 5-4-2, 5-4-8, 5-4-9, PCG



HANDOFF - An action taken to transfer the radar identification of an aircraft from one controller to another if the aircraft will enter the receiving controller's airspace and radio communications with the aircraft will be transferred.

RADAR CONTACT - The term used to inform the controller initiating a handoff that the aircraft is identified and approval is granted for the aircraft to enter the receiving controller's airspace.

POINT OUT - An action taken by a controller to transfer the radar identification of an aircraft to another controller and radio communications will not be transferred.

POINT OUT APPROVED - The term used to inform the controller initiating a point out that the aircraft is identified and that approval is granted for the aircraft to enter the receiving controller's airspace, as coordinated, without a communications transfer or the appropriate automated system response.

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TERMINOLOGY FOR TRANSFERRING RADAR IDENTIFICATION *(CONT'D)*

Definitions (Cont'd)

JO 7110.65, pars. 5-4-2, 5-4-8, 5-4-9, PCG

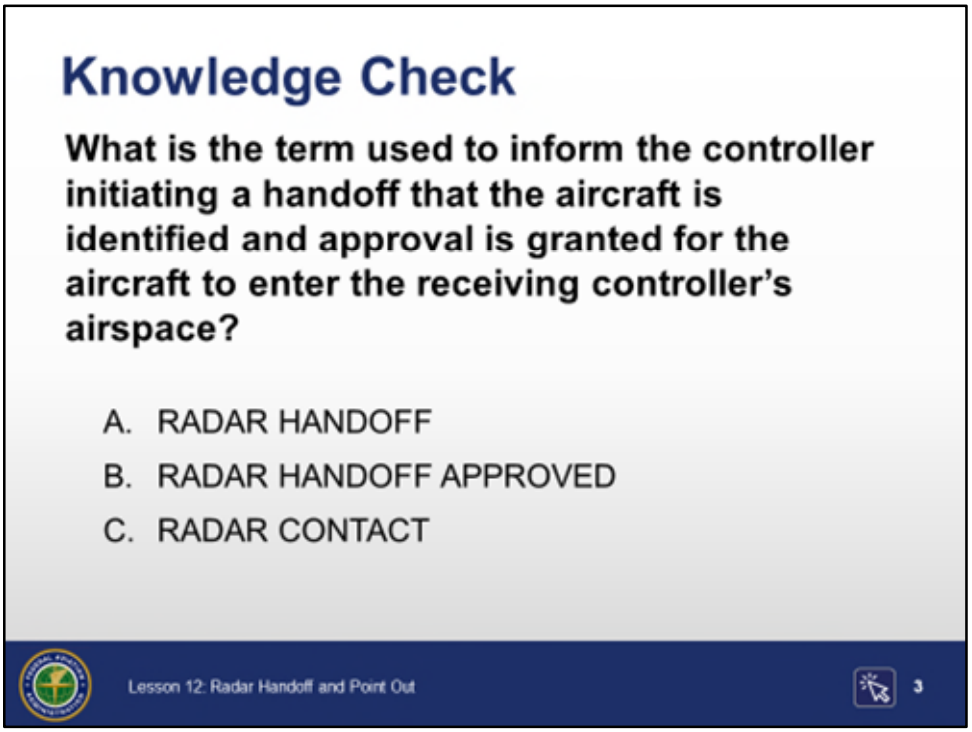
AUTOMATED INFORMATION TRANSFER (AIT) - A precoordinated process, specifically defined in facility directives, during which a transfer of altitude control and/or radar identification is accomplished without verbal coordination between controllers using information communicated in a full data block.

TRAFFIC - A term used by a controller to transfer radar identification of an aircraft to another controller for the purpose of coordinating separation action.

TRAFFIC OBSERVED - The term used to inform the controller issuing the traffic restrictions that the traffic is identified and that the restrictions issued are understood and will be complied with.

TERMINOLOGY FOR TRANSFERRING RADAR IDENTIFICATION *(CONT'D)*

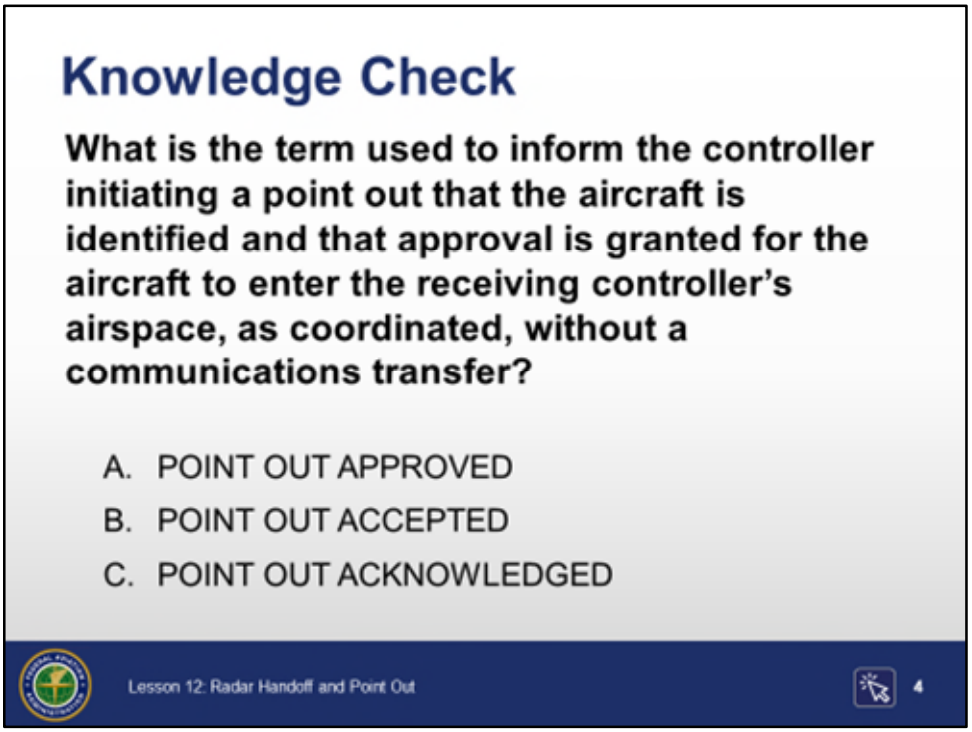
Knowledge Check



Question: What is the term used to inform the controller initiating a handoff that the aircraft is identified and approval is granted for the aircraft to enter the receiving controller's airspace?

TERMINOLOGY FOR TRANSFERRING RADAR IDENTIFICATION *(CONT'D)*

Knowledge Check

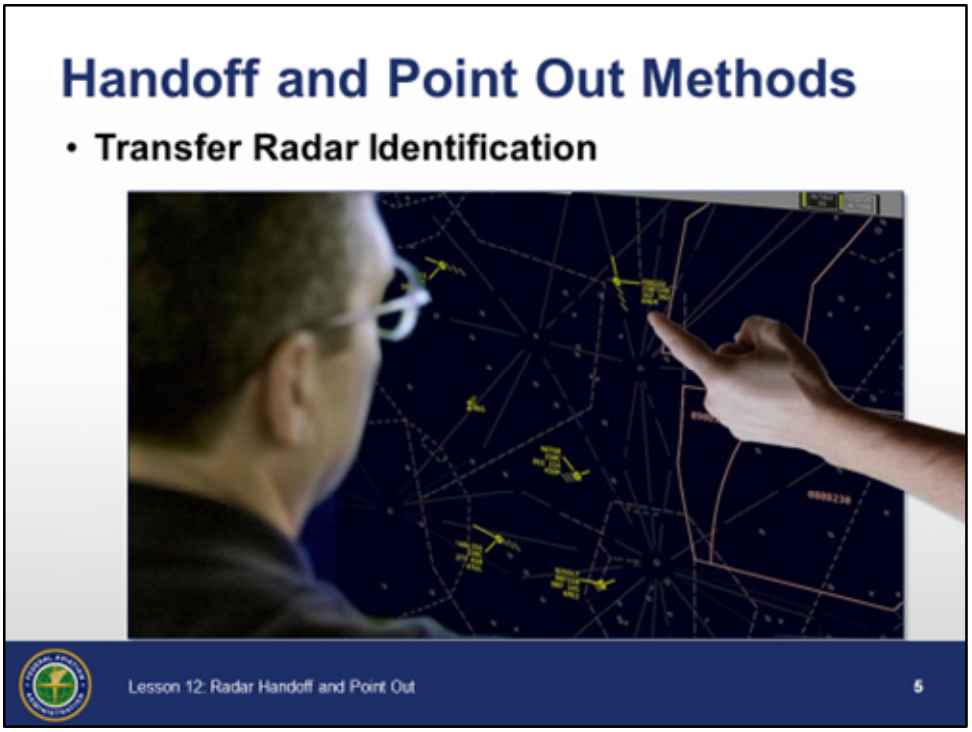


Question: What is the term used to inform the controller initiating a point out that the aircraft is identified and that approval is granted for the aircraft to enter the receiving controller's airspace, as coordinated, without a communications transfer?

HANDOFF AND POINT OUT METHODS

Transfer Radar Identification

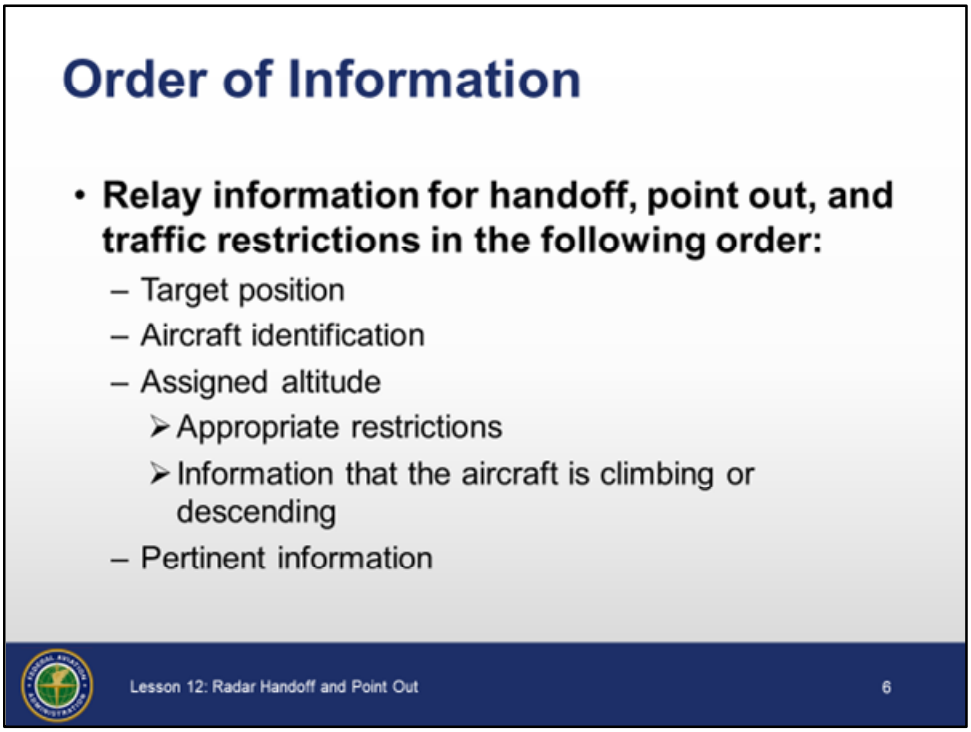
JO 7110.65, par. 5-4-3



- Transfer the radar identification (for both handoffs and point outs) of an aircraft by at least one of the following methods:
  - Physically point to the target on the receiving controller's display
    - When physically pointing to the target, you do not have to state the aircraft position
  - Use landline voice communications
  - Use automation capabilities

Order of Information

JO 7110.65, par. 5-4-3



⊙ Relay information for handoff, point out, and traffic restrictions in the following order:

- Target position relative to:
  - A fix
  - A map symbol, or
  - Radar target known and displayed on both Situation Displays
    - Mileage from the reference point may be omitted if a Full Data Block (FDB) associated with the target has been forced on the receiving controller's Situation Display
- The aircraft identification:
  - Aircraft call sign, or
  - Discrete beacon code of the aircraft
    - During interfacility point outs only, if both receiving and transferring controllers agree

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HANDOFF AND POINT OUT METHODS *(CONT'D)*

Handoff/Point Out - Order of Information (Cont'd)

JO 7110.65, par. 5-4-3

  - Computer Identification Number (CID) during intrafacility point outs
- Assigned altitude, unless facility directives ensure altitude information is known
  - Appropriate restrictions
  - Information that the aircraft is climbing or descending
- Pertinent information not contained in the data block or available flight data unless covered in a Letter of Agreement (LOA) or facility directive. Pertinent information may include:
  - Assigned heading
  - Speed restrictions
  - Altitude restrictions
  - Observed track or deviation from the last route clearance
  - Any other pertinent information

 HANDOFF/POINT OUT/TRAFFIC (aircraft position), (aircraft ID or discrete beacon code), (altitude, restrictions, and other pertinent information, if applicable).

Example:

Transferring controller: "SECTOR ONE, SECTOR TWO"

Receiving controller: "SECTOR ONE"

Transferring controller: "HANDOFF, ONE ZERO MILES WEST OF MCALESTER, UNITED TWO TEN CLIMBING TO FLIGHT LEVEL TWO FOUR ZERO, REQUESTING VECTOR TO HECTOR"

Receiving controller: "UNITED TWO TEN, RADAR CONTACT, REQUEST CONTROL"

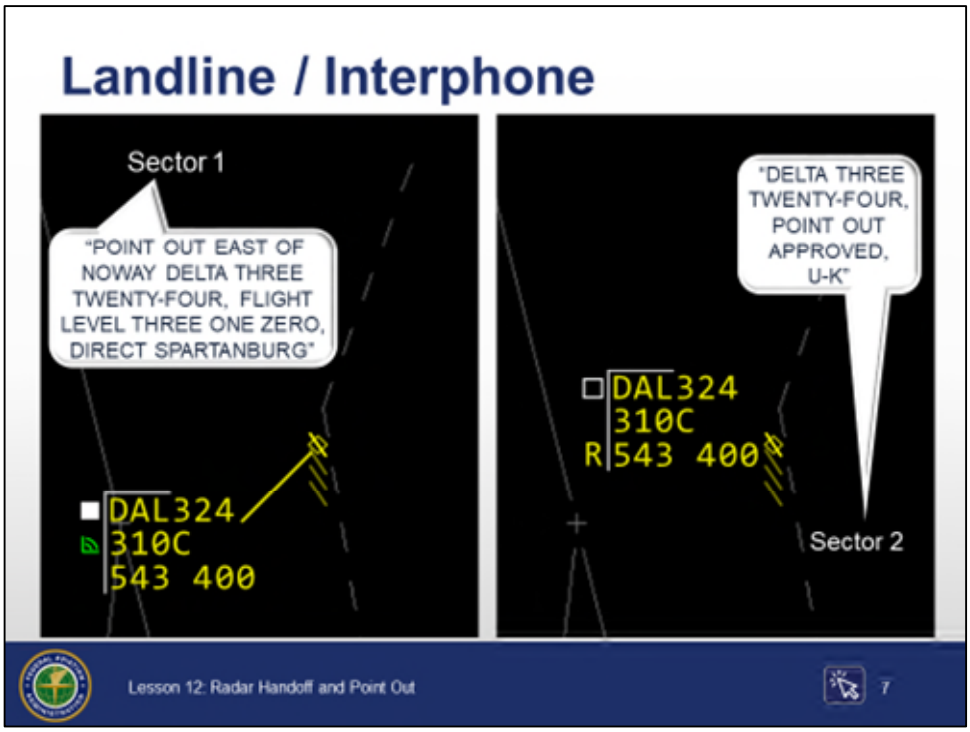
Transferring controller: "UNITED TWO TEN YOUR CONTROL, J-C"

Receiving controller: "N-D"

HANDOFF AND POINT OUT METHODS *(CONT'D)*

Landline Transfer of Radar Identification

JO 7110.65, par. 5-4-3



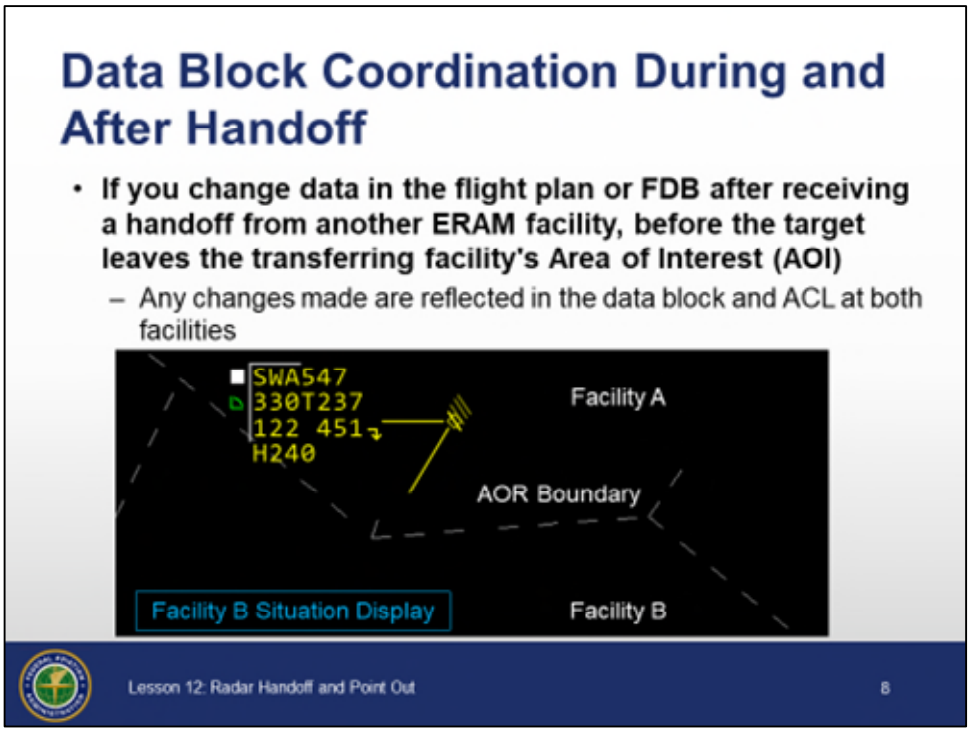
- Use landline voice communications to transfer radar identification

HANDOFF AND POINT OUT METHODS *(CONT'D)*

Data Block Coordination During and After Handoff

JO 7110.65, par. 5-14-3

TI 6110.100, sec. 5.1.5.3



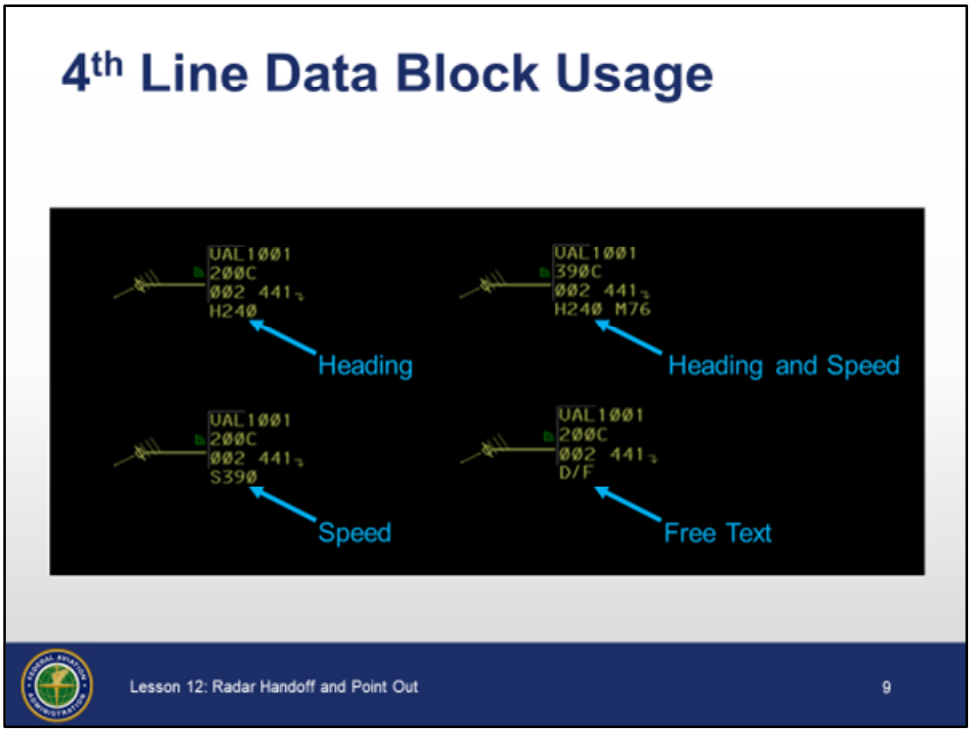
- If you change data in the flight plan or FDB after receiving a handoff from another ERAM facility, before the target leaves the transferring facility's Area of Interest (AOI):
  - Any changes made are reflected in the data block and ACL at both facilities
- If the transferring controller modifies 4th line data after the receiving facility accepts the handoff, and the aircraft is within the transferring controller's AOR:
  - The changes made are reflected in the data blocks of both facilities
- If there is an Unsuccessful Transmission Message (UTM), the message will not be passed

HANDOFF AND POINT OUT METHODS *(CONT'D)*

4th Line Data Block Usage

JO 7110.65, par. 5-4-10

TI 6110.100, sec. 5.1.5.20



- The 4th line of the data block may only be used to forward the following information of radar identified aircraft:
  - Assigned Heading
    - Character "H" preceding a three-digit number
      - The character "H" may be omitted as a prefix to the heading assignment only if necessary due to character field limitations, and it does not impede understanding
    - Present heading denoted by PH
    - Weather deviations must use designated characters
      - Information indicated by "D" and direction
      - Two digits specify turns and must include direction
      - Three digits specify headings
      - /NAVAID, /waypoint, or /F inclusion indicates authorized weather deviation and pilot must rejoin the route
      - /F indicates direct next NAVAID/waypoint
      - Absence of /NAVAID, /waypoint, or /F indicates deviation for weather only and clearance is required to rejoin the route
  - Assigned airspeed
    - Must use the designation character "S" preceding the three-digit assigned number

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HANDOFF AND POINT OUT METHODS *(CONT'D)*

4th Line Data Block Usage (Cont'd)

JO 7110.65, pars. 5-4-8, 5-4-10

TI 6110.100, sec. 5.1.5.20

- Assigned Mach number
  - Must use the designation "M" preceding the two-digit assigned number
- Celestial navigation
  - Information indicated by CELNAV
- Pilot requested altitude
  - RQ preceding a three-digit number
- Pilot requested route
  - RQ/ preceding a specific fix identifier

⊙ Acceptance of a handoff by the receiving controller constitutes receipt of the information contained within the fourth line of the data block

⊙ It is the responsibility of the receiving controller to advise the transferring controller if any information is not understood, or needs to be revised

⊙ Any additional control information must be forwarded via other communication methods

⊙ Free text may be used by individual sector teams for recording information the team deems appropriate for managing the sector, but must be removed prior to initiation of identification transfer

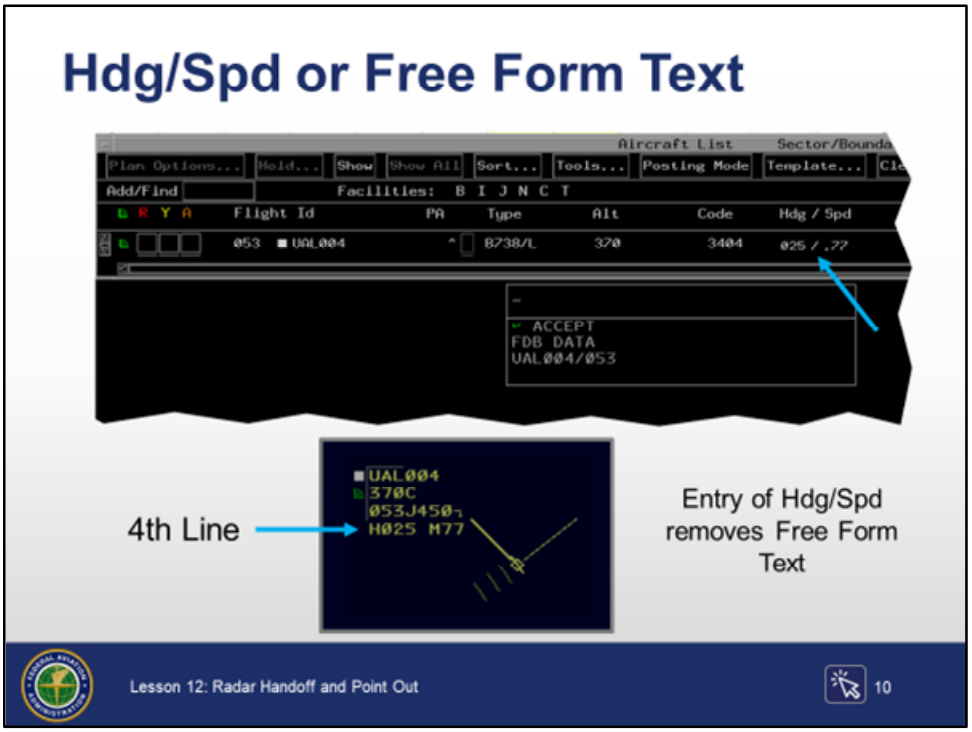
⊙ This information must not be modified outside of the controller's area of jurisdiction unless verbally coordinated or specified in a letter of agreement or facility directive

⊙ When Automated Information Transfer (AIT) procedures are applied, fourth line usage for transfer of control information must be specifically defined within facility AIT directive

HANDOFF AND POINT OUT METHODS *(CONT'D)*

4th Line Data Block Usage (Cont'd)

TI 6110.100, sec. 5.1.5.20, Appendix B

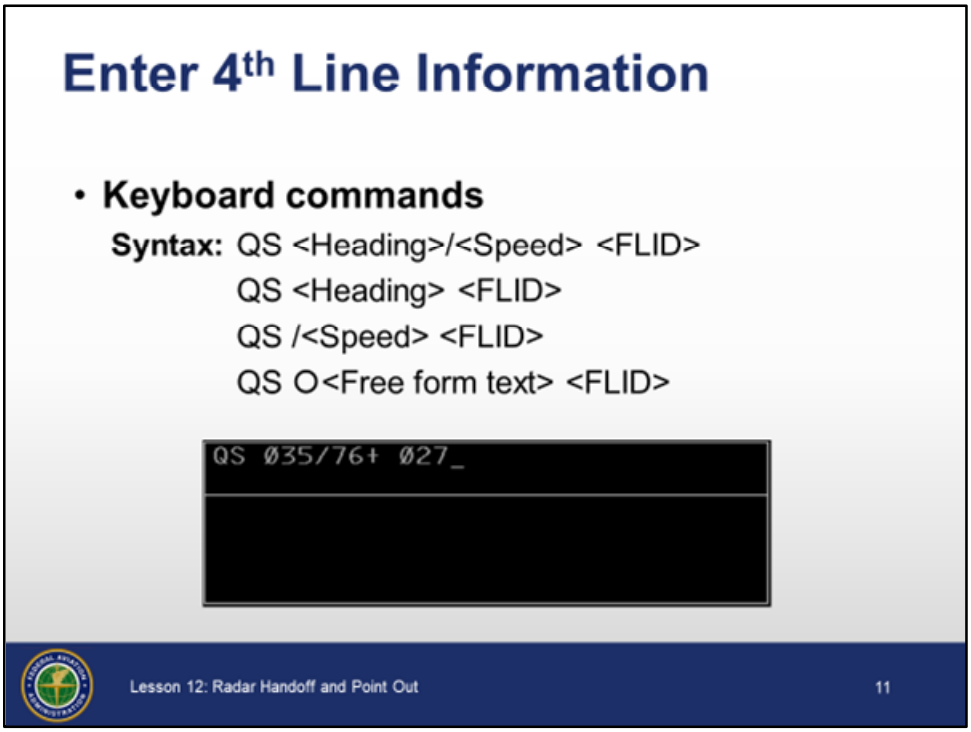


- 4th line of the FDB can only contain heading and/or speed, or free form text
  - Entering a heading and/or speed will replace free form text information in the FDB
    - The ACL entry's heading and speed data fields are populated
  - Entering free form text information will replace heading and speed data in the FDB
    - The ACL entry's heading and speed data is removed

HANDOFF AND POINT OUT METHODS *(CONT'D)*

Enter 4th Line Information

TI 6110.100, sec. 5.1.5.20, Appendix B



⊙ Enter 4th line information via:

- Keyboard commands

  Syntax: QS <Heading>/<Speed> <FLID>

  QS <Heading> <FLID>

  QS /<Speed> <FLID>

  NOTE: 2-digit speeds are Mach numbers and 3-digit speeds are knots.

  QS O<Free form text> <FLID>

  NOTE: Free form text must be 8 characters or less.

  Examples: QS 330/250 SWA420

  QS 115 UAL214

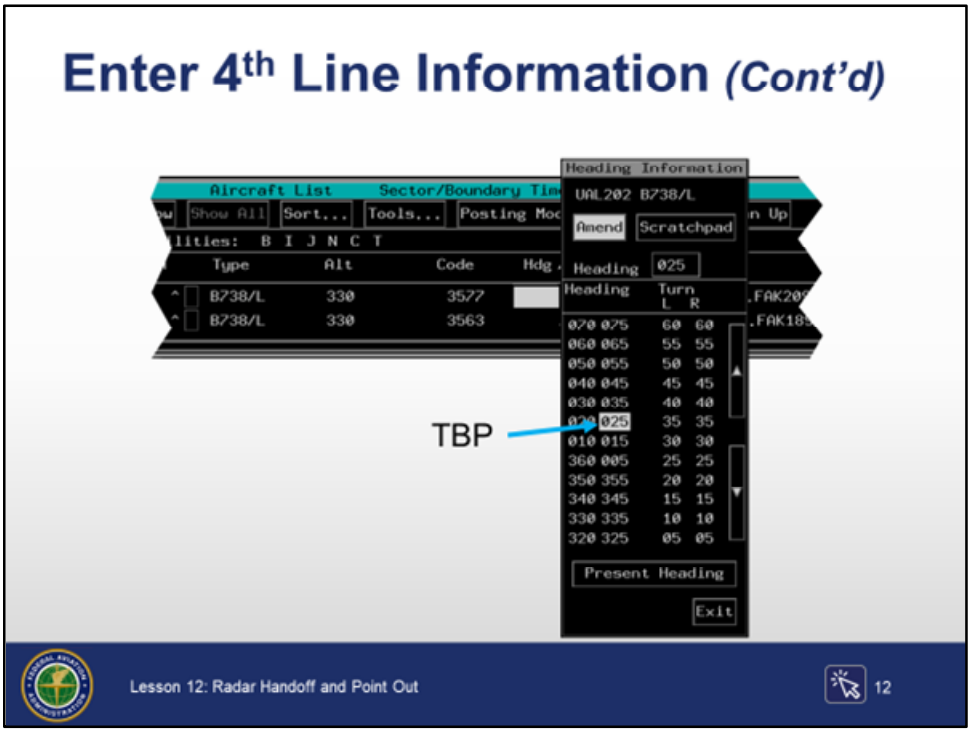
  QS /76 AAL1121

  QS ORQ/ELP SWA7881

HANDOFF AND POINT OUT METHODS *(CONT'D)*

Enter 4th Line Information (Cont'd)

TI 6110.100, sec. 5.1.5.20, Appendix B

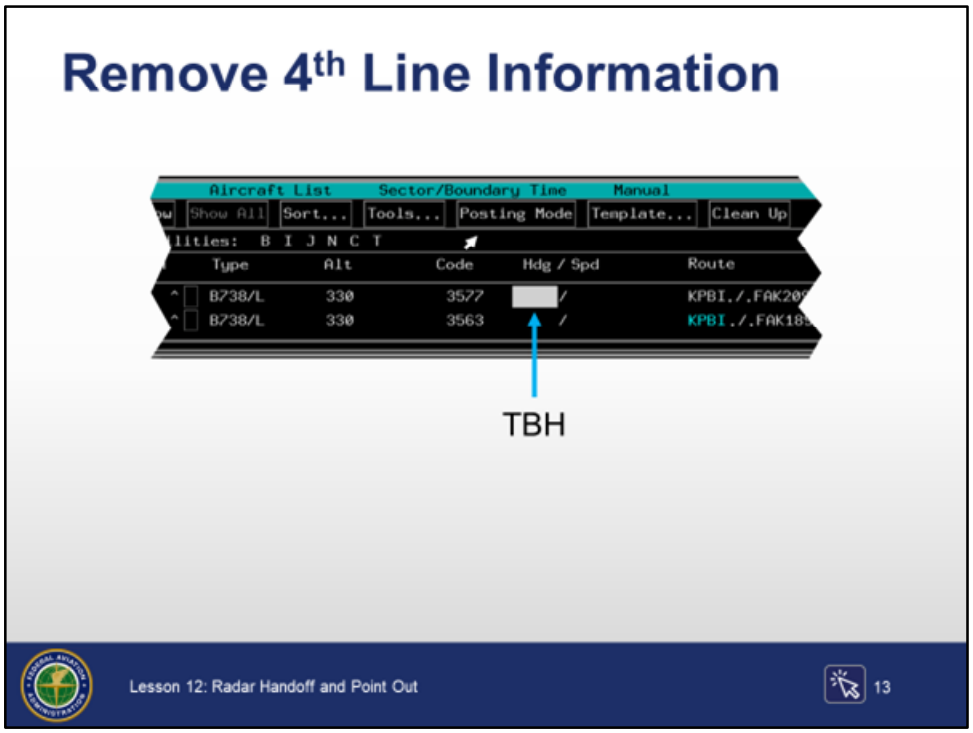


- EDST
  - Heading
    - TBP Hdg box to open
    - TBP heading, or type the heading then KBE
  - Speed
    - TBP Spd box to open
    - TBP speed, or type the speed then KBE

HANDOFF AND POINT OUT METHODS *(CONT'D)*

Remove 4th Line Information

TI 6110.100, sec. 5.1.5.20, Appendix B



- Remove 4th line information via:
  - Keyboard commands

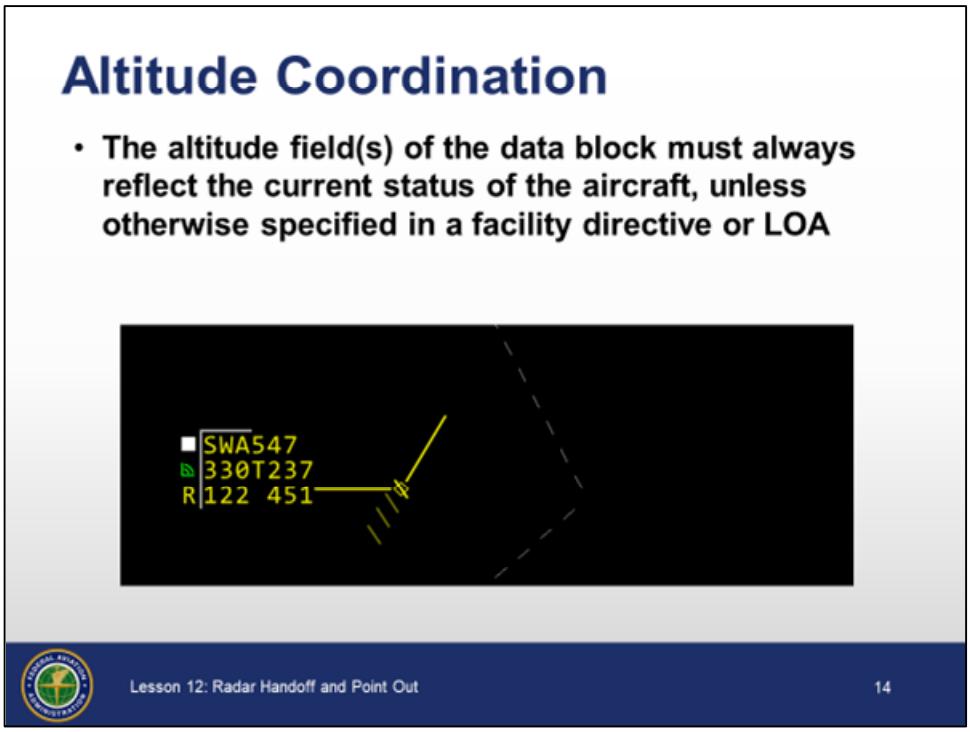
    Syntax: QS * <FLID> (Command removes all data)
    QS */ <FLID> (Command removes heading)
    QS /* <FLID> (Command removes speed)

    Examples: `QS * SWA420`
    `QS */ UAL214`
    `QS /* AAL1121`
  - EDST
    - Heading
      - TBH Hdg box to remove
    - Speed
      - TBH Spd box to remove

HANDOFF AND POINT OUT METHODS *(CONT'D)*

Altitude Coordination

JO 7110.65, par. 5-14-3



- The altitude field(s) of the data block must always reflect the current status of the aircraft, unless specified in a facility directive or LOA
- Do not modify assigned or interim altitude information prior to establishing communication with an aircraft that is outside your area of jurisdiction unless verbal coordination identifying who will modify the data block has been accomplished, unless otherwise specified in a facility directive or LOA
- Whenever an aircraft is cleared to maintain an altitude different from that in the flight plan database, enter into the computer one of the following:
  - The new assigned altitude, if the aircraft will maintain the new altitude, or
  - A procedure altitude if the aircraft is cleared to vertically navigate on a SID/STAR with published restrictions, or

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HANDOFF AND POINT OUT METHODS *(CONT'D)*

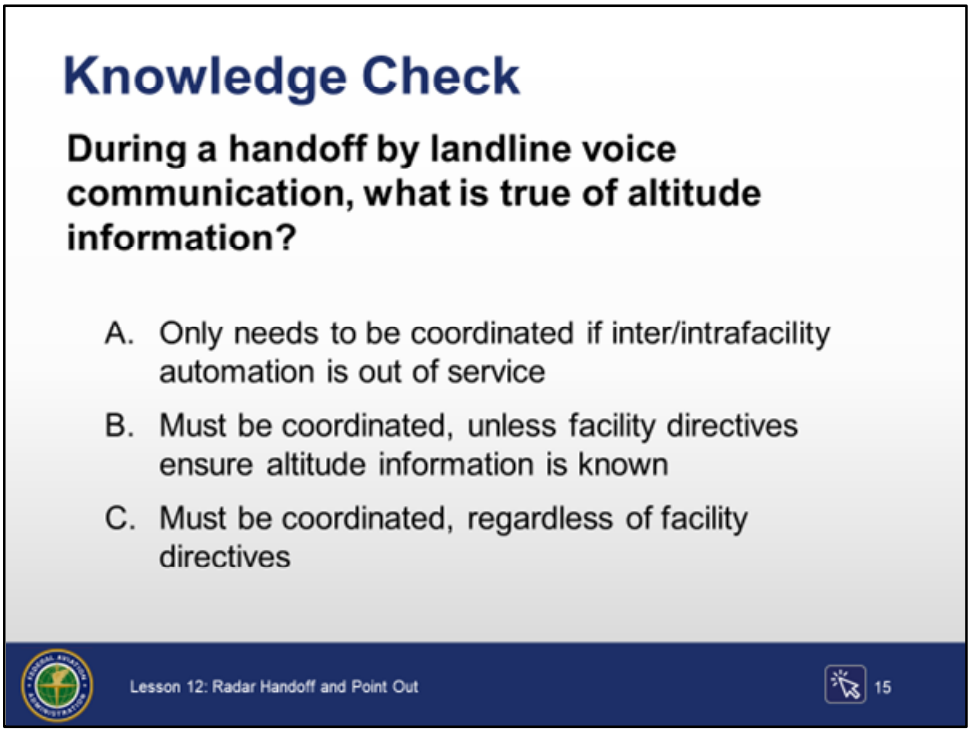
Altitude Coordination (Cont'd)

JO 7110.65, par. 5-14-3

- Where appropriate for interfacility handoffs, a local interim altitude when the assigned altitude differs from the coordinated altitude unless verbally coordinated or specified in a letter of agreement or facility directive, or
- An interim altitude, if the aircraft will maintain the new altitude for a short period of time and subsequently be recleared to:
  - The altitude in the flight plan database,
  - A new altitude, or
  - A new interim altitude

HANDOFF AND POINT OUT METHODS *(CONT'D)*

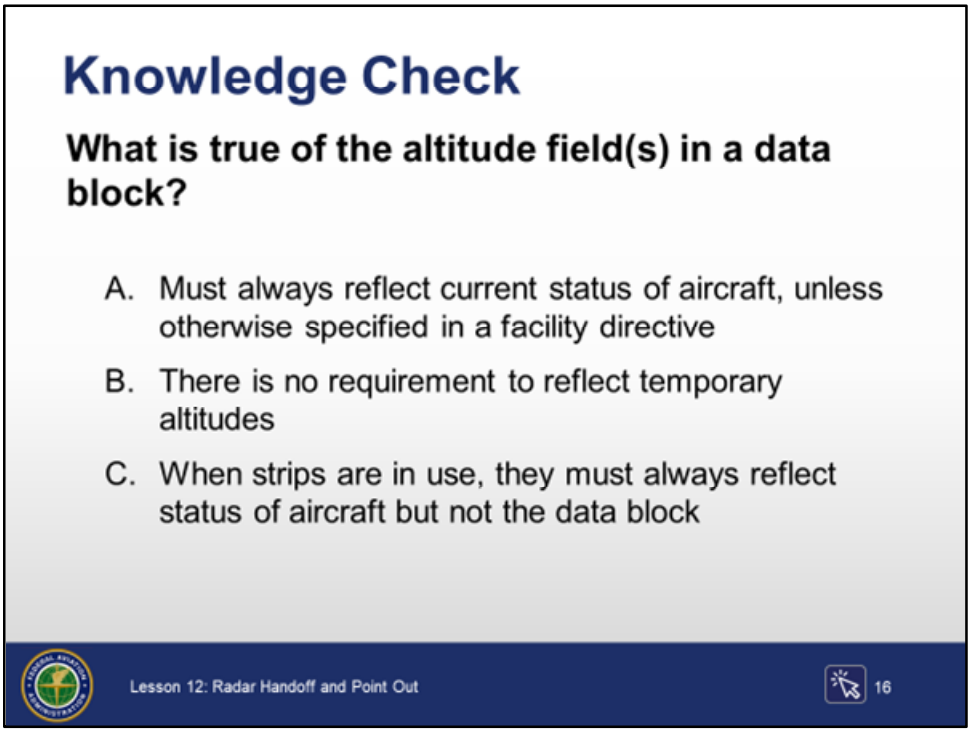
Knowledge Check



Question: During a handoff by landline voice communication, what is true of altitude information?

HANDOFF AND POINT OUT METHODS *(CONT'D)*

Knowledge Check

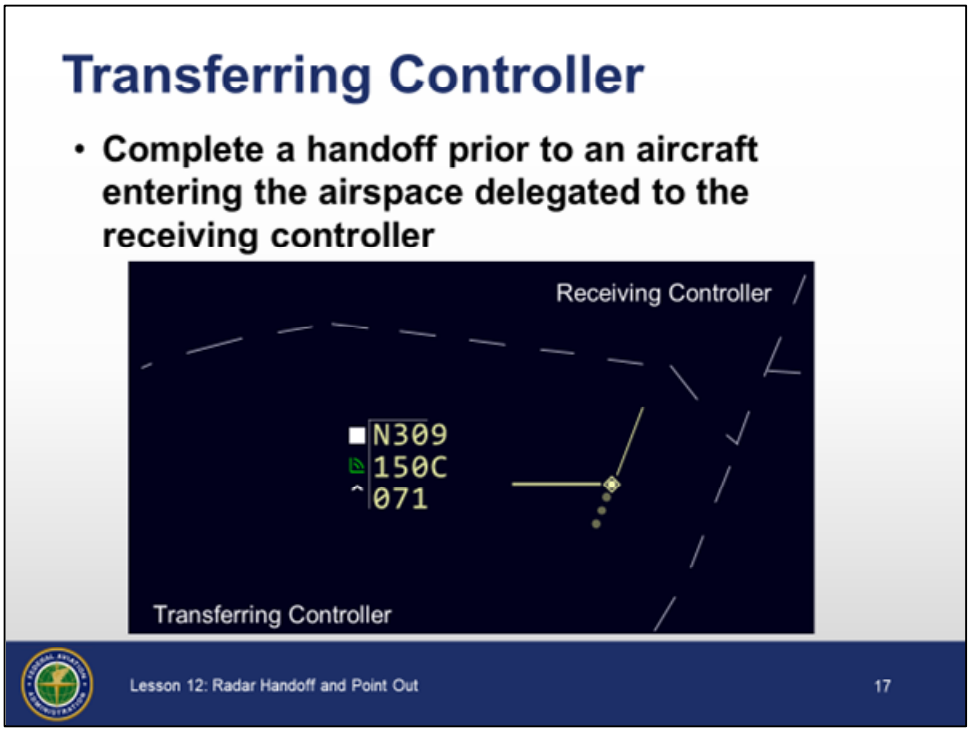


Question: What is true of the altitude field(s) in a data block?

HANDOFF PROCEDURES

Transferring Controller

JO 7110.65, pars. 2-1-14, 2-1-15, 2-1-17, 5-4-1, 5-4-5



- Unless otherwise coordinated, or specified in an LOA or facility directive, the transferring controller must:
  - Complete a handoff prior to an aircraft entering the airspace delegated to the receiving controller:
    - In all areas of radar surveillance (except where it is not operationally feasible), unless:
      - Coordinated for a specified period of time
  - While the handoff is being initiated, or after acceptance:
    - Verbally obtain the receiving controller's approval prior to making any changes to an aircraft's:
      - Flight path
      - Altitude
      - Speed
      - Data block information

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HANDOFF PROCEDURES *(CONT'D)*

Transferring Controller (Cont'd)

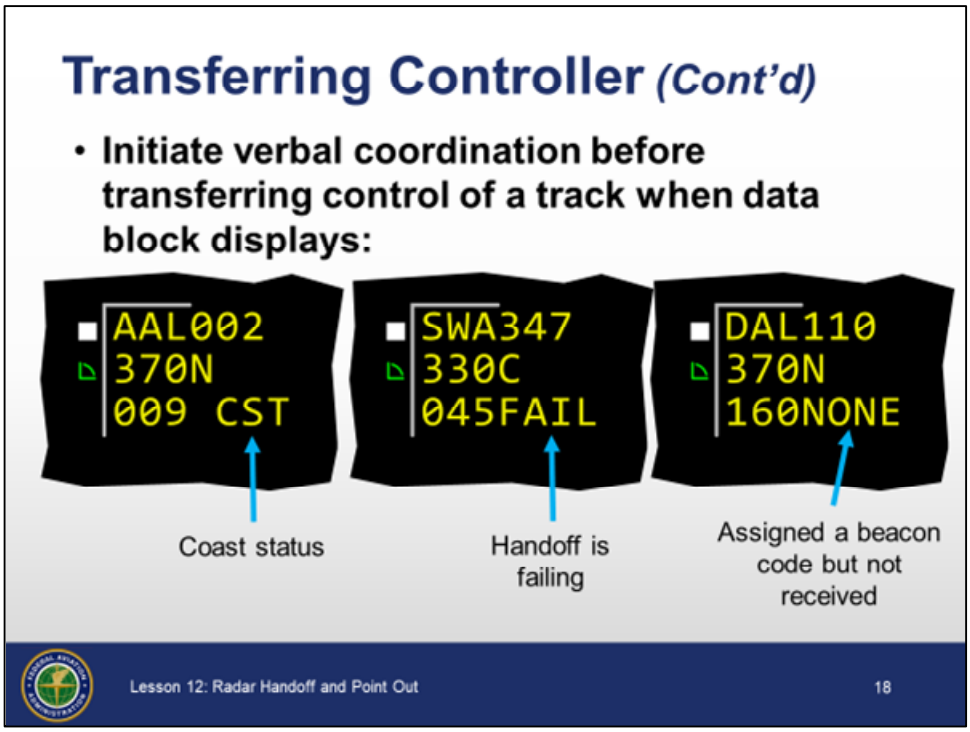
JO 7110.65, pars. 2-1-14, 2-1-15, 2-1-17, 5-4-1, 5-4-5

- Advise the receiving controller of pertinent information not contained in data block or flight progress strip, including:
  - Assigned heading
  - Speed restrictions
  - Altitude information issued
  - Observed track or deviation from last route clearance
  - Revised beacon code
  - Other pertinent information
- Initiate verbal coordination to verify the position of primary or nondiscrete targets
  - Not required for intrafacility handoffs in ERAM or MEARTS in Fused Display Mode

HANDOFF PROCEDURES *(CONT'D)*

Transferring Controller (Cont'd)

JO 7110.65, pars. 2-1-14, 2-1-15, 2-1-17, 4-1-2, 4-4-2, 5-4-1, 5-4-5, 13-1-8



- Initiate verbal coordination before transferring control of a track when data block displays:
  - CST (Coast status)
  - FAIL (handoff is failing)
  - NONE (assigned a beacon code but not received)
- Advise the receiving controller when radar monitoring is required due to:
  - Aircraft on direct route:
    - Initiated by ATC
    - Exceeding usable NAVAID distances
    - Random RNAV routes
- Consider the handoff complete when the receiving controller:
  - Acknowledges receipt verbally, or
  - Has accepted automated handoff

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HANDOFF PROCEDURES *(CONT'D)*

Transferring Controller (Cont'd)

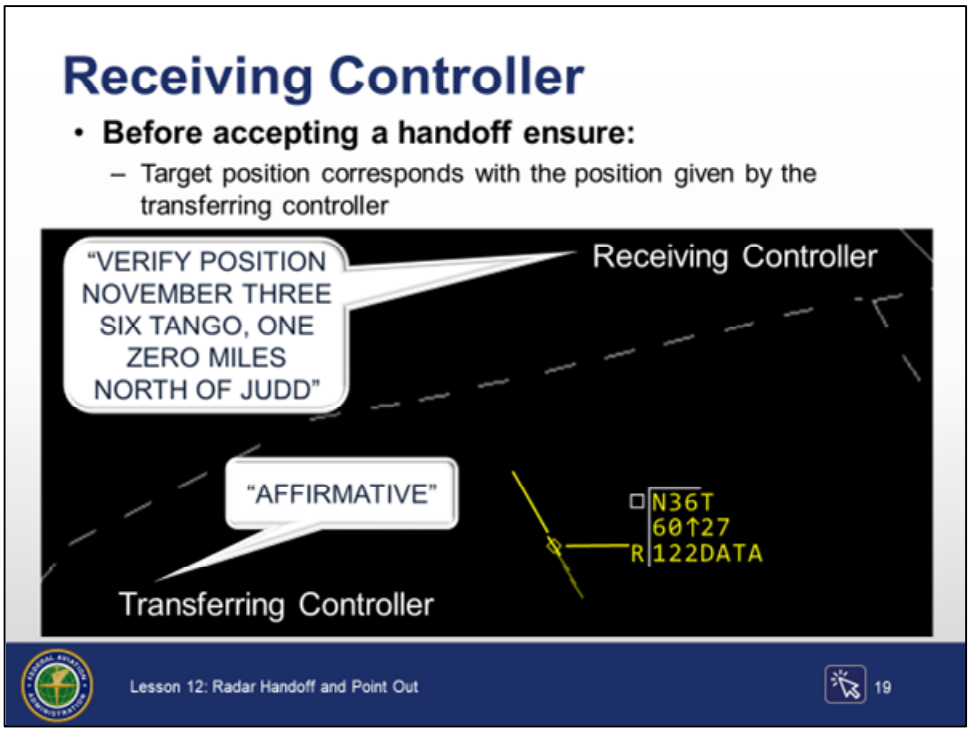
JO 7110.65, pars. 2-1-14, 2-1-15, 2-1-17, 5-4-1, 5-4-5

- Prior to transferring communications, the sector team must:
  - Resolve potential violations of adjacent airspace and potential conflicts with other aircraft in their own area of jurisdiction
  - Coordinate with any controller whose area of jurisdiction the aircraft will transit prior to entering the receiving controller's area of jurisdiction
  - Forward to the receiving controller any restrictions issued to ensure separation
  - Comply with restrictions issued by the receiving controller
- Transfer radio communications before an aircraft enters the receiving controller's area of jurisdiction
  - Unless otherwise coordinated or specified by an LOA or a facility directive
  - To the extent possible, transfer communications when the transfer of radar identification has been accepted
- Before releasing control of the aircraft, issue restrictions to the receiving controller that are necessary to maintain separation from other aircraft within your area of jurisdiction
- Transfer control of an aircraft in accordance with the following conditions:
  - At a prescribed or coordinated location, time, fix, altitude, or
  - At the time a radar handoff and frequency change to the receiving controller have been completed, and
  - When authorized by a facility directive or LOA which specifies the type and extent of control that is transferred
  - After all potential conflicts have been eliminated

HANDOFF PROCEDURES *(CONT'D)*

Receiving Controller

JO 7110.65, pars. 2-1-14, 2-1-15, 5-4-6



⊙ The receiving controller must:

- Before accepting a handoff:
  - Ensure target position corresponds with the position given by the transferring controller, or
  - Ensure there is an appropriate association between an automated data block and the target being transferred
  - Issue restrictions that are needed for the aircraft to enter your sector safely before accepting the handoff
  - Comply with restrictions issued by the transferring controller, unless otherwise coordinated

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HANDOFF PROCEDURES *(CONT'D)*

Receiving Controller (Cont'd)

JO 7110.65, pars. 2-1-14, 5-2-5, 5-4-6

- After accepting a handoff from another facility:
  - Confirm the identification of a primary target by:
    - Advising the aircraft of its position
  - Confirm the position of a nondiscrete beacon target by observing the following:
    - Code change
    - Ident reply
    - Standby squawk
    - Code change, ident reply, standby squawk, are not required if any of these were used during handoff
- Consider a beacon target's identity to be confirmed when:
  - The data block associated with the target being handed off indicates the computer assigned discrete beacon code is being received; or
  - You observe the deletion of a discrete code that was displayed in the data block; or

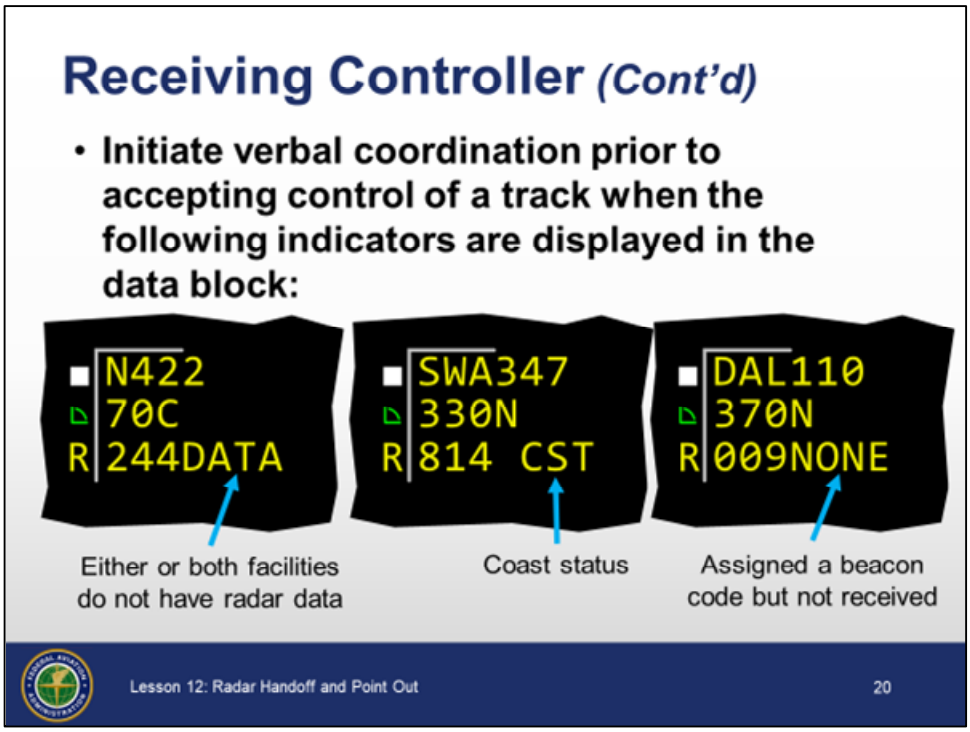
    NOTE: When the aircraft generated discrete beacon code does not match the computer assigned beacon code, the code generated will be displayed in the data block. When the aircraft changes to the assigned discrete code, the code disappears from the data block. In this instance, the observance of code removal from the data block satisfies confirmation requirements.
  - You observe the numeric display of a discrete code that an aircraft has been instructed to squawk or reports squawking

HANDOFF PROCEDURES *(CONT'D)*

Receiving Controller (Cont'd)

JO 7110.65, pars. 2-1-14, 5-4-6

TI 6110.100, sec. 5.1.5.17



- Initiate verbal coordination prior to accepting control of a track when the following indicators are displayed in the data block:
  - DATA (Either or both facilities do not have radar data)
  - CST
  - NONE
  - OLD
- Notify the supervisor/CIC when a MISM is displayed in the data block
  - During an interfacility handoff to an ERAM facility, a discrepancy or mismatch in the target position causes MISM to time share in Field E of the FDB
  - Only the receiving controller will see MISM in the data block

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HANDOFF PROCEDURES *(CONT'D)*

Receiving Controller (Cont'd)

JO 7110.65, pars. 2-1-14, 2-1-15, 5-4-6

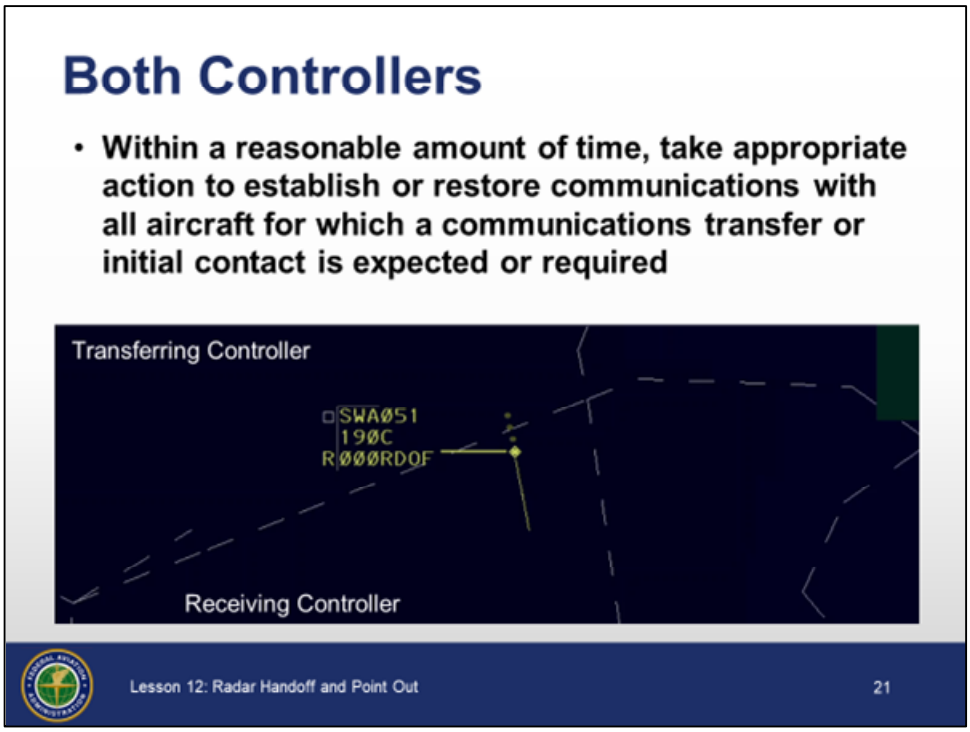
- Complete necessary coordination with all affected controllers through whose area the aircraft will pass before issuing a control instruction that will affect an aircraft's:
  - Heading or route
  - Speed
  - Altitude
  - Beacon code
- Advise the transferring controller as soon as possible if you will delay the climb or descent of the aircraft through the vertical limits of that controller's airspace
  - Unless otherwise specified in an LOA or a facility directive
- Update EDST or mark strips, as appropriate

HANDOFF PROCEDURES *(CONT'D)*

Both Controllers

JO 7110.65, pars. 2-1-17, 2-4-3, 10-4-4

JO 7610.4, par. 7-3-1

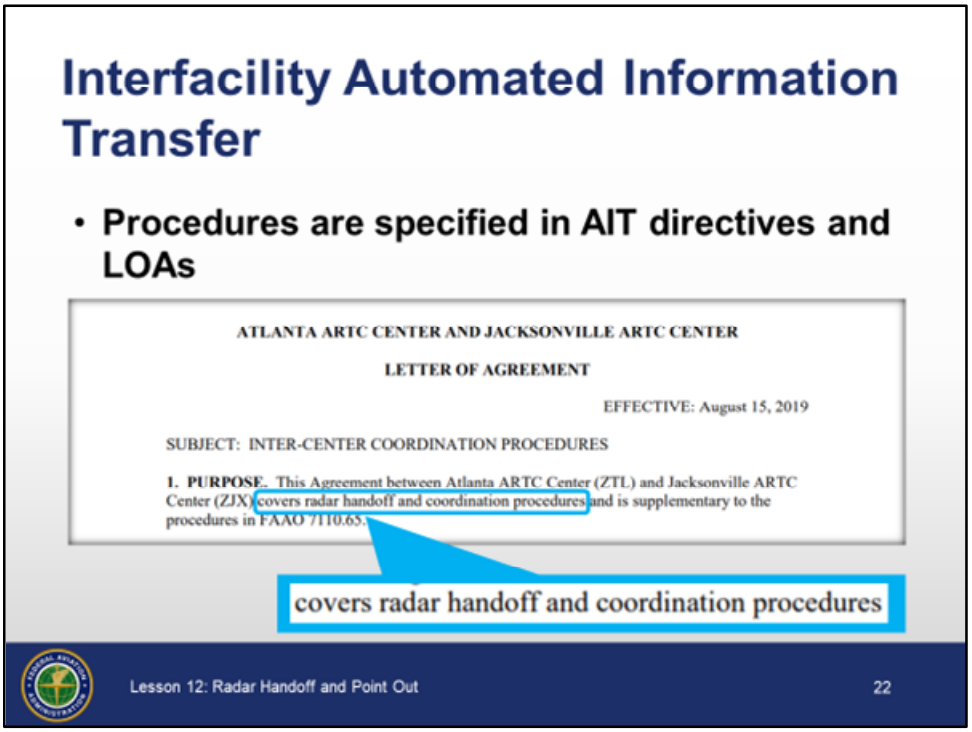


- Within a reasonable amount of time, take appropriate action to establish or restore communications with all aircraft for which a communications transfer or initial contact is expected or required
  - Communications may include, but are not limited to:
    - Two-way VHF or UHF radio contact
    - CPDLC
    - High frequency radio through an approved third party (e.g., data link provider)
- If radio communications have not been reestablished with an IFR aircraft after 5 minutes, consider the aircraft's or pilot's actions to be suspicious and report it to your supervisor/CIC

HANDOFF PROCEDURES *(CONT'D)*

Interfacility Automated Information Transfer

JO 7110.65, par. 5-4-8



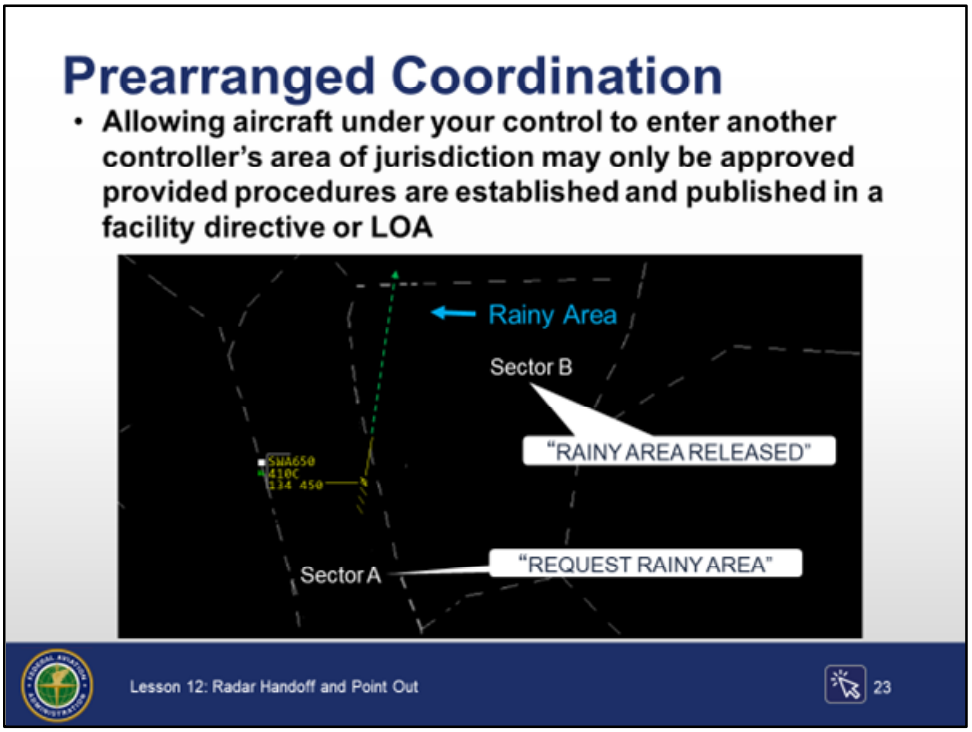
- Transfer radar identification, altitude control, and/or fourth line control information, without verbal coordination under the following conditions:
  - During radar handoff
  - Via information displayed in full data blocks
  - When following procedures specified in your facility AIT directive and LOA

HANDOFF PROCEDURES *(CONT'D)*

Prearranged Coordination

JO 7110.65, pars. 5-4-9

JO 7210.3, par. 3-6-7



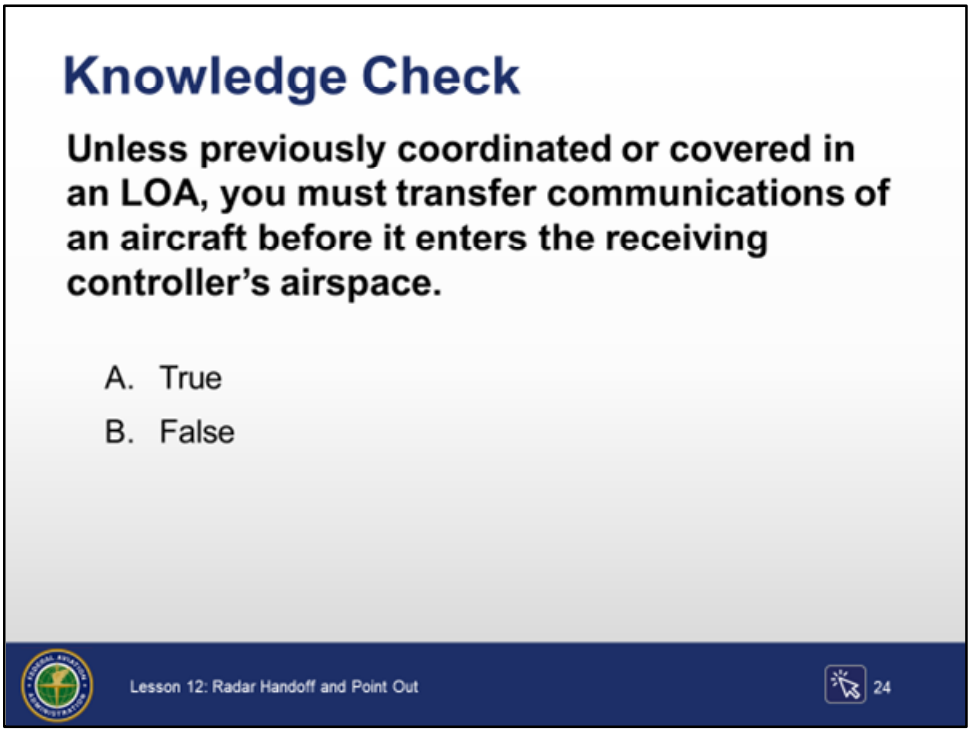
- Allowing aircraft under your control to enter another controller's area of jurisdiction may only be approved provided procedures are established and published in a facility directive or LOA

  NOTE: Under no circumstances may one controller permit an aircraft to enter another's airspace without proper coordination. Coordination can be accomplished by several means:

  - Radar handoff
  - Automated information transfer
  - Verbal
  - Point out
  - By prearranged coordination procedures identified in a facility directive that clearly describe the correct application

HANDOFF PROCEDURES *(CONT'D)*

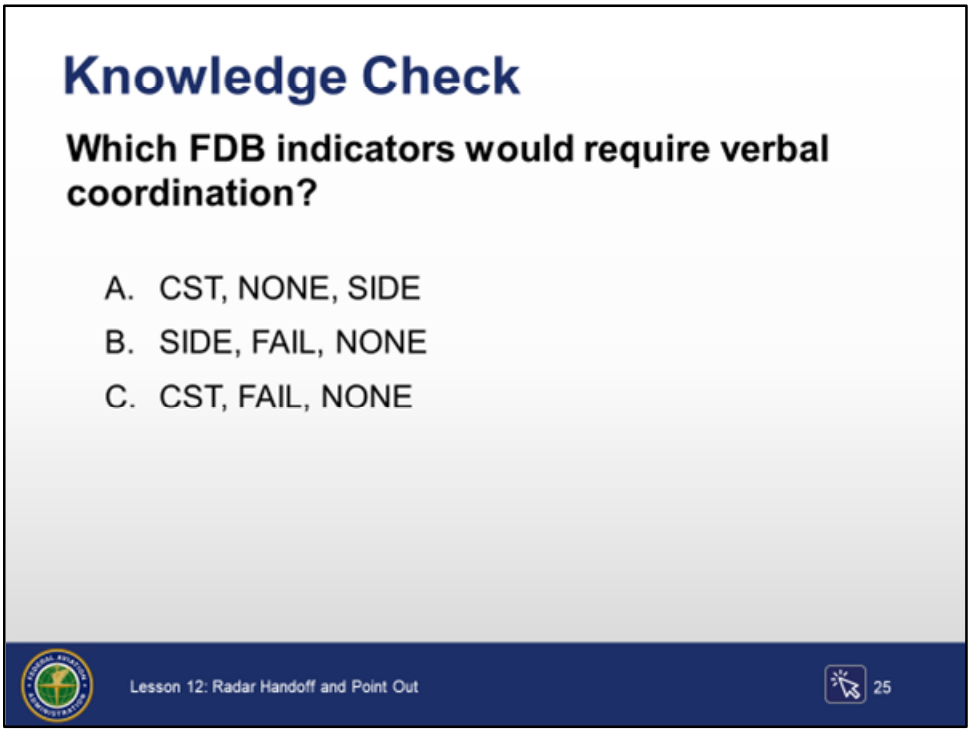
Knowledge Check



Question: Unless previously coordinated or covered in an LOA, you must transfer communications of an aircraft before it enters the receiving controller's airspace.

HANDOFF PROCEDURES *(CONT'D)*

Knowledge Check



Question: Which FDB indicators would require verbal coordination?

HANDOFF COMMAND ENTRY

Initiate Handoff - Intrafacility

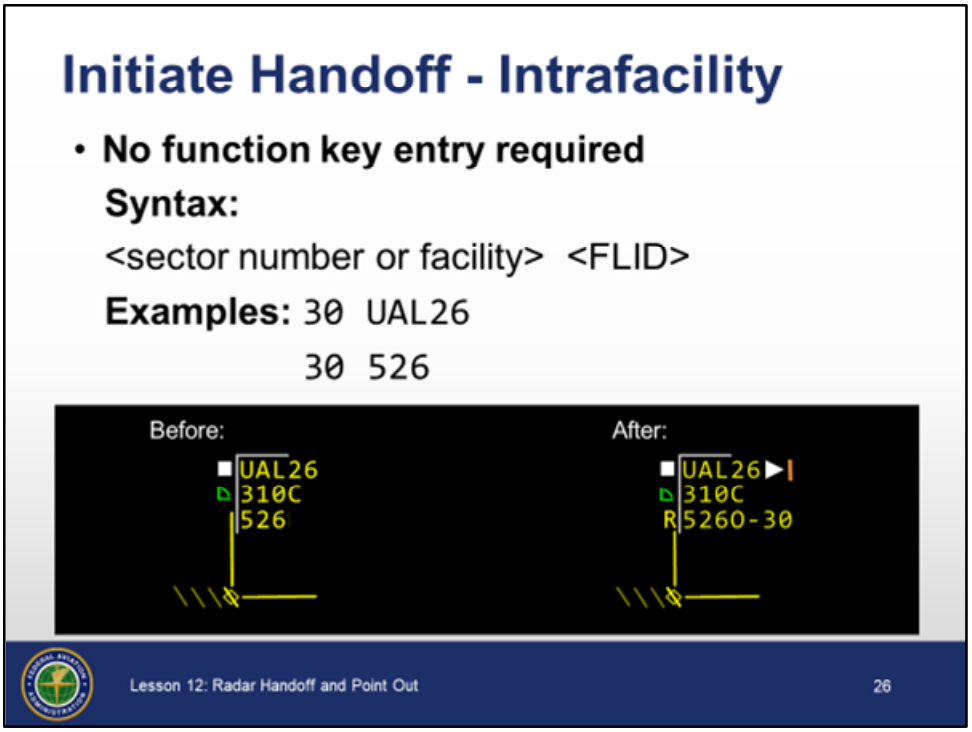
JO 7110.65, pars. 5-4-3 thru 5-4-6

TI 6110.100, Table B-1

TI 6110.104 p. 17

TI 6110.108 pp. 19, 20

ERAM EDSM SRS 210.04 V1B2



- No function key entry required
  - QN is always enabled
- To initiate a handoff:

  Syntax: <sector number or facility> <FLID>

  Examples: `30 UAL26`
  `30 526`
  - Forces the FDB to the receiving controller with the appropriate handoff indicator
    - This causes the code to be entered in the receiving controller's Beacon Code view, if not already present
  - Multiple handoffs can be combined in a single command

    Syntax: <sector number or facility> <FLID>/(FLID)/(FLID)

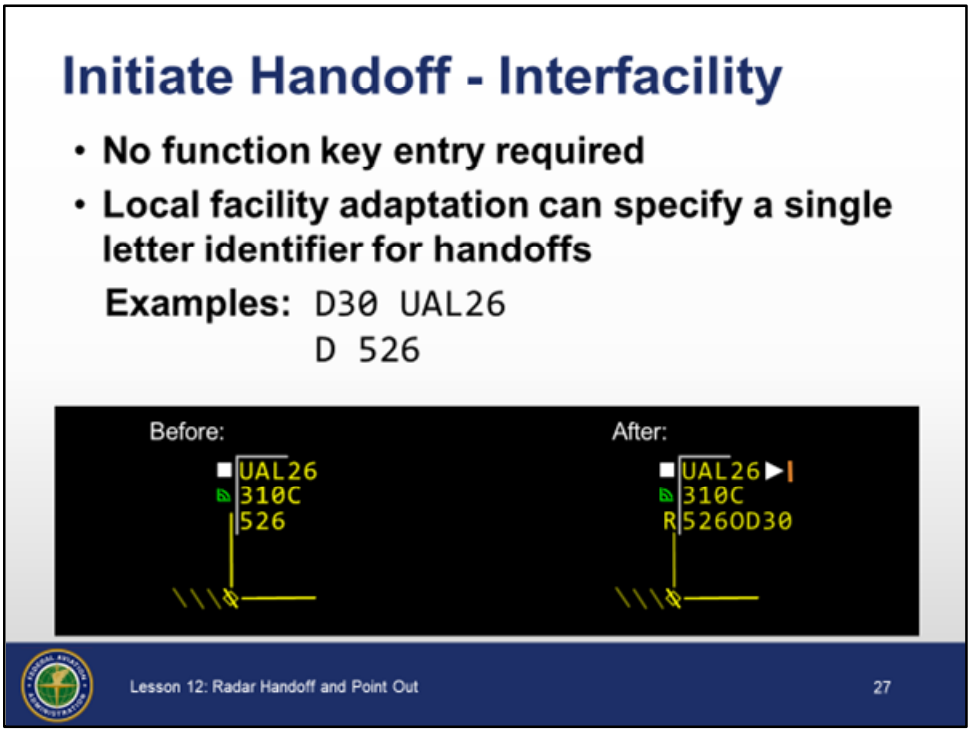
    NOTE: Up to 15 FLIDs may be entered in a single command.
- Handoff types include:
  - Sector to sector
  - Center to center
  - Center to STARS

HANDOFF COMMAND ENTRY *(CONT'D)*

Initiate Handoff - Interfacility

TI 6110.100, Table B-1 and sec. 4.3

TI 6110.108, pp. 7, 19



- No function key entry required
  - QN is always enabled
- Local facility adaptation can specify a single letter identifier for handoffs
- Command facility address formats are as follows:

Command Facility Address Format	Direction of Handoff
L	To an adjacent facility locally adapted as a single letter identifier L
dd	To sector dd within the center
Ldd	To an interfacility center sector dd where L is the receiving center's one letter designator
LdL	To a specific position dL in a STARS facility L
LLL	To an STARS facility where LLL is the STARS facility identifier
LLx	To a position x in an STARS facility LL

Continued on next page

HANDOFF COMMAND ENTRY *(CONT'D)*

Initiate Handoff - Interfacility (Cont'd)

TI 6110.100, Table B-1 and sec. 4-3

TI 6110.108, pp. 7, 19

⊙ To initiate a handoff:

Syntax: <facility address> <FLID>

Examples: `D30 UAL26`

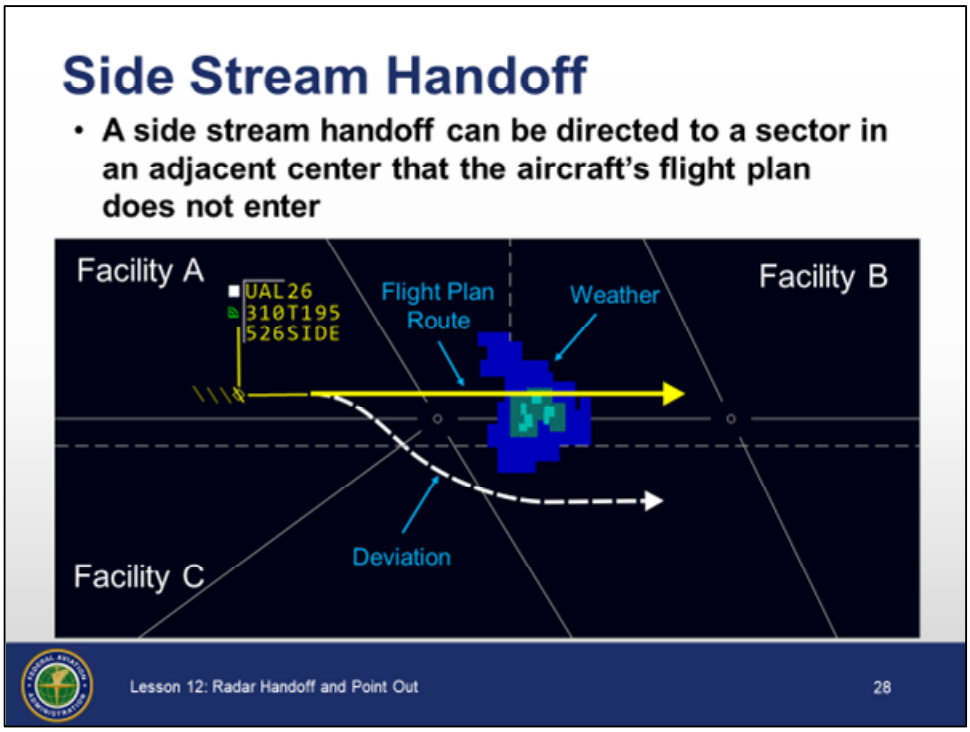
`D 526`

HANDOFF COMMAND ENTRY *(CONT'D)*

Side Stream Handoff

TI 6110.100, sec. 5.1.1.1, 5.1.5.16, and Table 5-4

TI 6110.108, p. 7



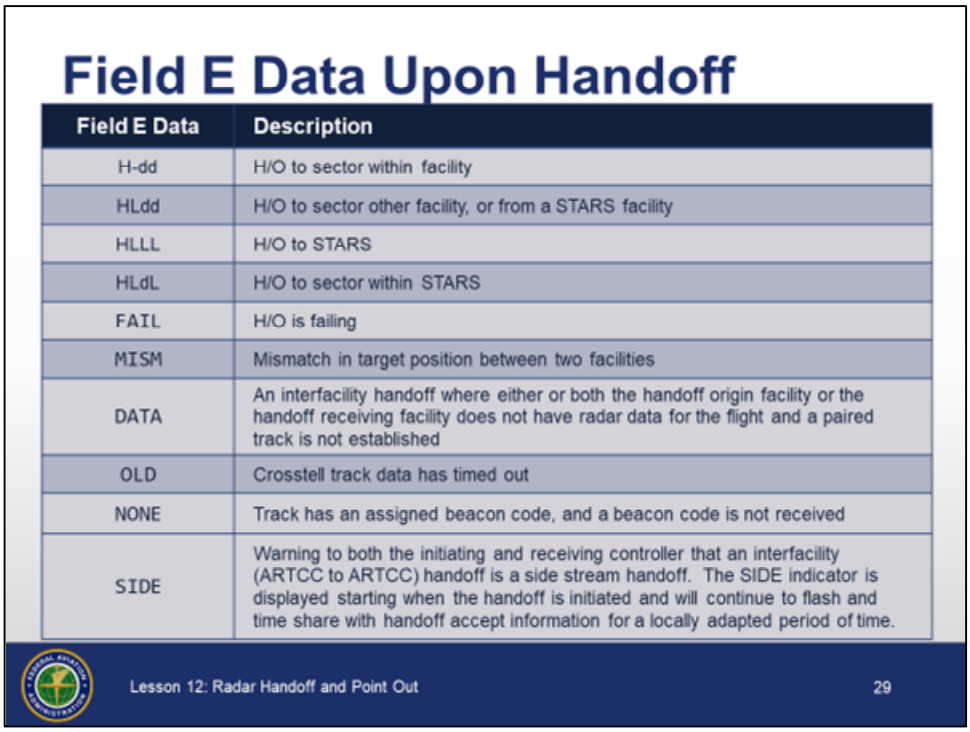
⊙ Side stream handoff

- Allows handoffs to a sector in an ARTCC that is not on the flight plan route when operationally necessary
- SIDE indicator in Field E of data block will display in both handoff originating and receiving sectors for a locally adapted period of time
- Must use facility ID and sector number
- System supports a rejoin handoff to an ARTCC on the route of flight where the handoff originating facility is not on the route of flight
- Attempts to preserve the pairing of the flight plan to the radar track while in the Area of Interest (AOI) of the adjacent facility

HANDOFF COMMAND ENTRY *(CONT'D)*

Field E Data Upon Handoff Initiation

TI 6110.100, Table 5-4



Field E Data Upon Handoff

Field E Data	Description
H-dd	H/O to sector within facility
HLdd	H/O to sector other facility, or from a STARS facility
HLLL	H/O to STARS
HLdL	H/O to sector within STARS
FAIL	H/O is failing
MISM	Mismatch in target position between two facilities
DATA	An interfacility handoff where either or both the handoff origin facility or the handoff receiving facility does not have radar data for the flight and a paired track is not established
OLD	Crosstell track data has timed out
NONE	Track has an assigned beacon code, and a beacon code is not received
SIDE	Warning to both the initiating and receiving controller that an interfacility (ARTCC to ARTCC) handoff is a side stream handoff. The SIDE indicator is displayed starting when the handoff is initiated and will continue to flash and time share with handoff accept information for a locally adapted period of time.

Lesson 12: Radar Handoff and Point Out 29

- Field E data will appear, depending on who is being handed off to and whether or not the handoff is successful
  - H-dd - Track is being handed off to sector dd within the center
  - HLdd - Track is being handed off interfacility, or from a STARS facility
    - L contains the receiving center's one letter designator
    - dd contains the two-digit ID of the receiving sector
  - HLLL - Handoff is to a STARS facility where LLL is the STARS facility identifier
  - HLdL - Track is being handed off to a specific position dL in a STARS facility
  - FAIL - A Fail indication may be caused by the lack of a flight plan at the receiving facility. In response to a FAIL indication, an RF command (request flight plan transfer) can be initiated to the receiving facility to attempt to correct the indication.

Continued on next page

HANDOFF COMMAND ENTRY *(CONT'D)*

Field E Data Upon Handoff Initiation (Cont'd)

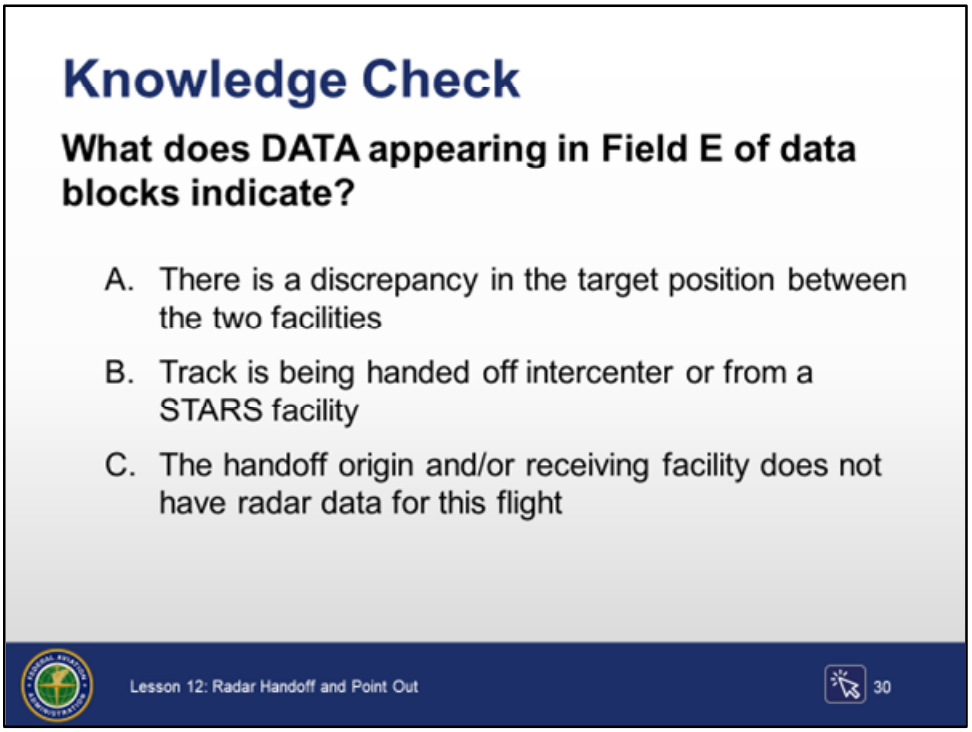
TI 6110.100, Table 5-4

- MISM - A mismatch or discrepancy in the target position during an interfacility handoff
- DATA - An interfacility handoff where the handoff originating facility and/or the handoff receiving facility does not have radar data for the flight and a paired track is not established
- OLD - Crosstell track data has timed out

  NOTE: Crosstell is the transfer of information between facilities.
- NONE - Displayed if the track has an assigned beacon code, and a beacon code is not received
- SIDE - Interfacility warning that handoff is a side stream handoff. The SIDE indicator is displayed starting when the handoff is initiated and will continue to flash and time share with handoff accept information for a locally adapted period of time.

HANDOFF COMMAND ENTRY *(CONT'D)*

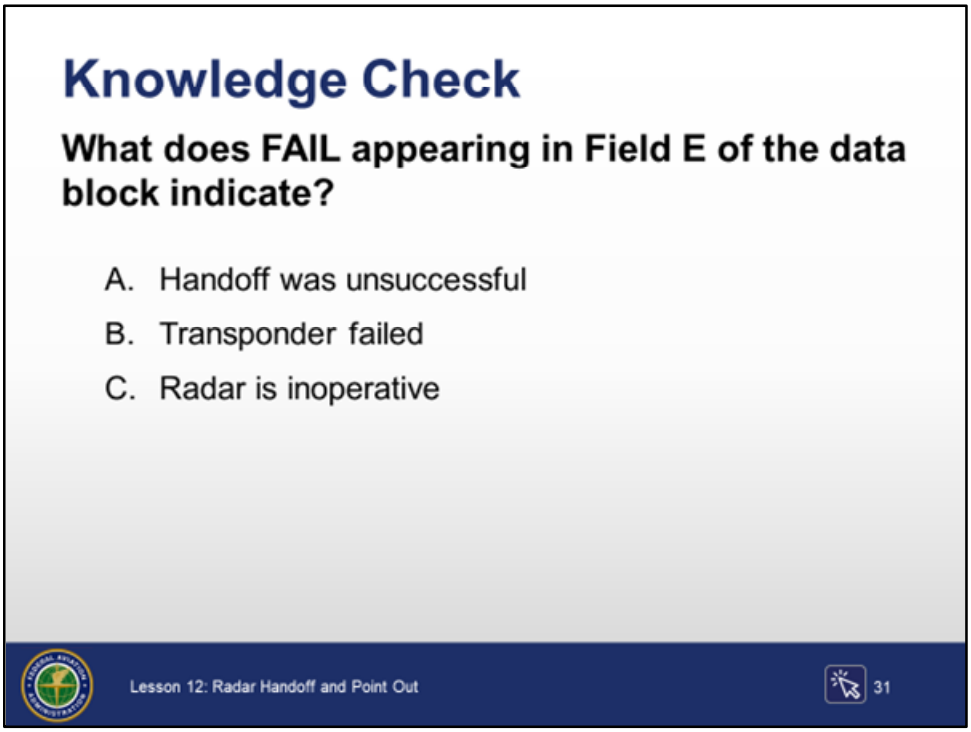
Knowledge Check



Question: What does DATA appearing in Field E of data blocks indicate?

HANDOFF COMMAND ENTRY *(CONT'D)*

Knowledge Check

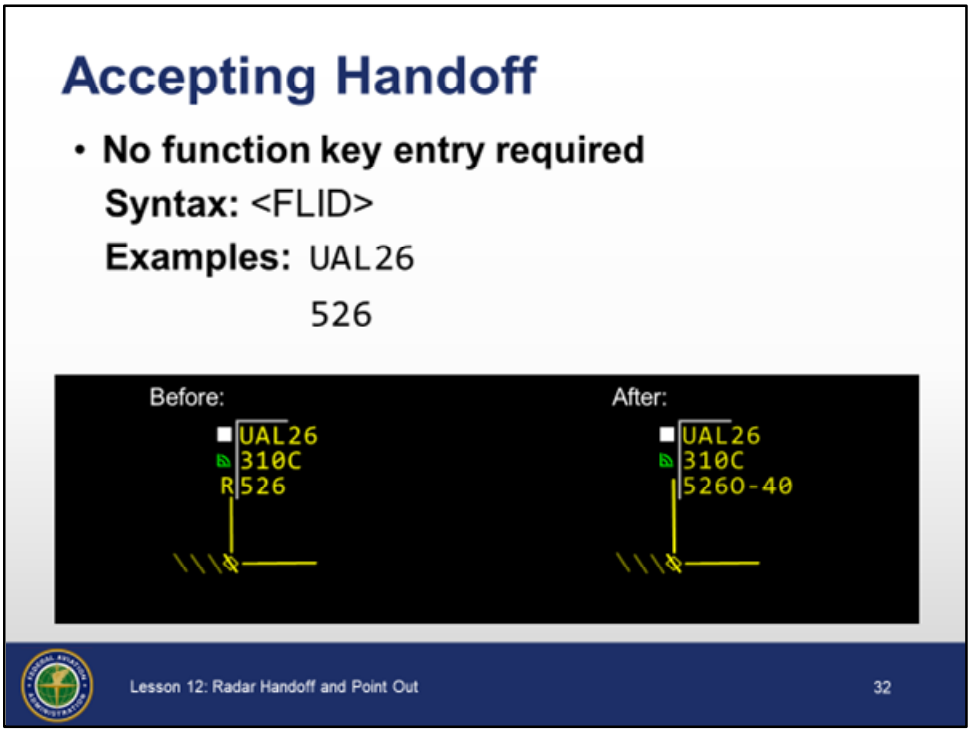


Question: What does FAIL appearing in Field E of the data block indicate?

HANDOFF COMMAND ENTRY *(CONT'D)*

Accept Handoff

TI 6110.100, Table 5-4



- The receiving controller accepts the handoff and assumes control
- No function key entry required
  - QN is always enabled
- To accept a handoff:

  Syntax: <FLID>

  Examples: UAL26

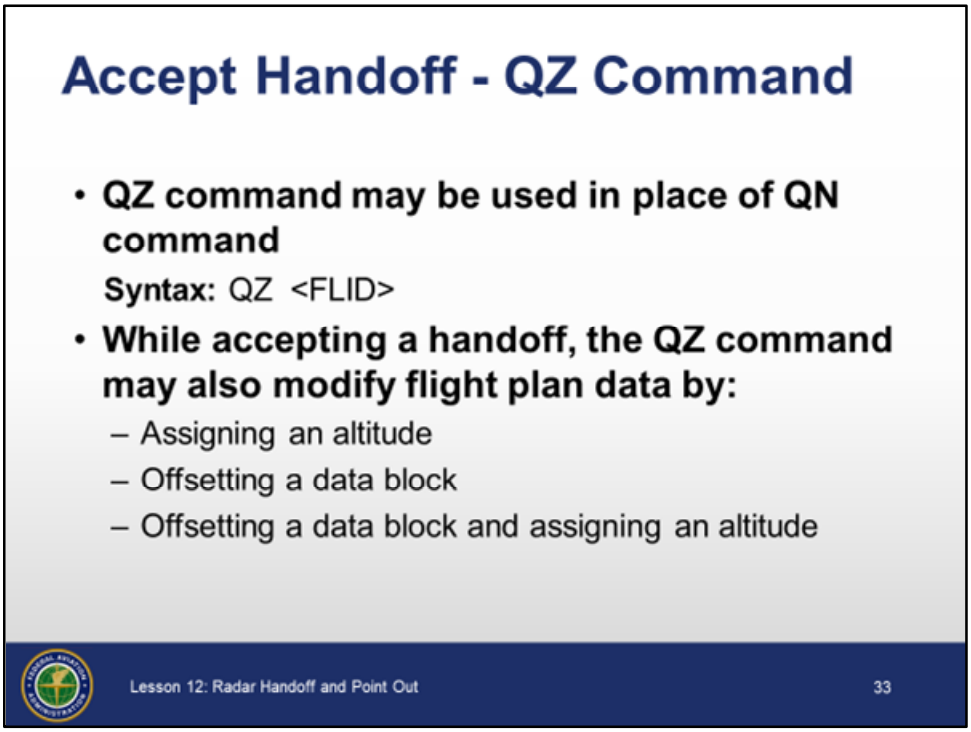
  526

  - Field E changes to one of the following:
    - OLLL (accepted by STARS where LLL is the facility identifier)
    - O-dd (accepted by sector dd within the facility, or sector dd has retracted a handoff to a STARS facility)
    - OLdd (accepted by sector dd in another center (interfacility)
    - OUNK (handoff accepted by an unknown facility)
  - The FDB disappears from the sending sector after an adapted time, and Field E Accept Handoff indication drops from the receiver's FDB

HANDOFF COMMAND ENTRY *(CONT'D)*

Accept Handoff - QZ Command

TI 6110.100, sec. 2.7.2 and Table 5-4



- QZ command may be used in place of QN command

  Syntax: QZ <FLID>

- While accepting a handoff, the QZ command may also modify data by:
  - Assigning an altitude

    Syntax: QZ <altitude> <FLID>

  - Offsetting a data block

    Syntax: QZ <offset> <FLID>

    – FDBs can be offset to any of eight compass directions

    – Direction of leader line will correspond to number's position on the keypad, i.e., 1 NW, 2 N, 3 NE, etc.

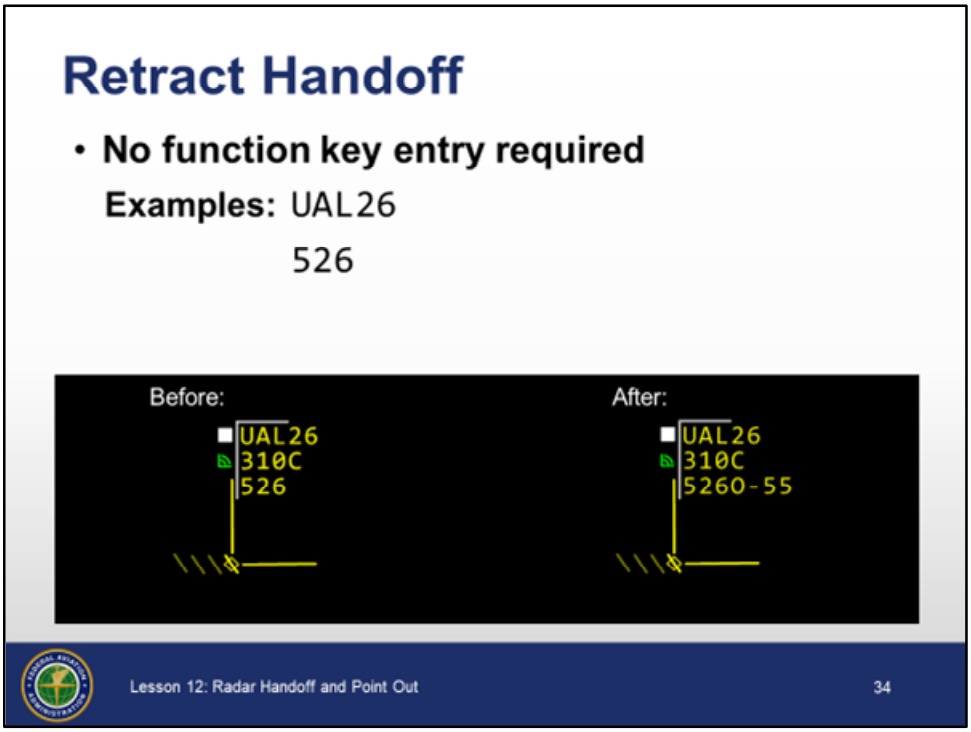
  - Offsetting a data block and assigning an altitude

    Syntax: QZ <offset> <altitude> <FLID>

HANDOFF COMMAND ENTRY *(CONT'D)*

Retract Handoff

TI 6110.100, Table 5-4



⊙ To retract a handoff:

- No function key entry required

Syntax: <FLID>

  - Field E changes to:
    - O-dd (Intrafacility), or
    - OLdd (Interfacility)
  - The receiving display drops FDB
    - Unless display eligibility exists
  - Automatic handoff is inhibited
  - Aircraft remains under control of your sector

Continued on next page

HANDOFF COMMAND ENTRY *(CONT'D)*

Retract Handoff (Cont'd)

TI 6110.100, Table 5-4

⊙ Assume control of a track not currently under your control

Syntax: <FLID> /OK

- FDB control is stolen
- Field E of all displayed FDBs changes to:
  - K-dd (intrafacility), or
  - KLdd (interfacility)

⊙ Using the /OK command allows you to steal track control of a data block

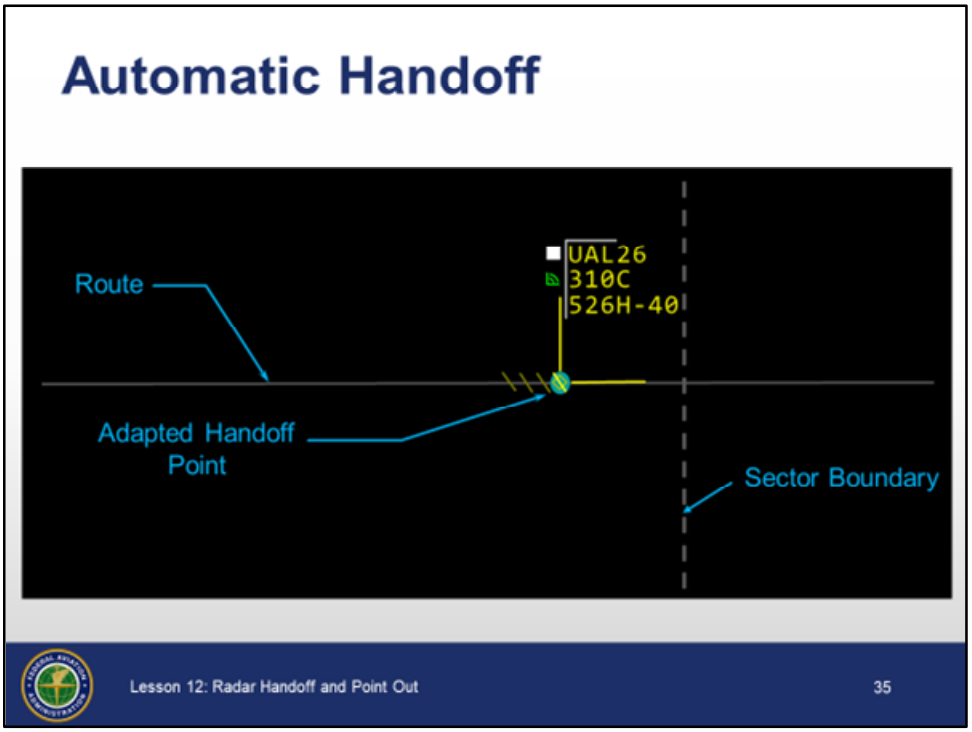
NOTE: Always be very cautious when utilizing the /OK feature.

HANDOFF COMMAND ENTRY *(CONT'D)*

Automatic (Computer-Generated) Handoff

TI 6110.141, sec. 2.1.2

TI 6110.108, p. 7



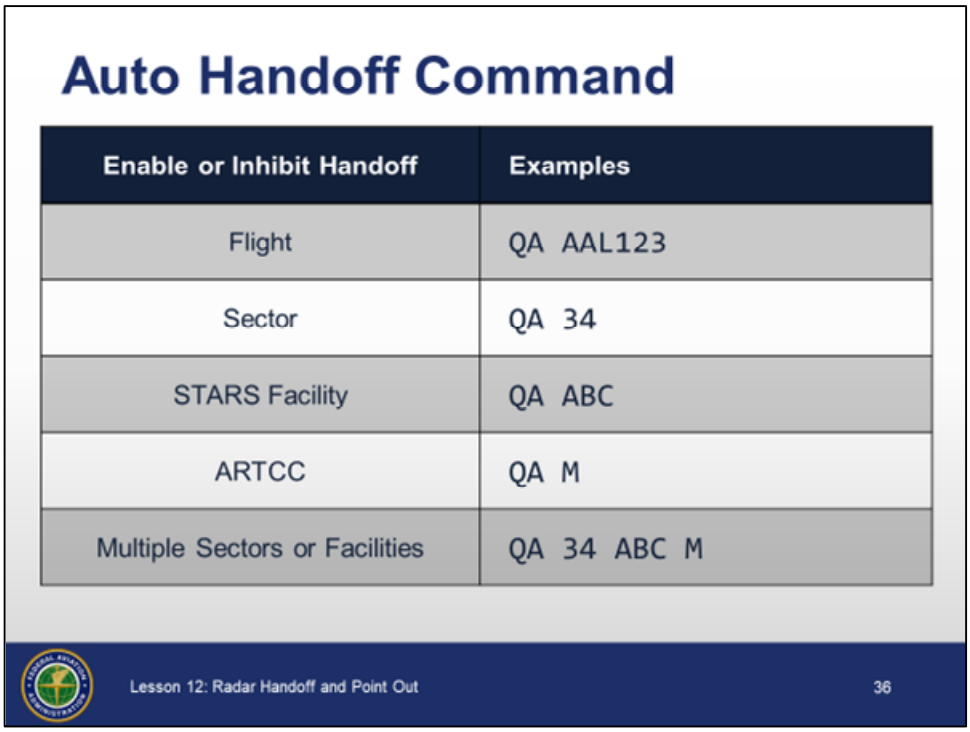
- Automatic handoff points are designed to automatically handoff flights to the next sector or facility
  - Adapted locally on specific routes, proximity to sector boundaries, or time parameters
  - Aircraft must be in FLAT Track (Flight Plan Aided Tracking)

HANDOFF COMMAND ENTRY *(CONT'D)*

Auto Handoff Command

TI 6110.101, Table B-1

ERAM EDSM SRS 210.04 V1B2, Table 25



- The automatic handoff command (QA) allows the controller to enable or inhibit this function
  - You may enable or inhibit auto handoff for
    - A specific flight (FLID, call sign, etc.)

      Example: `QA AAL123`
    - Sector (2 digit number)

      Example: `QA 34`
    - STARS facility (three letters)

      Example: `QA ABC`
    - ARTCC (one letter)

      Example: `QA M`
    - Up to 5 sectors or facilities per command

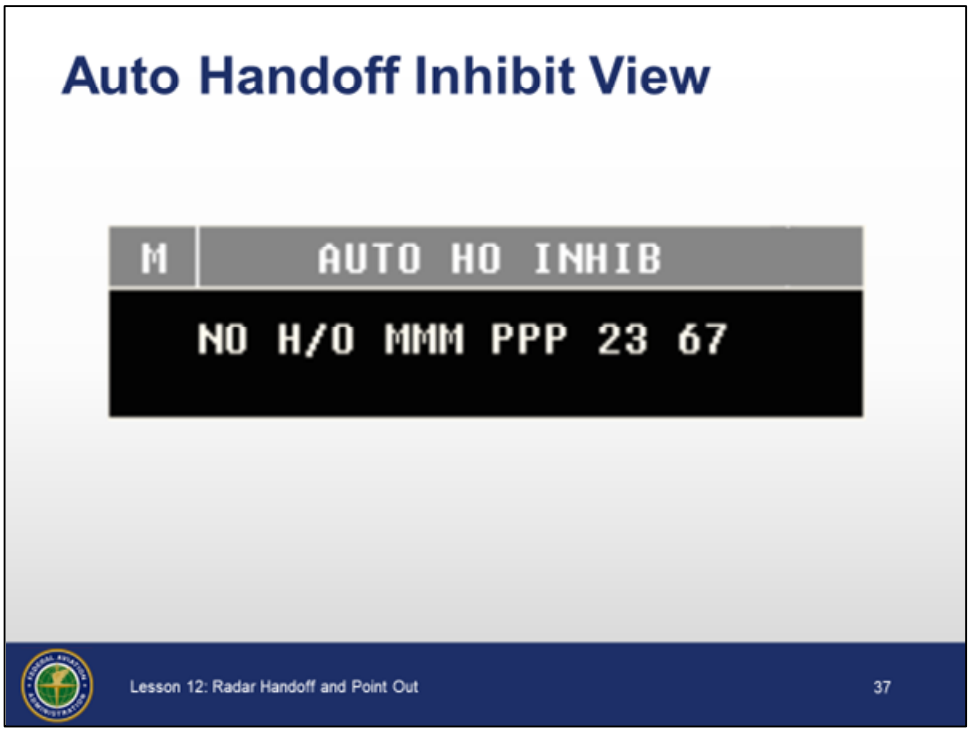
      Example: `QA 34 ABC M`

HANDOFF COMMAND ENTRY *(CONT'D)*

Auto Handoff Inhibit View

TI 6110.100, sec. 4.2.2

ERAM EDSM SRS 210.04 V1B2, Table 25



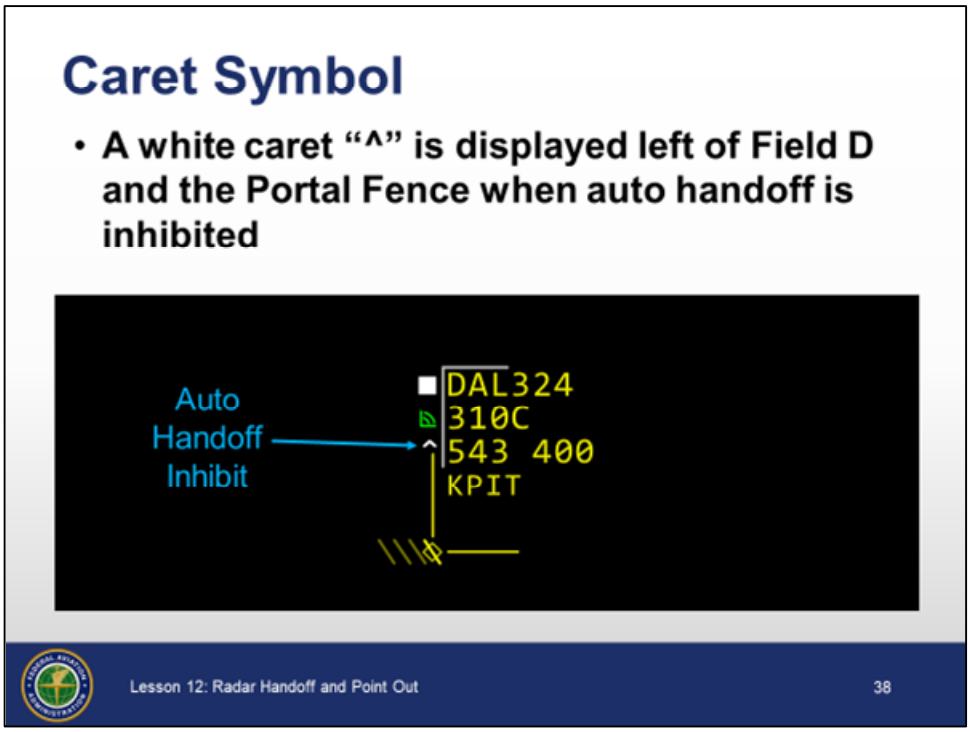
- The Auto Handoff Inhibit View shows the automatic handoff inhibit list
  - After the NO H/O label, facilities will be listed first, then sectors
    - Up to four facilities and sector IDs can be listed per line
  - A single command is limited to five facilities or one flight plan; the view has sufficient display capability to display all the facilities and flight plans for which automatic handoff is inhibited

NOTE: This view is only available on the Situation Display.

HANDOFF COMMAND ENTRY *(CONT'D)*

Auto Handoff Inhibited - Caret Symbol

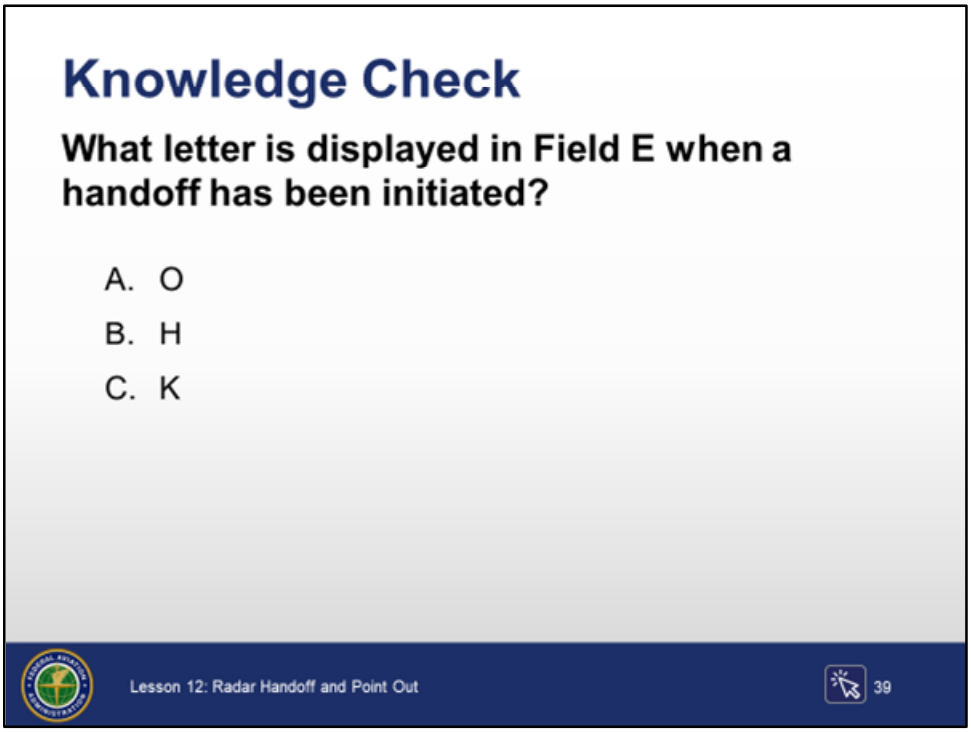
TI 6110.100, sec. 5.1.1.1



⊙ A white caret "^" is displayed to the left of Field D and the Portal Fence when auto handoff is inhibited

HANDOFF COMMAND ENTRY *(CONT'D)*

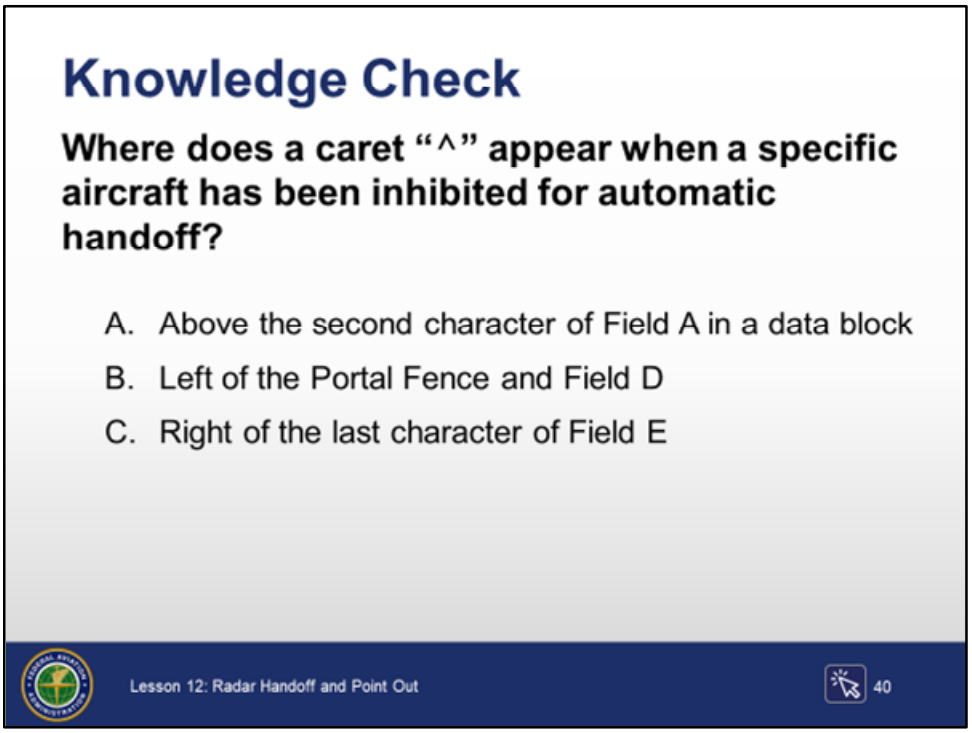
Knowledge Check



Question: What letter is displayed in Field E when a handoff has been initiated?

HANDOFF COMMAND ENTRY *(CONT'D)*

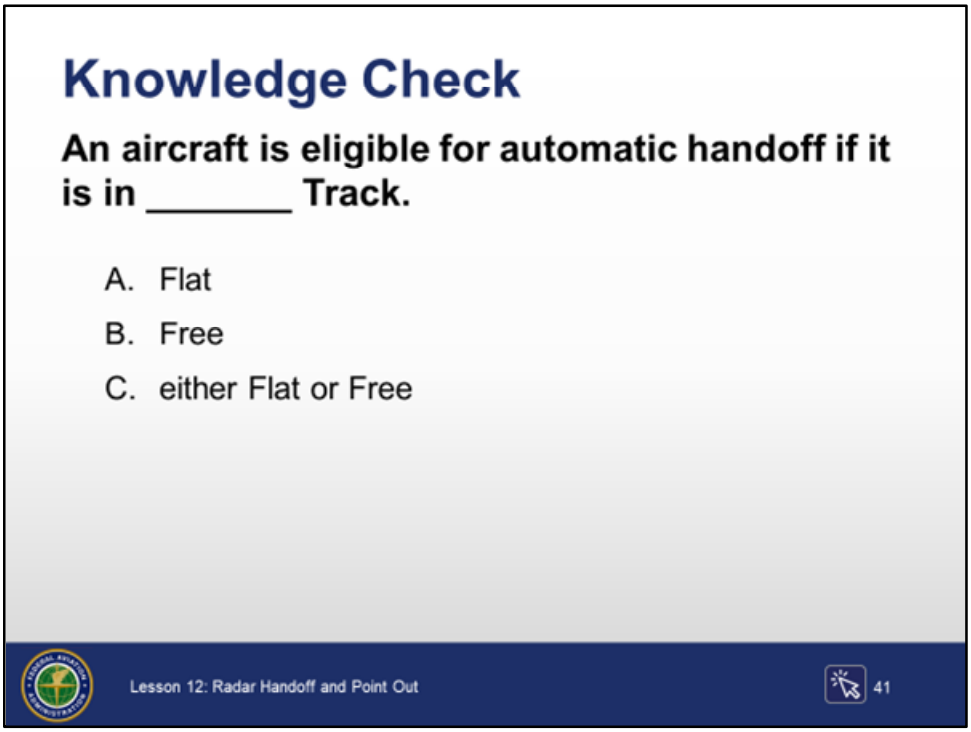
Knowledge Check



Question: Where does a caret "^" appear when a specific aircraft has been inhibited for automatic handoff?

HANDOFF COMMAND ENTRY *(CONT'D)*

Knowledge Check

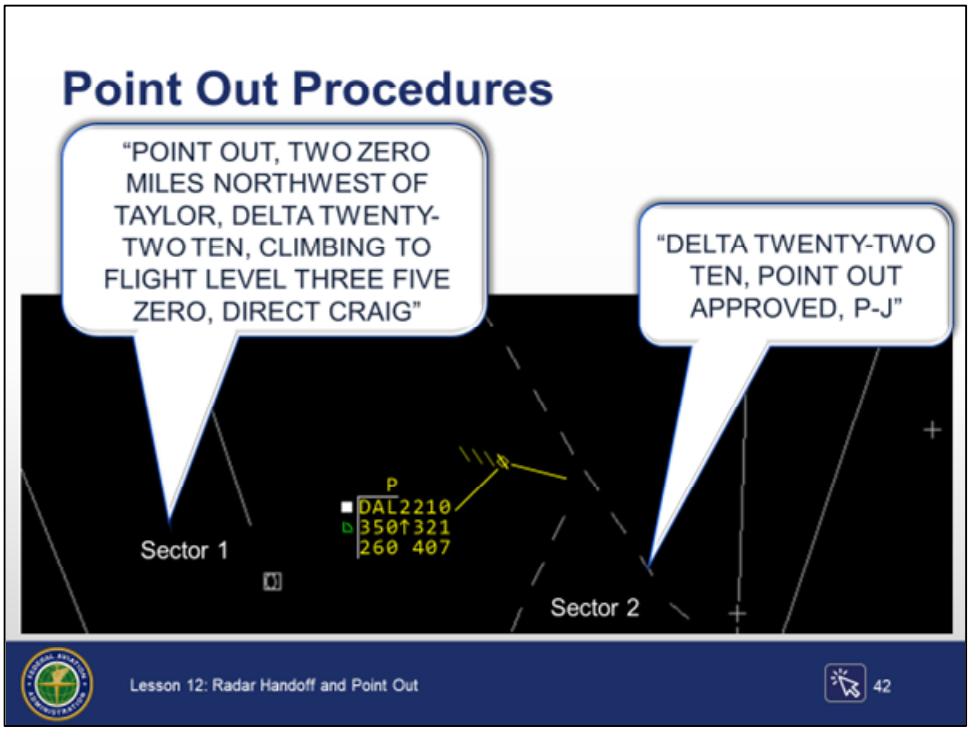


Question: An aircraft is eligible for automatic handoff if it is in _____ Track.

POINT OUT PROCEDURES

Point Out Procedures

JO 7110.65, pars. 5-4-3, 5-4-4; 5-4-7



- The transferring controller must:
  - Obtain approval before an aircraft enters the receiving controller's airspace
  - After point out is approved, obtain approval before changing:
    - Flight path
    - Altitude
    - Speed
    - Data block information
  - Comply with the receiving controller's restrictions
  - Be responsible for:
    - Subsequent handoffs and point outs
    - Communications transfer
    - Flight data revision and coordination

Continued on next page

POINT OUT PROCEDURES *(CONT'D)*

Point Out Procedures (Cont'd)

JO 7110.65, pars. 5-4-3, 5-4-4, 5-4-7, PCG

⊙ The receiving controller must:

- Prior to approving a point out ensure:
  - That the target position corresponds to the position given by the transferring controller, or
  - There is an association between a computer data block and the target being transferred
- Be responsible for separation between his/her traffic and the point out traffic
- Issue restrictions necessary to provide separation from other aircraft within his/her airspace

⊙ When receiving a point out, use one of the following phraseologies, as appropriate:

 (Aircraft ID or discrete beacon code) (restrictions, if applicable) POINT OUT APPROVED

 (Aircraft ID) (restrictions, if applicable) RADAR CONTACT

- Used when communication is requested with the aircraft being pointed out

 UNABLE (appropriate information, as required)

Example:

Transferring controller: "POINT OUT, TWO ZERO MILES NORTHWEST OF TAYLOR, DELTA TWENTY-TWO TEN, CLIMBING TO FLIGHT LEVEL THREE FIVE ZERO, DIRECT CRAIG"

Receiving controller: "DELTA TWENTY-TWO TEN, POINT OUT APPROVED, P-J"

Transferring controller: "R-W"

Continued on next page

POINT OUT PROCEDURES *(CONT'D)*

Point Out Procedures (Cont'd)

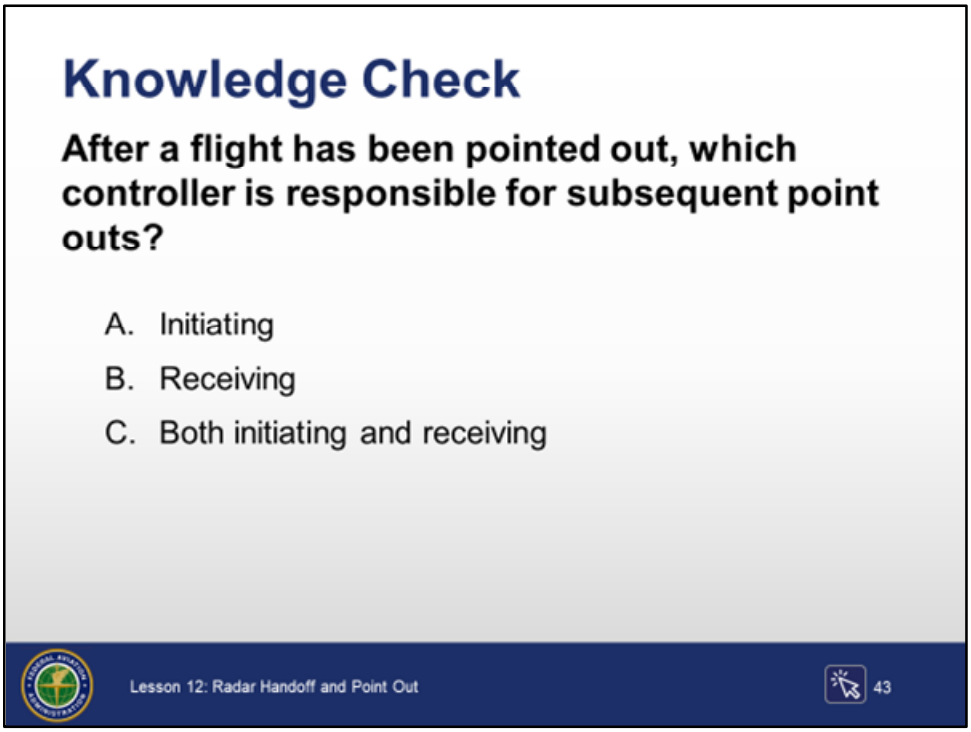
JO 7110.65, pars. 5-4-2 through 5-4-4, 5-4-7

⊙ Use the term TRAFFIC for coordinating separation as follows:

- Controller issuing traffic issues appropriate restrictions
- Controller accepting restrictions is responsible for ensuring separation between aircraft involved
  - State TRAFFIC OBSERVED if restrictions are to be complied with
- Traffic is normally issued:
  - In response to a handoff or point out
  - In anticipation of a handoff or point out
  - In conjunction with a request for control of an aircraft

POINT OUT PROCEDURES *(CONT'D)*

Knowledge Check



Question: After a flight has been pointed out, which controller is responsible for subsequent point outs?

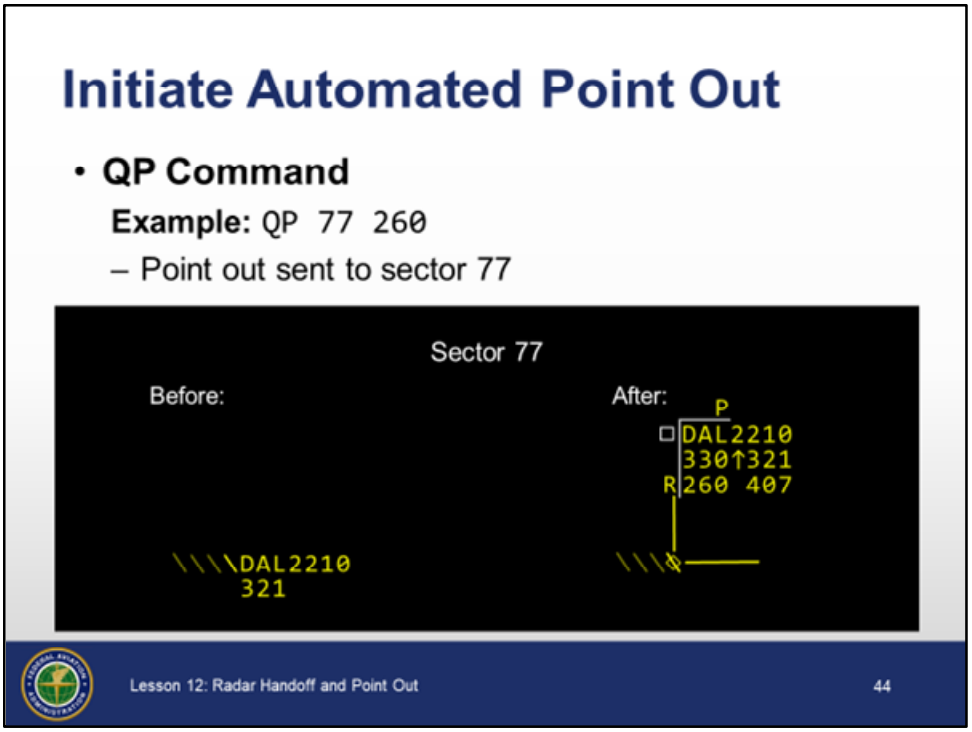
POINT OUT COMMAND ENTRY

Initiate Automated Point Out

JO 7110.65, pars. 5-4-3, 5-4-7

TI 6110.101, sec. 5.2.4

TI 6110.108, p. 7



⊙ To initiate an automated point out:

- Force the FDB to the receiving controller with the appropriate point out indicator

  Syntax: QP <sector number> <FLID> or

  QP <facility and sector number> <FLID>

  Examples: QP 77 N45T

  QP A18 543

- Multiple sector point outs can be combined with a single QP command

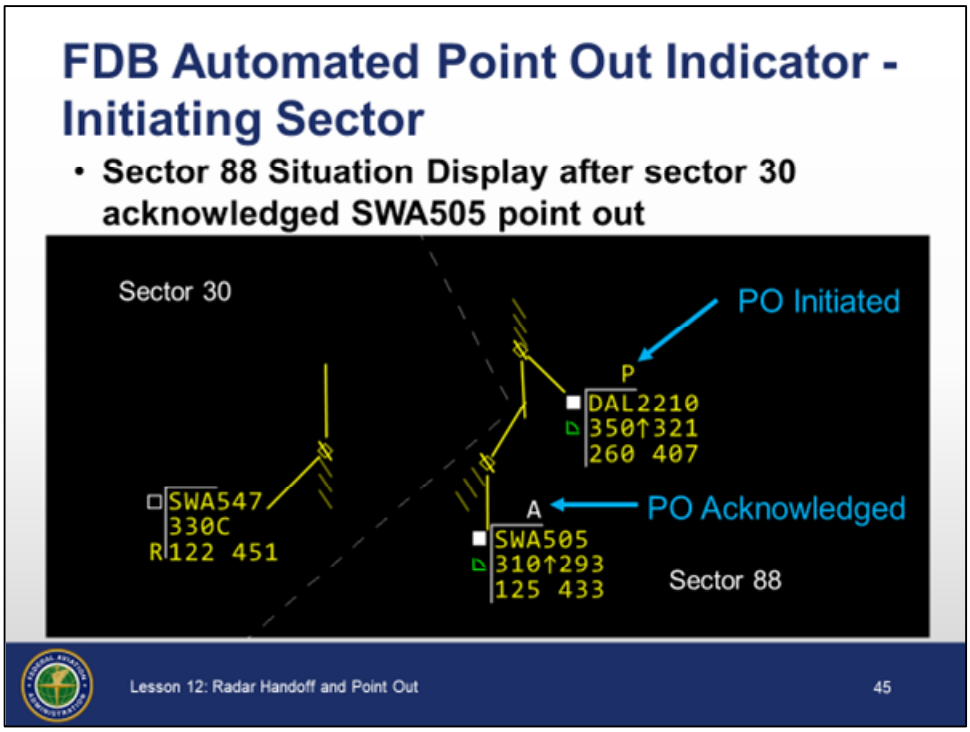
  Example: QP 30 T21 15 978

- Pressing the PVD quick action key will insert QP space into message composition area

POINT OUT COMMAND ENTRY *(CONT'D)*

FDB Automated Point Out Indicator - Initiating Sector

TI 6110.100, sec. 5.1.5.11

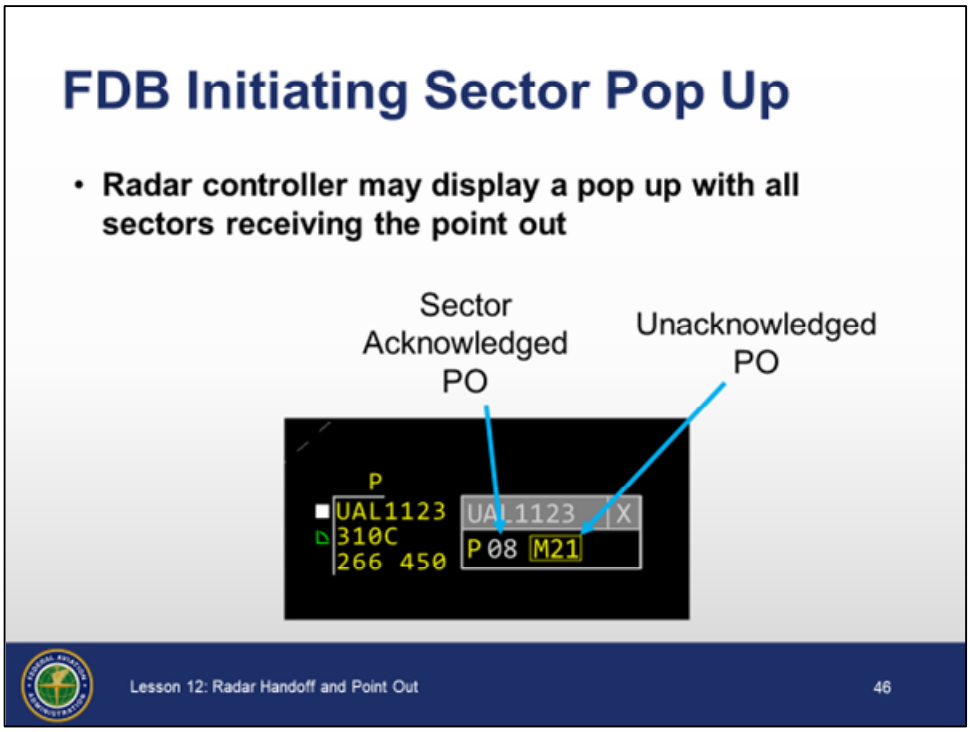


- It is possible to indicate and acknowledge an automated point out at both the initiating and receiving sectors
- Initiating Sector
  - When a point out is initiated
    - The initiating sector's FDB will display a "P" indicator in yellow at the third character position of Line 0
  - When the FDB Automated Point Out Indicator is acknowledged (i.e., approved) at the receiving sector:
    - If it is a single sector point out, the yellow "P" indicator will change to a white "A" indicator:
      - The R Controller may TBP the white "A" to remove it from the FDB
    - If it is a multiple sector point out, the "P" indicator will remain yellow until all sectors have acknowledged the point out

POINT OUT COMMAND ENTRY *(CONT'D)*

FDB Initiating Sector Pop Up

TI 6110.100, sec. 5.1.5.11



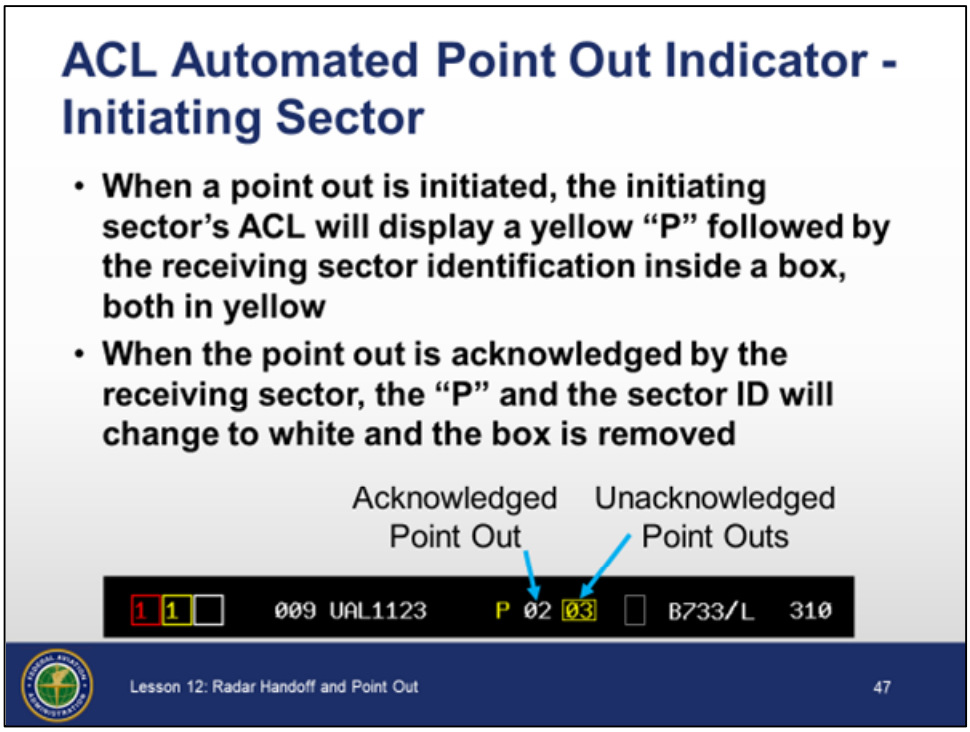
⊙ Radar controller management of point out indicators within pop up:

- Sectors that have not acknowledged the point out will be in yellow enclosed by a yellow box
- Sectors that have acknowledged the point out will change to white and the box will be removed

POINT OUT COMMAND ENTRY *(CONT'D)*

ACL Automated Point Out Indicator - Initiating Sector

TI 6110.101, sec. 5.2.4.1



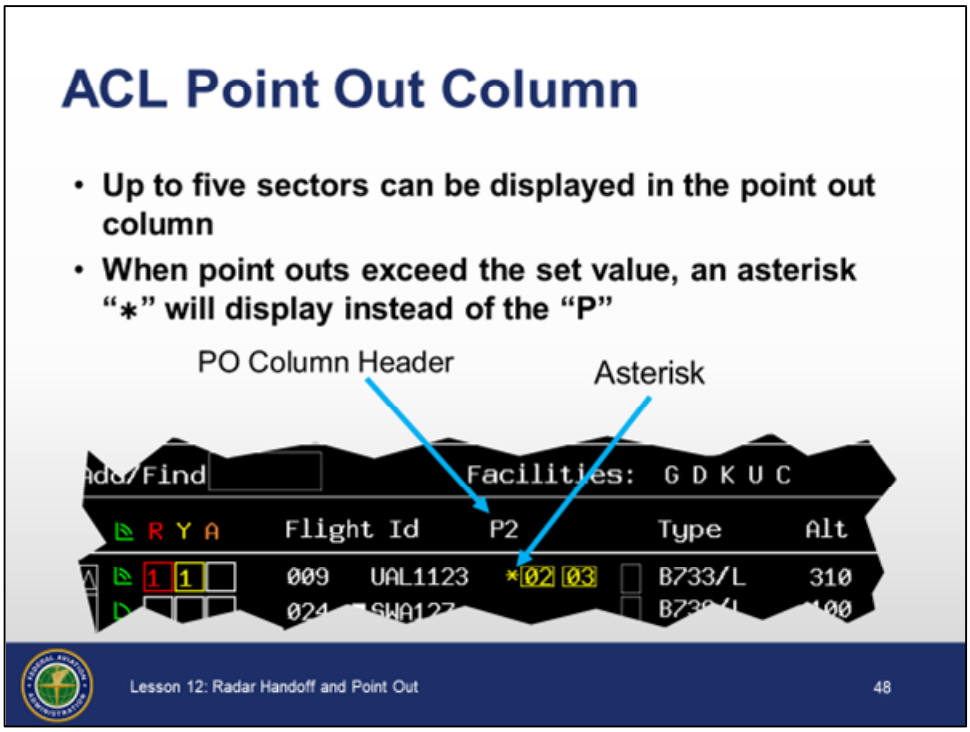
- When a point out is initiated, the initiating sector's ACL will display a yellow "P" followed by the receiving sector identification inside a box, both in yellow
- When the point out is acknowledged by the receiving sector, the "P" and the sector ID will change to white and the box is removed

  NOTE: If the receiving controller takes no action, revert to verbal procedures.
- If a point out is sent to multiple sectors, the "P" and any unacknowledged sector IDs will remain yellow
- TBH on a white acknowledged sector will remove it from the display

POINT OUT COMMAND ENTRY *(CONT'D)*

ACL Automated Point Out Column

TI 6110.101, sec. 5.2.4.1



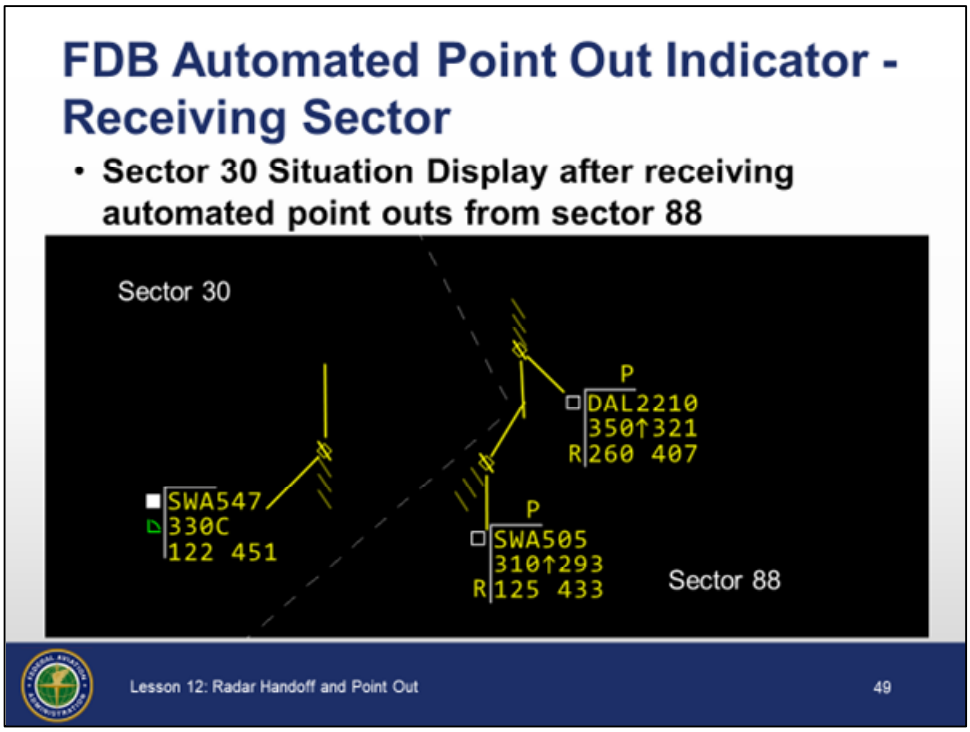
⊙ Up to five sectors can be displayed in the point out column

- The point out display can be set from zero to five by selecting the column header
  - TBP the header to decrease or TBE the header to increase the set values
- The column will expand to the maximum set value
- PA header selection will automatically expand and contract the point out column from zero to five
- When point outs exceed the set value, an asterisk "✱" will display instead of the "P"
  - Increasing the column size will display the additional point outs and the asterisk will change to a "P" when all point outs are displayed
- If there are more than five point outs, the oldest point out is deleted despite its acknowledgement status, and the new point out sector ID is displayed in the right-most position:
  - The removed point out will not be re-displayed if space becomes available

POINT OUT COMMAND ENTRY *(CONT'D)*

FDB Automated Point Out Indicator - Receiving Sector

TI 6110.100, sec. 5.1.5.11

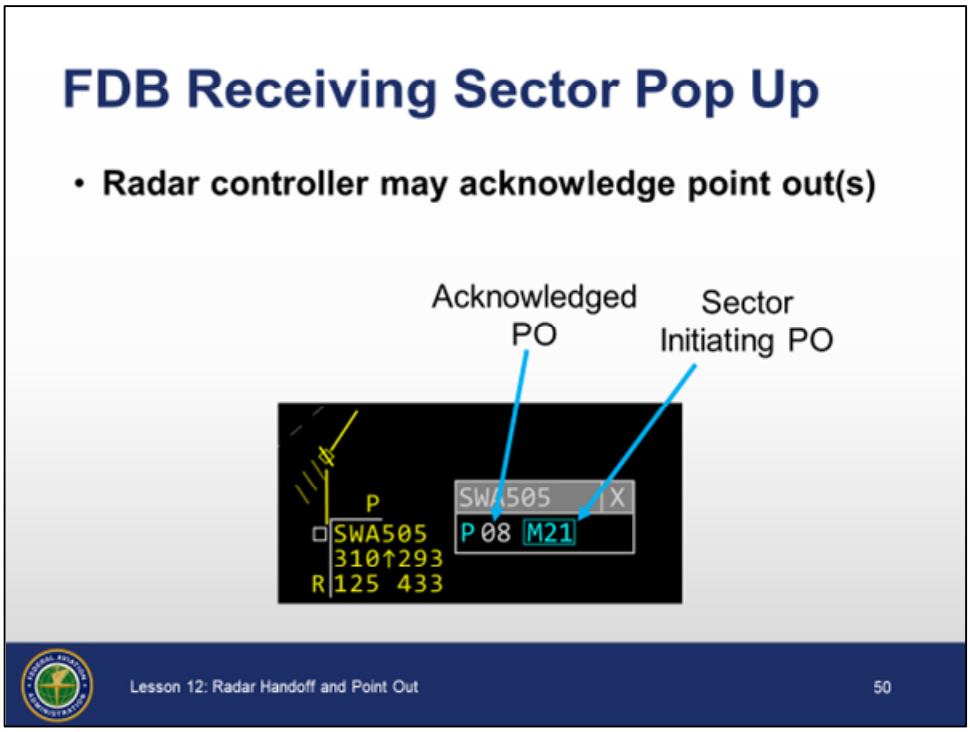


- When a point out is initiated, the receiving sector
  - Will display an FDB with a "P" indicator in yellow at the third character position of Line 0
  - The "P" will be removed and the FDB will remain displayed after acknowledging the point out

POINT OUT COMMAND ENTRY *(CONT'D)*

FDB Receiving Sector Pop Up

TI 6110.100, sec. 5.1.5.11



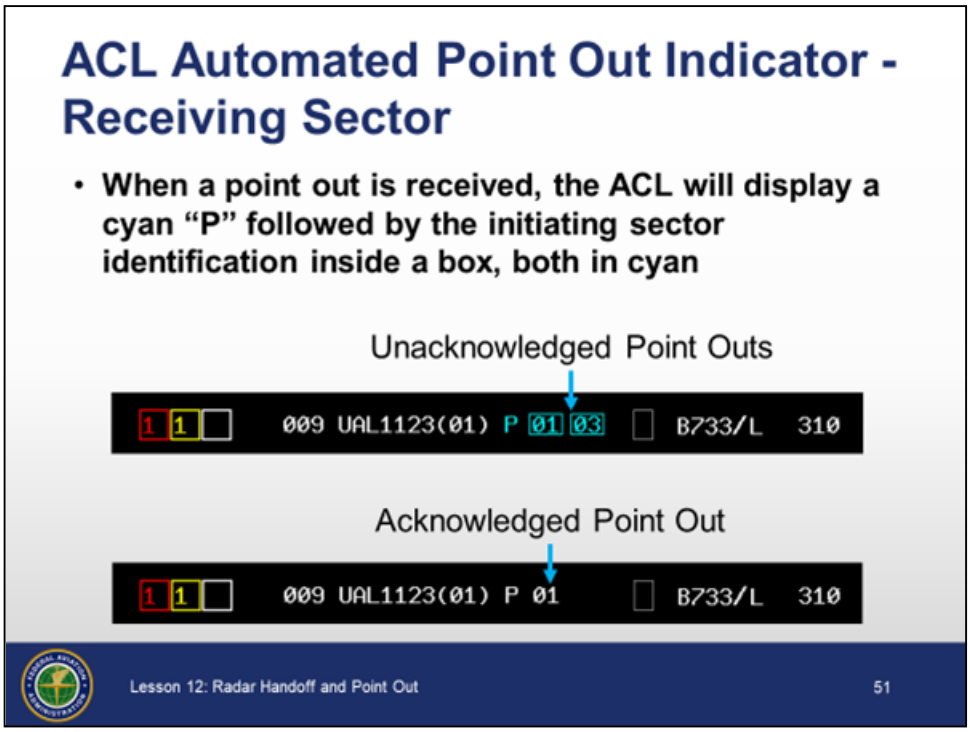
⊙ Radar controller acknowledgement of point out(s)

- Sectors that have initiated the point out will be in cyan enclosed by a cyan box
- Sectors that are acknowledged will change to white and the box will be removed
- When all sectors have been acknowledged, the cyan "P" in the pop up will change to white

POINT OUT COMMAND ENTRY *(CONT'D)*

ACL Automated Point Out Indicator - Receiving Sector

TI 6110.101, sec. 5.2.4.2

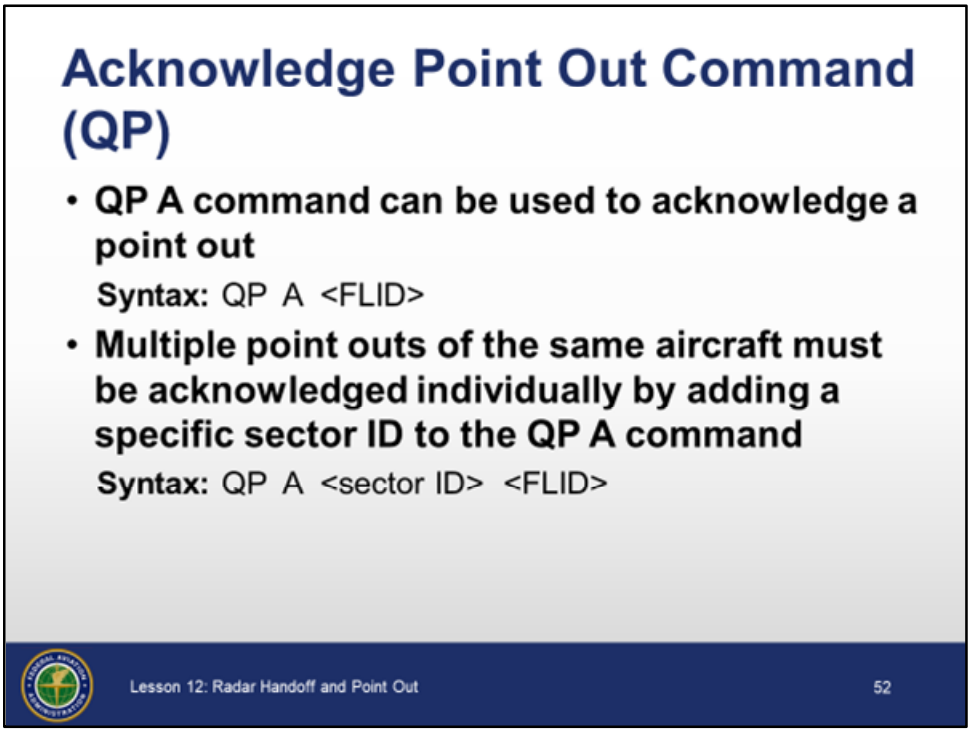


- When a point out is received, the ACL will display a cyan "P" followed by the initiating sector identification inside a box, both in cyan
- If the receiving sector's ACL does not have an entry for the flight, one will be added in the Normal Posting Area
- When all point outs for an added entry have been acknowledged, the flight is coded for deletion and removed after the normal deletion timeout period
- TBH on a sector ID will acknowledge the point out for that sector and change both the receiving and initiating sector IDs to white
- TBH on an acknowledged point out indicator will remove it from the ACL display
  - Removal of the ACL point out indicator will not remove the point out FDB from the Situation Display or the point out indicator from any other sector position

POINT OUT COMMAND ENTRY *(CONT'D)*

Acknowledge Point Out Command

TI 6110.101, sec. 5.2.4.2



- QP A command can be used to acknowledge a point out

  Syntax: QP A <FLID>

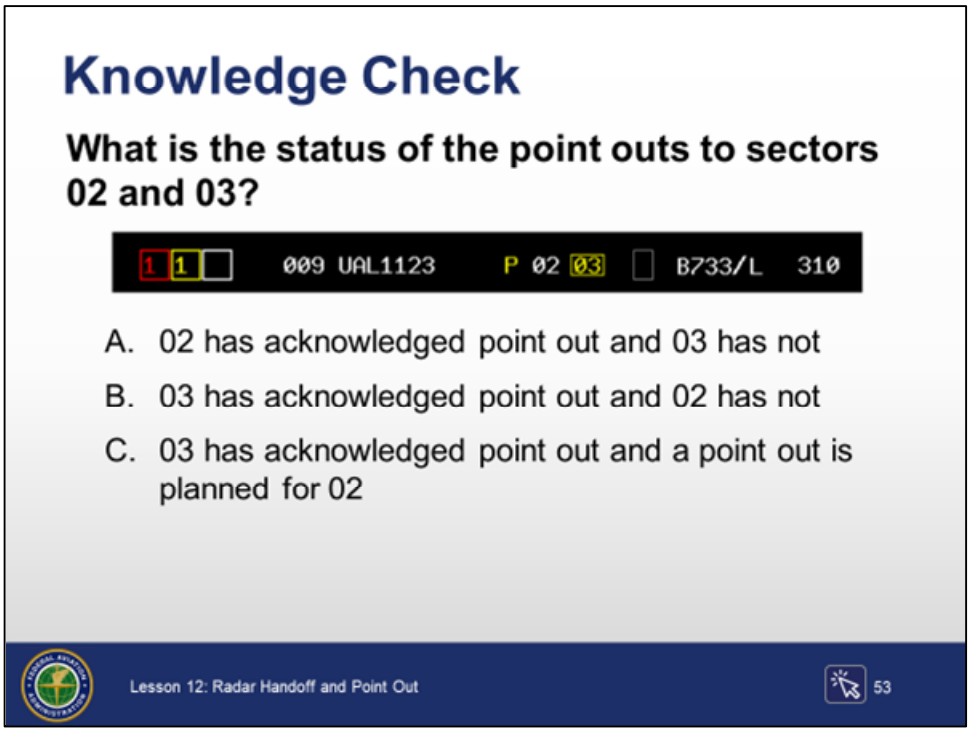
- Multiple point outs of the same aircraft must be acknowledged individually by adding a specific sector ID to the QP A command

  Syntax: QP A <sector ID> <FLID>

- Acknowledgement of a point out will change the sector ID in a displayed pop up to white
- Error Messages
  - If multiple point outs for the same aircraft exist and the receiving sector uses a QP A command without specifying a sector, a reject message will display: `REJECT-SECTOR ID REQUIRED`
  - If a QP A command is entered and the sector is both the receiver and initiator of the point out, then a reject message will display: `REJECT- (sector) AMBIGUOUS PO`
  - If a QP A command is entered and no point out associated with the entering sector is found, or both positions at a sector have the point out marked as cleared, a reject message will display: `REJECT-POINT OUT NOT FOUND`
- Acknowledgement of all point out sectors using a QP A command will remove the yellow P from the FDB

POINT OUT COMMAND ENTRY *(CONT'D)*

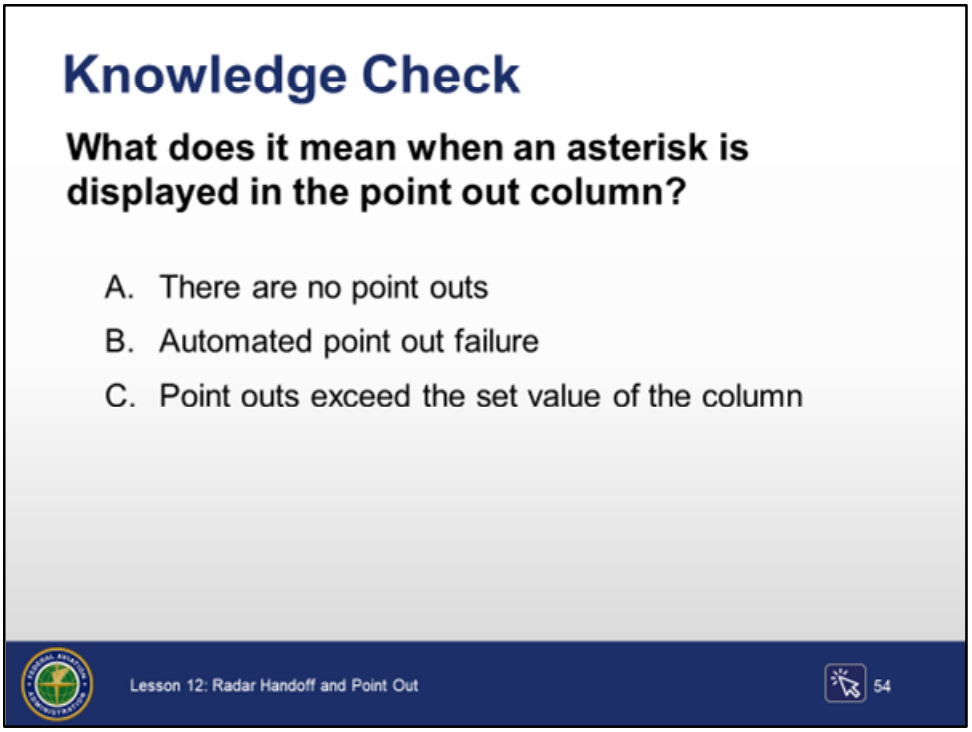
Knowledge Check



Question: What is the status of the point outs to sectors 02 and 03?

POINT OUT COMMAND ENTRY *(CONT'D)*

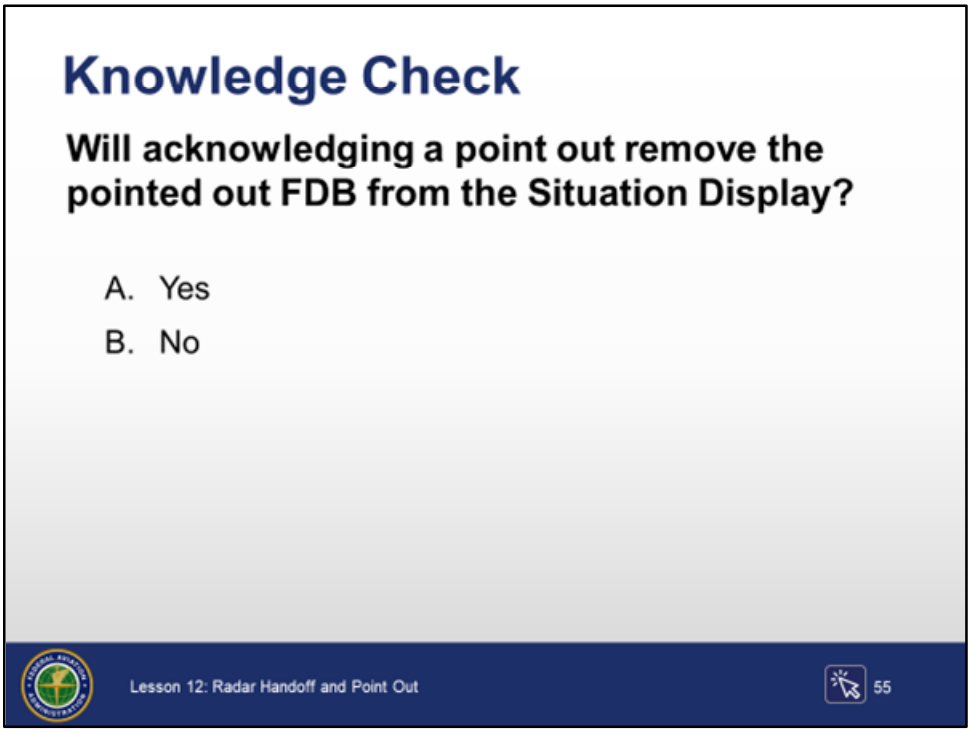
Knowledge Check



Question: What does it mean when an asterisk is displayed in the point out column?

POINT OUT COMMAND ENTRY *(CONT'D)*

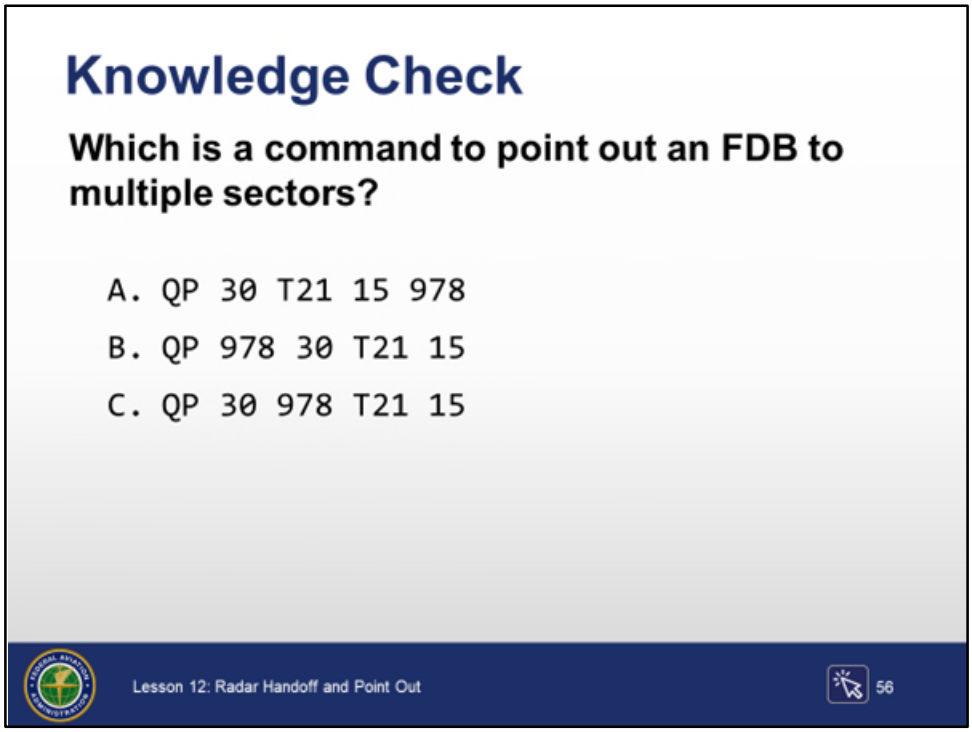
Knowledge Check



Question: Will acknowledging a point out remove the pointed out FDB from the Situation Display?

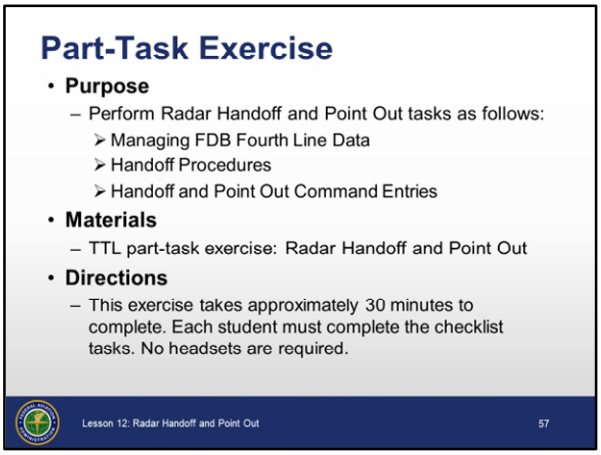
POINT OUT COMMAND ENTRY *(CONT'D)*

Knowledge Check



Question: Which is a command to point out an FDB to multiple sectors?

PART-TASK EXERCISE: RADAR HANDOFF AND POINT OUT



Purpose

Perform Radar Handoff and Point Out tasks as follows:

- Managing FDB Fourth Line Data
- Handoff Procedures
- Handoff and Point Out Command Entries

Materials

Handout:

- TTL part-task exercise: Radar Handoff and Point Out

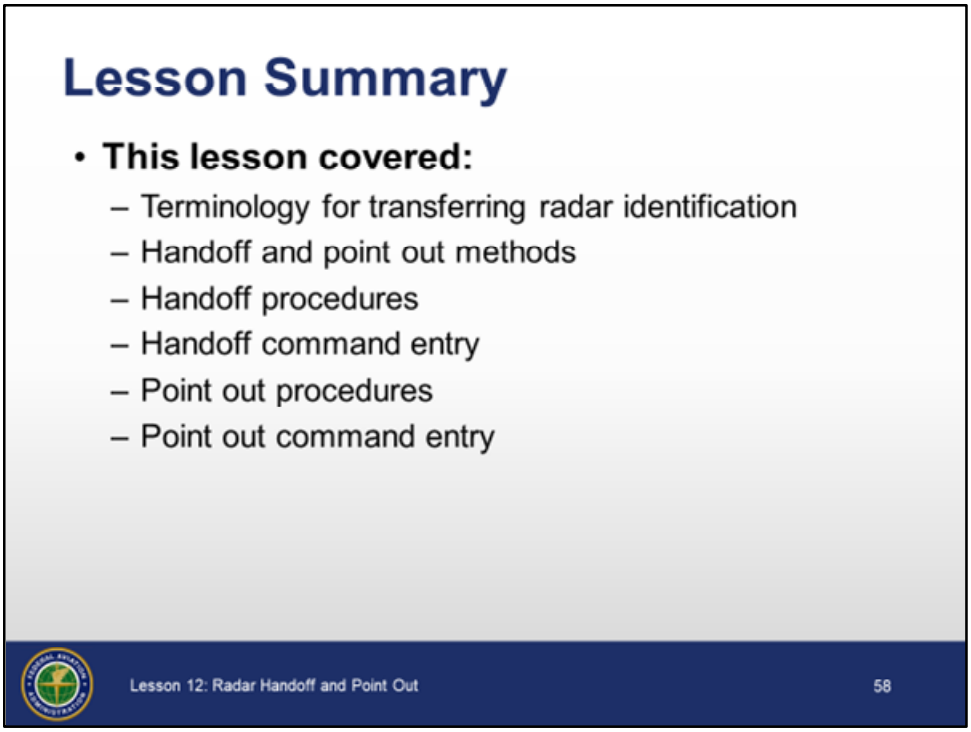
TTL scenario

Directions

This exercise takes approximately 30 minutes to complete. Each student must complete the checklist tasks. No headsets are required.

CONCLUSION

Lesson Summary



This Lesson covered:

- Terminology for transferring radar identification
  - Handoff
  - Radar contact
  - Point out
  - Point out approved
  - Automated Information Transfer (AIT)
  - Traffic
  - Traffic observed
- Handoff and point out methods
  - Transfer radar identification
  - Handoff/point out - Order of Information
  - Landline transfer of radar identification

Continued on next page

CONCLUSION *(CONT'D)*

Lesson Summary (Cont'd)

- Data block coordination during and after handoff
- 4th line data block usage
- Altitude coordination

⊙ Handoff procedures

- Transferring controller
- Receiving controller
- Both controllers
- Interfacility Automated Information Transfer (AIT)
- Prearranged coordination

⊙ Handoff command entry

- Initiating handoffs
  - Intrafacility
  - Interfacility
- Side stream handoff
- Field E data upon handoff initiation
- Accepting a handoff
  - QZ command
- Retracting a handoff
- Automatic (Computer-Generated) handoff point
- Auto Handoff command
- Auto Handoff Inhibit view
- Auto handoff inhibited - Caret symbol

⊙ Point out procedures

- Transferring controller
- Receiving controller

Continued on next page

CONCLUSION *(CONT'D)*

Lesson Summary (Cont'd)

- Point out command entry
  - Initiate point out
  - FDB Automated Point Out indicator - Initiating sector
  - ACL Automated Point Out indicator - Initiating sector
  - FDB Automated Point Out indicator -Receiving sector
  - ACL Automated Point Out indicator - Receiving sector
  - Acknowledge Point Out command