Federal Aviation Administration

Initial En Route Qualification Training

Instructor
Lesson 11
Route Assignments

Course 50148001

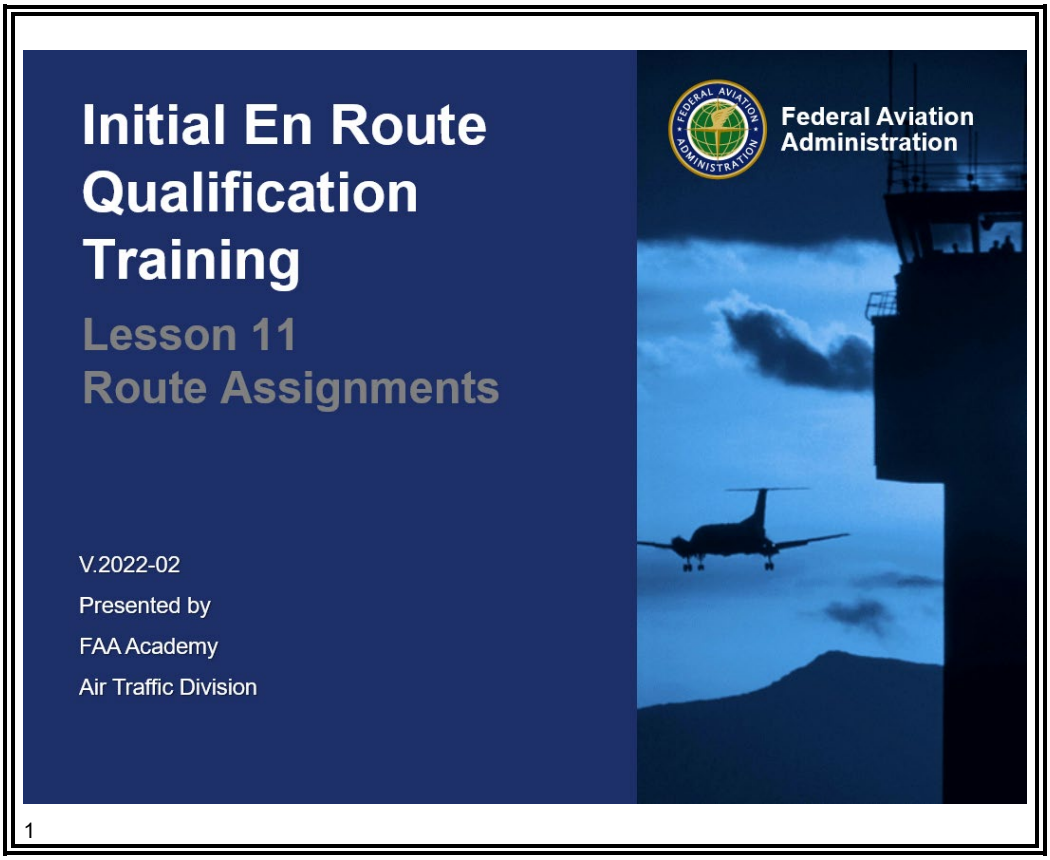
LESSON PLAN DATA SHEET

COURSE NAME:	INITIAL EN ROUTE QUALIFICATION TRAINING
COURSE NUMBER:	50148001
LESSON TITLE:	ROUTE ASSIGNMENTS
DURATION:	3+30 HOURS
DATE REVISED:	2022-02
VERSION:	V.2022-02
REFERENCE(S):	FAA ORDER JO 7110.65, AIR TRAFFIC CONTROL; FAA ORDER JO 7110.10, FLIGHT SERVICES; AERONAUTICAL INFORMATION MANUAL (AIM)
HANDOUT(S):	NONE
EXERCISE(S)/ ACTIVITY(S):	ACTIVITY: FIX RADIAL DISTANCE EXERCISE: ALTITUDE STRATUM
END-OF-LESSON TEST:	YES *(REFER TO ELT11.PDF)*
PERFORMANCE TEST:	NONE
MATERIALS:	NONE
OTHER PERTINENT INFORMATION:	*INSTRUCTOR KEY FOR ELEARNING ACTIVITIES IS INCLUDED AS AN APPENDIX AT THE END OF THIS DOCUMENT*

☞ ***NOTE:*** *As you prepare for this lesson, recall and be prepared to talk about examples and personal experiences that illustrate or explain the teaching points in the lesson.*

INTRODUCTION

Gain Attention



As you proceed through this course, you continue to add skills that are required of all air traffic controllers. This lesson on IFR clearances and route assignment covers critical air traffic control functions.

Mastery of these skills will ensure that pilots have **no** doubt as to what you expect them to do. You will use skills learned in previous lessons to accurately issue clearances and route assignments.

Continued on next page

INTRODUCTION *(Continued)*

Opening Scenario

ROUTE ASSIGNMENTS

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In earlier lessons, you were introduced to Air Traffic Control (ATC) clearances and the role they play in the ATC system. ATC clearances are employed by all controllers to maintain a safe, orderly, and expeditious flow of air traffic. In this lesson, we will focus on ATC clearances as they apply in the en route environment.

Purpose

This lesson covers IFR clearance items, route/altitude amendments, and clearance prefixes.

INTRODUCTION *(Continued)*

Lesson Objectives

LESSON OBJECTIVES

- On an End-of-Lesson Test and in accordance with FAA Order JO 7110.65, you will identify:
  - Clearance and route assignment procedures for IFR aircraft
  - Phraseology for issuing selected clearances
  - Fix radial distance locations

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☞ ***NOTE:*** *Teach from graphic.*

CLEARANCE PREFIXES

Prefix
JO 7110.65,
pars. 4-2-2, 4-2-4

✈ **Phraseology**

⊙ Prefix a clearance, information, or a request for information which will be relayed to an aircraft through a non-ATC facility by stating:

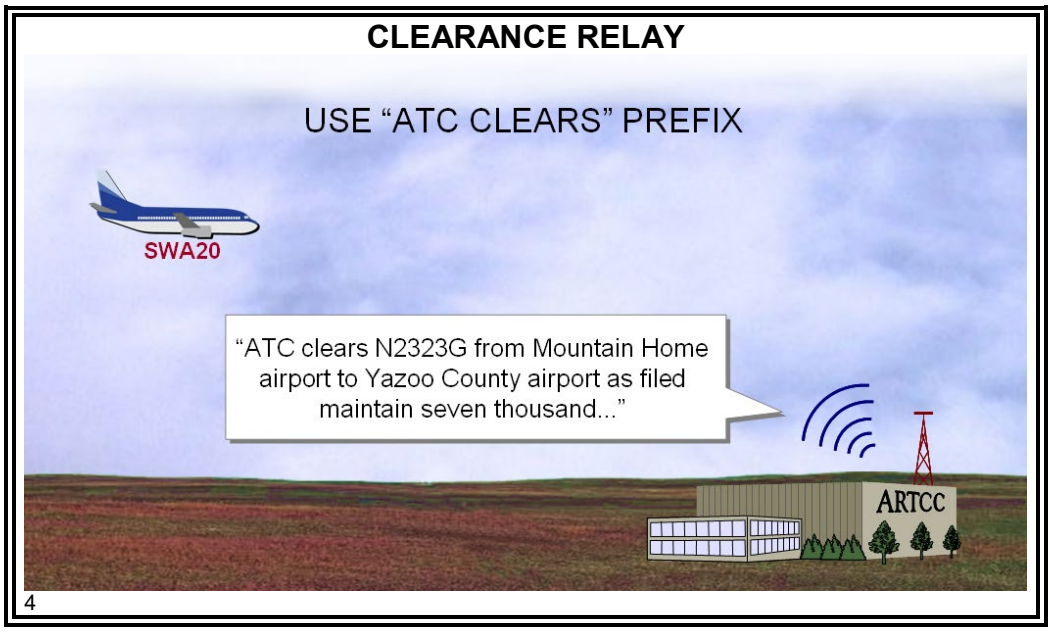
- "ATC clears" (Clearance)
- "ATC advises" (Information)

  Example: Weather information, delays at destination, etc.

- "ATC requests" (Request)

  Example: Requests for flight conditions, altitude, etc.

✈ **Phraseology Example**



☞ ***NOTE:*** *Click once to build slide. Give examples of each item; both through another aircraft and through a non-ATC facility.*

⊙ FDU **must** prefix a clearance with the appropriate phrase:

✈ **Phraseology**

- "ATC clears"
- "ATC advises"
- "ATC requests"

⊙ Relay clearances verbatim.

CLEARANCE PREFIXES *(Continued)*

Knowledge Check

KNOWLEDGE CHECK

QUESTION: What prefix phrase should you use to relay a clearance to an aircraft through another aircraft?

A. “ATC clears.”

B. “ATC relays.”

C. “ATC advises.”

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☞ ***NOTE:*** *Click once to show answer.*

ANSWER: *A*

ROUTE ASSIGNMENT

Definitions
JO 7110.65, Pilot/Controller Glossary;
JO 7110.10, par. 6-3-3

📖 An **airway** is a Class E airspace area established in the form of a corridor, the centerline of which is defined by radio navigational aids; e.g., V278.

📖 A **fix radial distance (FRD)** is a geographical position determined by a fix (up to 5 characters), an azimuth from the fix (3 digits in degrees magnetic), and a distance from the fix in nautical miles (3 digits).

Examples: SQS270040
HATER045012

📖 A **route** is a defined path consisting of one or more courses in a horizontal plane, which aircraft traverse over the surface of the earth.

📖 A **jet route** is a route designed to serve aircraft operations from 18,000 feet MSL up to and including flight level 450. The routes are referred to as “J” routes with numbering to identify the designated route; e.g., J35.

📖 A **Q Route** is an Area Navigation (RNAV) route published for use in the United States.

📖 A **vector** is a heading issued to an aircraft to provide navigational guidance by radar.

📖 A **Preferential Arrival Route (PAR)** is a specific arrival route from an appropriate en route point to an airport or terminal area. **It may be included in a Standard Terminal Arrival (STAR) or a Preferred IFR Route.** The abbreviation “PAR” is used primarily within the ARTCC and should **not** be confused with the abbreviation for Precision Approach Radar.

📖 A **Standard Terminal Arrival (STAR)** is a pre-planned Instrument Flight Rule (IFR) air traffic control arrival procedure published for pilot use in graphic and/or textual form. STARs provide transition from the en route structure to an outer fix or an instrument approach fix/arrival waypoint in the terminal area.

📖 A **Standard Instrument Departure (SID)** is a preplanned instrument flight rule (IFR) air traffic control (ATC) departure procedure printed for pilot/controller use in graphic form to provide obstacle clearance and a transition from the terminal area to the appropriate en route structure. SIDs are primarily designed for system enhancement to expedite traffic flow and to reduce pilot/controller workload. ATC clearance **must always** be received prior to flying a SID.

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ROUTE ASSIGNMENT *(Continued)*

Route Use
JO 7110.65,
par. 4-4-1

DESIGNATED AIRWAY

SWA20 B733/I T450 66 **431** 01		↑	↑120	SQS 120	KJAN MHZ V9 KMEM	2575 D-A
		KJAN P1910				

Phraseology Example

"Southwest Twenty, cleared to Memphis Airport via Victor Niner, climb and maintain one two thousand."

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⊙ Clear aircraft via routes consistent with the altitude stratum in which the operation is to be conducted by one or more of the following:

- Designated airways and routes

Phraseology

"VIA"

VICTOR (COLOR) (airway number) (the word "ROMEO" when RNAV)

or

J (route number) (word "ROMEO" when RNAV)."

Continued on next page

ROUTE ASSIGNMENT (*Continued*)

Route Use (Cont'd)
JO 7110.65, par. 4-4-1

DESIGNATED RADIALS OF AIRWAY

AAL380 B738/I T450 02 **437** 01		↑	↑220 KJAN P2010	SQS 220	KJAN MHZ V9 SQS J35 KMEM RDLS	2464 D-A

"American Three Eighty, cleared to Memphis Airport, via radials of Victor Niner Sidon, J Thirty-Five, climb and maintain flight level two two zero."

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✈ Phraseology Example

- Radials, courses, azimuths, or direct to or from NAVAIDs
  - To utilize an airway above/below its route structure
  - To define a route when an airway does **not** exist

✈ Phraseology

"DIRECT."

or

"VIA"

(name of NAVAID) (specified) RADIAL/COURSE/AZIMUTH

or

(fix) AND (fix)

or

RADIALS OF (airway or route) AND (airway or route)."

Continued on next page

ROUTE ASSIGNMENT *(Continued)*

Route Use (Cont'd)
JO 7110.65, par. 4-4-1

REROUTE ON DEPARTURE VIA RADIALS

N905T WW24/I T440 66 **477** 01		↑ KGWO P2205	↑160	MHZ 160	KGWO SQS ~~V9 MHZ~~ V18 EIC KSHV SQS240R/⇒MLU060R MLU	6654 D-A

"Westwind Niner Zero Five Tango, cleared to Shreveport Airport via direct Sidon, the Sidon two four zero radial, until intercepting Monroe zero six zero radial Monroe Victor Eighteen, then as filed, climb and maintain one six thousand."

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✈ **Phraseology Example**

- Radials, courses, azimuths, and headings of departure or arrival routes

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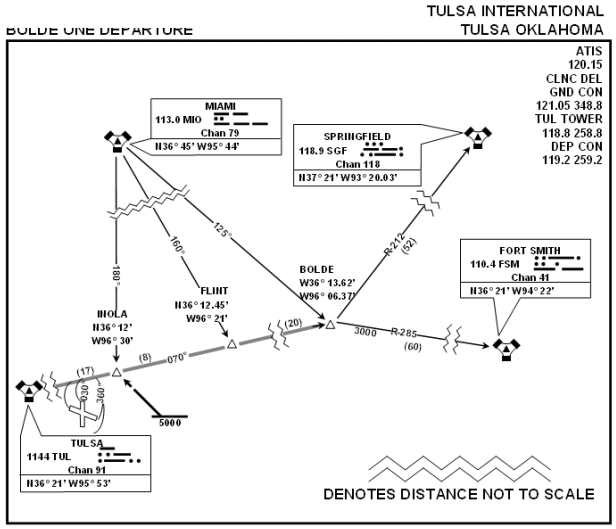
ROUTE ASSIGNMENT *(Continued)*

Route Use (Cont'd)
JO 7110.65, par. 4-4-1

BOLDE 1 DEPARTURE



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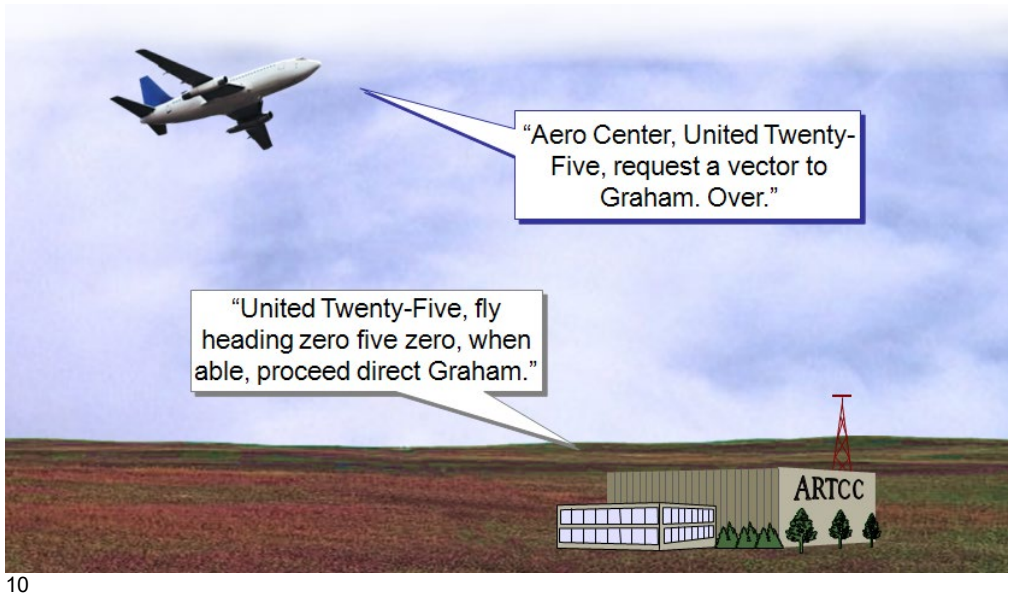
- Standard Instrument Departures (SIDs)/Standard Terminal Arrivals (STARs)/Flight Management System Procedures (FMSPs)

VECTORS



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Phraseology Example

☞ ***NOTE:*** *Click twice to show dialogue.*

- Vectors

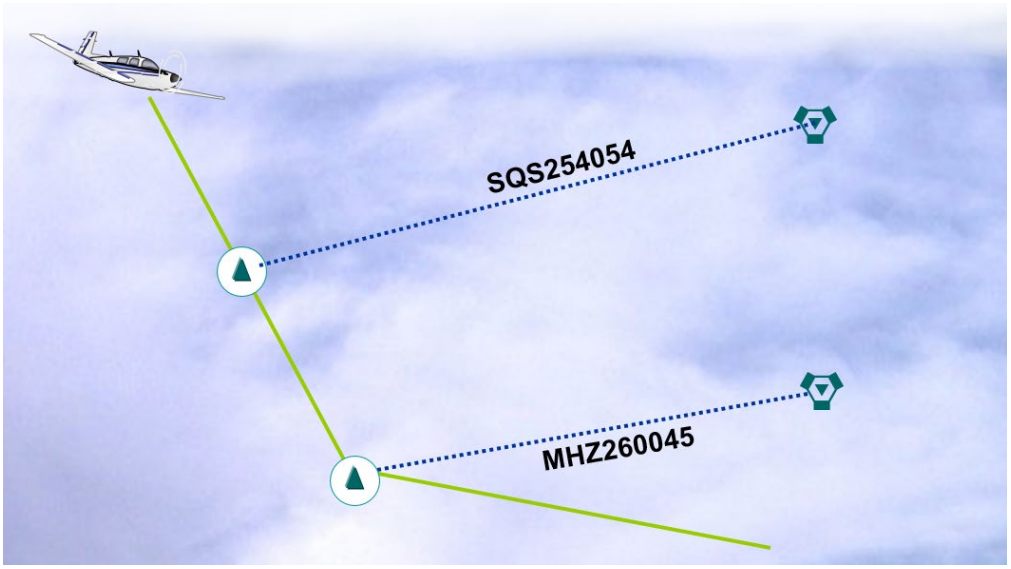
Continued on next page

ROUTE ASSIGNMENT *(Continued)*

Route Use (Cont'd)
JO 7110.65, par. 4-4-1

- Degree-distance fixes for special military operations
- Courses, azimuths, bearings, quadrants, or radials within a radius of a NAVAID

FIX RADIAL DISTANCE FIXES



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- Fixes/waypoints defined in terms of:
  - Published name
  - Degree-distance from NAVAIDs
  - Latitude/longitude coordinates

Phraseology

"DIRECT (fix/waypoint)." e.g., "DIRECT HEDUD"

"DIRECT TO THE (facility) (radial) (distance) FIX."

Example: "DIRECT TO THE MAGNOLIA TWO FOUR FIVE RADIAL THREE ZERO MILE FIX"

ALTITUDE STRATUM EXERCISE

Exercise

ALTITUDE STRATUM EXERCISE

Purpose: to practice determining which route to clear aircraft based on altitude stratum

Directions: answer the questions

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Directions

Record your answers to questions 1 – 7 in the space provided.

Questions

QUESTION 1

UAL35 A320/I T420 66	MCB 1500	28 15 MHZ	160	SQS		

QUESTION: Should this aircraft be cleared via victor airway or jet route?

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NOTE: *Click once to show answer.*

ANSWER: *Victor airway, since the altitude is below FL180*

Continued on next page

ALTITUDE STRATUM EXERCISE *(Continued)*

Questions (Cont'd)

QUESTION 2

N651CC C650/I T420 66	EIC 0256	22 03 17 MHZ	210✓	MEI		

QUESTION: Should this aircraft be cleared via victor airway or jet route?

14

☞ ***NOTE:*** *Click once to show answer.*

ANSWER: *Jet route, since the altitude is above FL180*

QUESTION 3

N8010A GLF3/L T440 66	EIC	52 00 MHZ	230	MCB		

QUESTION: Should this aircraft be cleared via victor airway or jet route?

15

☞ ***NOTE:*** *Click once to show answer.*

ANSWER: *Jet route, since the altitude is above FL180*

Continued on next page

ALTITUDE STRATUM EXERCISE *(Continued)*

Questions (Cont'd)

QUESTION 4

N9051N AC80/A T250 66	GLH 1330	48 13 MHZ	160	MIZZE		

QUESTION: Should this aircraft be cleared via victor airway or jet route?

16

☞ ***NOTE:*** *Click once to show answer.*

ANSWER: *Victor airway, since the altitude is below FL180*

QUESTION 5

N56Q P28A/A T145 66	GLH 0022	48 00 MHZ	170	MIZZE	KLIT V74 MHZ V11 GCV KMSY/0139	

QUESTION: Is the route that the aircraft is assigned appropriate for the altitude stratum?

17

☞ ***NOTE:*** *Click once to show answer.*

ANSWER: *Yes, since the altitude is below FL180*

Continued on next page

ALTITUDE STRATUM EXERCISE *(Continued)*

Questions (Cont'd)

QUESTION 6

N64AP C500/A T280	MHZ 1911	21 19 DORTS	160	MLU	KSTF./.MHZ V417 MLU KRSN/1942 RDLS	

QUESTION: This aircraft requests climb to FL180, what would the new route clearance be?

18

☞ ***NOTE:*** *Click once to show answer.*

ANSWER: *"Cleared to Ruston airport via after Magnolia the radials of victor four seventeen Monroe direct."*

QUESTION 7

DAL369 MD82/L T420	MEI 1534	44 15 MHZ	180		KATL./.MEI J20 MHZ J4 EIC KDFW RDLS	

QUESTION: Approaching Magnolia VORTAC, DAL369 requests clearance to one six thousand, what would the new route clearance be?

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☞ ***NOTE:*** *Click once to show answer.*

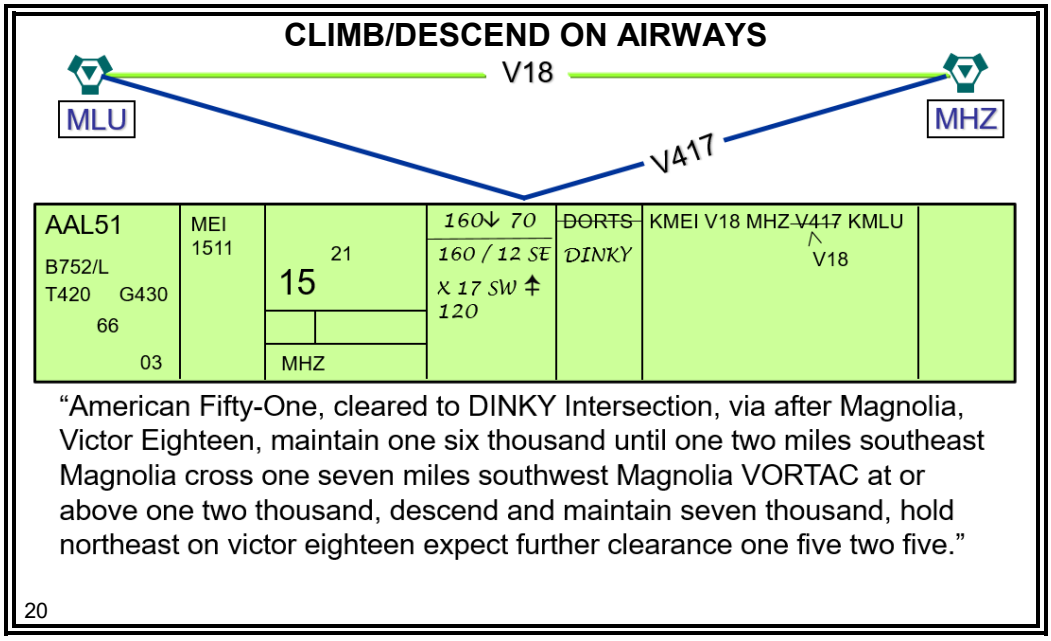
ANSWER: *"Cleared to Dallas-Fort Worth Airport via after Magnolia the radials of J4 Belcher direct."*

ROUTE STRUCTURE TRANSITIONS

Transition Within/ Between Route Structures
JO 7110.65, par. 4-4-2

⊙ To transition within or between route structures, clear an aircraft by one or more of the following methods, based on VOR, VORTAC, TACAN or MLS NAVAIDs:

- Vector aircraft to or from:
  - Radials
  - Courses
  - Azimuths of the airway or route assigned
- Assign a
  - Standard Instrument Departure (SID)
  - Standard Terminal Arrival (STAR)



✈ **Phraseology Example**

"American Fifty-One, cleared to DINKY Intersection, via after Magnolia, Victor Eighteen, maintain one six thousand until one two miles southeast Magnolia cross one seven miles southwest Magnolia VORTAC at or above one two thousand, descend and maintain seven thousand, hold northeast on victor eighteen expect further clearance one five two five."

- Clear departing or arriving aircraft to climb or descend via:
  - Radials
  - Courses
  - Azimuths of the airway or route assigned

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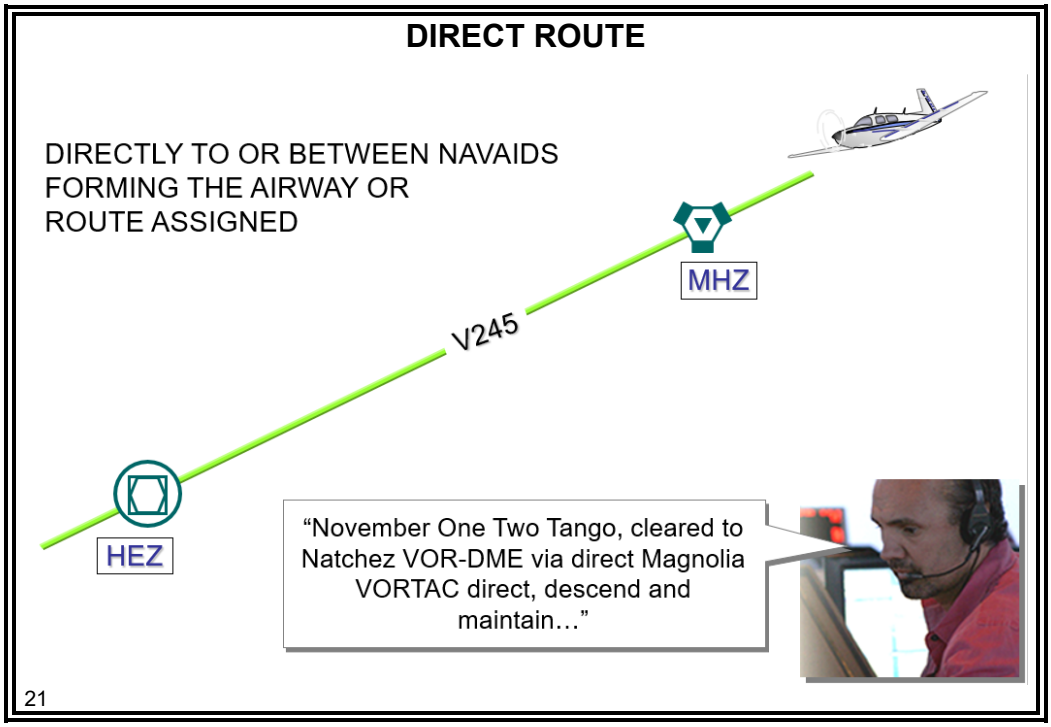
ROUTE STRUCTURE TRANSITIONS *(Continued)*

Transition Within/ Between Route Structures (Cont'd)
JO 7110.65, par. 4-4-2



- Clear departing or arriving aircraft directly to or between NAVAIDs forming the airway or route assigned.

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ROUTE STRUCTURE TRANSITIONS *(Continued)*

Transition Within/ Between Route Structures (Cont'd)
JO 7110.65, par. 4-4-2

✈ **Phraseology Example**

DESCENT ON AIRWAYS

AAL51 H/B772/L T475 G475 66 **675** 05	SQS 0902	11 09 MHZ ~~271005~~	240✓↓70 X35SE ↟ 120	MCB 0921	KMEM J35 KMCB SQS MHZ V9	6564

"American Fifty-One, after Sidon, cleared direct Magnolia Victor Niner McComb, cross three five miles southeast Magnolia VORTAC at or above one two thousand, descend and maintain seven thousand."

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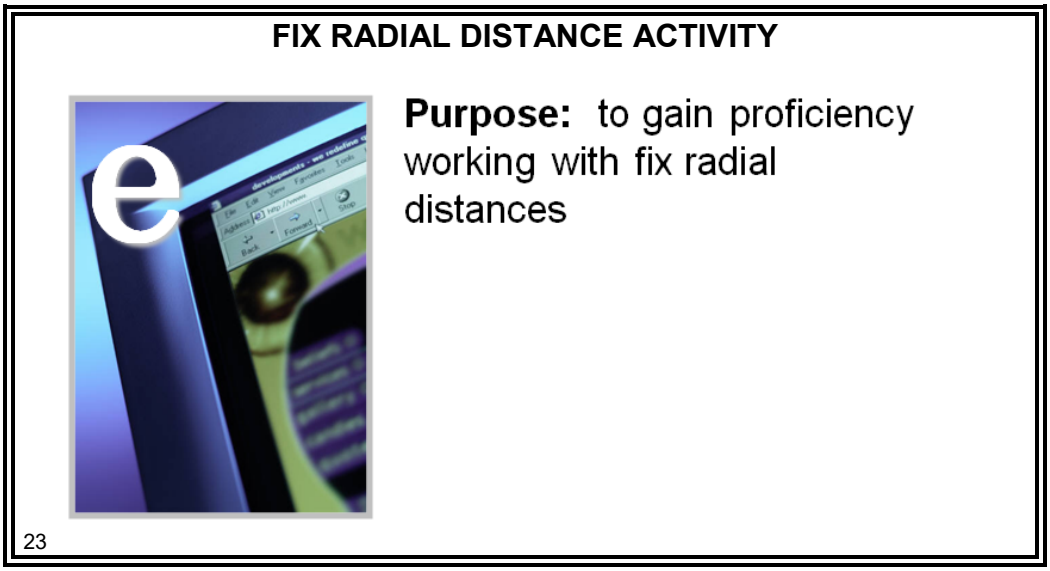
- Clear aircraft to climb or descend via:
  - The airway or route on which flight will be conducted
  - Specified radials, courses, or azimuths of NAVAIDs

FIX RADIAL DISTANCE ACTIVITY

Activity



☞ ***NOTE:*** Have the students access the IET eLearning menu and select the first activity for Lesson 11.

Description

In this activity, you will be presented with information related to the components that comprise a fix radial distance and then will be asked to answer a series of related questions. Feedback will be given immediately.

Directions

Access the IET eLearning menu. Select **Lesson 11 – Route Assignments**. Click on the title to launch the **Fix Radial Distance** activity.

Time Allotted

30 minutes

☞ ***NOTE:*** *Refer to the appendix for the Instructor Key for this eLearning activity.*

☞ **NOTE:** Remember to disable the eLearning after the students complete the eLearning.

CLEARANCE AMENDMENTS

Route/Altitude Amendments
JO 7110.65, par. 4-2-5

ROUTE AMENDMENT EXAMPLE 1

N200P BE65/A T160 G160 66 **463** 02	STUEE 1000	21 10 21 MHZ	110✓	ZAMMA	KSAT V18 MHZ ~~V245~~ IGB KUBS V9 SQS V278	2563

"Beechcraft Two Zero Zero Papa, change Magnolia Victor Two Forty-Five Bigbee to read Magnolia Victor Niner Sidon Victor Two Seventy-Eight Bigbee direct Columbus."

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Phraseology Example

⊙ Amend route of flight in a previously issued clearance by one of the following methods:

- State which portion of the route is being amended and then state the amendment

Phraseology

"CHANGE (portion of route) TO READ (new portion of route)."

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CLEARANCE AMENDMENTS *(Continued)*

Route/Altitude Amendments (Cont'd)
JO 7110.65, par. 4-2-5

ROUTE AMENDMENT EXAMPLE 2

N200P BE65/A T160 G160 66 **462** 05	HLI	11 07 11 SQS	110✓	MHZ	KSTL ./. HLI V535 SQS ~~V9~~ V557 MHZ V11 KGCV	2571

"Beechcraft Two Zero Zero Papa, cleared via after Sidon Victor Five Fifty-Seven Magnolia, rest of route unchanged."

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Phraseology Example

NOTE: If "rest of route unchanged" is left out, the pilot may be confused as to what routing to fly after MHZ or the pilot may mistakenly assume that the clearance limit is MHZ.

- State the amendment to the route and then state that the rest of the route is unchanged

Phraseology

"(Amendment to route), REST OF ROUTE UNCHANGED."

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CLEARANCE AMENDMENTS *(Continued)*

Route/Altitude Amendments (Cont'd)
JO 7110.65, par. 4-2-5

ROUTE AMENDMENT EXAMPLE 3

SWA632 B733/A T450 G435 66 **211** 01	HEZ 1100	11 11 11 MHZ	110✓	SQS	KMSY HEZ ~~V245~~ MHZ V555 SQS KGWO	1362

"Southwest Six Thirty-Two, cleared direct Magnolia VORTAC."

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Phraseology Example

- Issue a clearance "direct" to a point on the previously issued route

Phraseology

"CLEARED DIRECT (fix)."

NOTE: Clearances authorizing "direct" to a point on a previously issued route do **not** require the phrase, "rest of route unchanged." However, it **must** be understood where the previously cleared route is resumed. When necessary, "rest of route unchanged" may be used to clarify routing.

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CLEARANCE AMENDMENTS *(Continued)*

Route/Altitude Amendments (Cont'd)
JO 7110.65, par. 4-2-5

ROUTE AMENDMENT EXAMPLE 4

N14AM BE35/A T180 66 **521** 02	KGWO P1600 +21	21 16 MHZ	80	~~STUEE~~ *DORTS*	KGWO SQS V9 MHZ ~~V18~~ EIC KSHV *V417 MLU V18*	1364

Bonanza One Four Alpha Mike has been cleared to the Shreveport (SHV) Airport via Sidon Victor Niner Magnolia Victor Eighteen Belcher (EIC) Direct Shreveport Airport Climb and Maintain Eight Thousand. After takeoff, the aircraft is rerouted via after Magnolia Victor Four Seventeen Monroe Victor Eighteen Belcher.

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✈ **Phraseology Example**

- Issue the entire route by stating the amendment

  The Controller can issue **any** one of the following clearances:

  - "Bonanza One Four Alpha Mike **Change** Victor Eighteen Belcher **To Read** Victor Four Seventeen Monroe Victor Eighteen Belcher."
  - "Bonanza One Four Alpha Mike cleared via after Magnolia Victor Four Seventeen Monroe Victor Eighteen Belcher, **Rest of Route Unchanged**."
  - "Bonanza One Four Alpha Mike Cleared via after Magnolia Victor Four Seventeen Monroe Victor Eighteen Belcher **Direct Shreveport Airport.**"

✈ **Phraseology**

☞ ***NOTE:*** *Stress to students that if they chose this last option of issuing the entire route amendment that they need to include the Airport Clearance Limit in the clearance given.*

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CLEARANCE AMENDMENTS *(Continued)*

Route/Altitude Amendments (Cont'd)
JO 7110.65, par. 4-2-5

ROUTE/ALTITUDE AMENDMENT
ORIGINAL CLEARANCE

N27T C421/A T180 66 **481** 01		↑	↑120 X6NW SQS ‡ 90 2019 KGWO P2020 ↑120	GLH 120	KGWO SQS V278 GLH V94 KMLU /0057	D-A

Phraseology Example

"Cessna Two Seven Tango, cleared to Monroe Airport via direct Sidon Victor Two Seventy Eight Greenville Victor Ninety Four. Cross six miles northwest Sidon VORTAC at or below niner thousand. Climb and maintain one two thousand."

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ROUTE/ALTITUDE AMENDMENT (CONT'D)
AMENDED ROUTE AND ALTITUDE RESTRICTION

N27T C421/A T180 66 **481** 01		↑	↑120 X6NW SQS ‡ ~~90~~ 70 2019 KGWO P2020 ↑120	GLH 120	KGWO SQS V278 GLH ~~V94~~ ~~KMLU~~ /0057	D-A

Phraseology Example

"Cessna Two Seven Tango, cleared to Greenville Airport via direct Sidon Victor Two Seventy-Eight. Cross six miles northwest Sidon VORTAC at or below seven thousand. Climb and maintain one two thousand."

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⊙ When route or altitude in a previously issued clearance is amended, restate all applicable altitude restrictions.

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CLEARANCE AMENDMENTS *(Continued)*

Route/Altitude Amendments (Cont'd)
JO 7110.65, par. 4-2-5

NOTE: Restating previously issued altitude to "maintain" is an amended clearance. If altitude to "maintain" is changed or restated, whether prior to departure or while airborne, and if previously issued altitude restrictions are omitted, altitude restrictions are canceled, including SID/STAR/ATC altitude restrictions, if any.

Example: A Greenwood Departure is cleared to cross one seven miles southwest Sidon VORTAC at or below five thousand, cross one seven miles northwest Magnolia VORTAC at or above seven thousand, climb and maintain one zero thousand. Shortly after takeoff the aircraft request a final altitude of eight thousand. Because the altitude restriction remains in effect, the controller issues an amended altitude clearance as follows:

"Amend Altitude. Cross one seven miles southwest Sidon VORTAC at or below five thousand, cross one seven miles northwest Magnolia VORTAC at or above seven thousand, climb and maintain eight thousand."

☞ ***NOTE:*** *Stress to the students that if the controller had simply cleared the aircraft to "maintain eight thousand" that all the previously issued restrictions become void and therefore any separation they provided is lost.*

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CLEARANCE AMENDMENTS *(Continued)*

Knowledge Check

KNOWLEDGE CHECK

QUESTION: What are the four ways to amend a route of flight?

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☞ ***NOTE:*** *Click once to show answer.*

ANSWER:

1. *State which portion of the route is being amended and then state the amendment.*
2. *State the amendment to the route and then state that the rest of the route is unchanged.*
3. *Issues a clearance "direct" to a point on the previously issued route.*
4. *Issue the entire route by stating the amendment.*

KNOWLEDGE CHECK

N23GP LJ24/I T450 66		↑ 1733 /1733 KGWO P1730	↑120 X17SE SQS ↓70 X17NW MHZ ↑90	MHZ 130	KGWO SQS V9 MCB KBTR MHZ V557	D-A

QUESTION: N23GP was cleared as filed. Later, the aircraft was rerouted via SQS V9 MHZ V557 MCB KBTR with the same restrictions and altitude. How should the clearance be amended?

A. Amend route and say, "Altitude and restrictions remain unchanged."

B. Amend route only.

C. Amend route and restate applicable altitude restrictions.

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☞ ***NOTE:*** *Click once to show answer.*

ANSWER: *C*

IN CONCLUSION

Lesson Review

LESSON REVIEW

The following topics were covered in this lesson:

- Clearance and route assignment procedures for IFR aircraft
- Phraseology for issuing selected clearances

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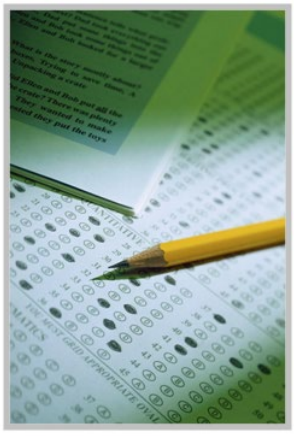
☞ **NOTE:** Teach from graphic. Review and elaborate briefly on the topics covered in this lesson.

End-of-Lesson Test

END-OF-LESSON TEST

Route Assignments



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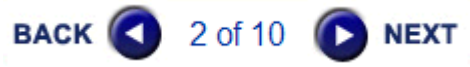
APPENDIX: INSTRUCTOR KEY FOR ELEARNING ACTIVITIES

Purpose

This document serves as a guide for facilitating the eLearning activities of the Initial En Route Training course and provides an overview of the objectives and content of the eLearning activities within this lesson.

Navigation

- To navigate within the eLearning activities, a Navigation Bar is positioned at the top right of the page and contains the following options:
  - MAIN MENU: Allows students to access a main menu listing all of the elearning activities
  - RESOURCES: Allows students to access additional resources, including:
    - A **Glossary** link
    - A **References** link
    - A **Help** link
  - EXIT: Allows students to exit from the eLearning activity at any time



- To navigate within an activity, a navigation tab is also positioned near the top right of the screen, just below the navigation bar.
  - The navigation tab contains the following buttons:
    - BACK: When active, returns students to the previous page
    - NEXT: When active, allows students to advance to the next page

NOTE: Inactive **BACK** and **NEXT** buttons indicate students are at the beginning or at the end of a lesson.

Navigation Tips

- To refresh a page or reset an activity, press **F5**.
- You can advance to a specific page in the activity without completing the activity. Click the **NEXT** or **BACK** buttons until the page is displayed.

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APPENDIX: INSTRUCTOR KEY FOR ELEARNING ACTIVITIES *(Continued)*

Lesson Title

Lesson 11, Route Assignments

eLearning Objective

The objective of this eLearning activity is to reinforce interpreting and locating Fix Radial Distance (FRD) elements when they are encountered in a clearance, in a route, or on a flight progress strip.

eLearning Activity

⊙ Lesson 11 contains one eLearning activity:

- Fix Radial Distance

Activity Description

In this activity, students are first presented with a brief refresher on Fix Radial Distances, then they review the map and given flight progress strips to answer fill-in-the-blank and multiple choice questions and to plot routes of flights focusing on FRDs.

Activity Content

⊙ Page 1 contains an activity introduction.

⊙ Page 2 contains a rollover activity in which students are given a refresher on FRDs.

⊙ Page 3 contains a series of fill-in-the-blank questions regarding FRDs.

⊙ Pages 4-5 contain an activity in which students **must** identify components of FRDs.

⊙ Pages 6-11 contain a series of multiple choice questions about FRDs.

⊙ Page 12 contains an activity in which students pick points on the map and answer multiple choice questions related to specific locations.

⊙ Pages 13-15 contain an activity in which students drag and drop FRDs onto appropriate location on the map.

⊙ Pages 16-25 contain an activity in which students review given flight progress strips and answer multiple choice questions regarding FRDs.

⊙ Page 26 contains an activity in which students plot route of flights based on the FRDs in given flight progress strips.

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APPENDIX: INSTRUCTOR KEY FOR ELEARNING ACTIVITIES *(Continued)*

Activity Specifics

- Rollover activity
  - On page 2, students **must** click **ZOOM IN** in order to rollover the components of the given FRD and to read the definitions.
- Fill-in-the-blank questions
  - On page 3, students have two attempts to type in their answer before they are given the correct answer.
- Click the FRD component activity
  - On pages 4-5, students have one attempt to click the appropriate location on the given FRD before they are given the correct answer.
- Multiple choice questions
  - On pages 6-11 and 16-25, students have one attempt to respond to each question before they are given the correct answer.
- Multiple choice questions with map
  - On page 12, students have two attempts to answer the multiple choice question regarding each point indicated on the map before they are given the correct answer.
- Drag and drop questions
  - On pages 13-15, students have two attempts to drag and drop the FRD to the map before they are shown the correct answer.
    - Students **must** drag and drop the correct answers onto the map once the answers are given.
- Interactive map activity
  - On page 26, students have two attempts to plot each part of the route of flight before they shown the correct answer.