Federal Aviation Administration

55054001

EN ROUTE RADAR ASSOCIATE CONTROLLER TRAINING PART A: BASIC CONCEPTS

Lesson 5: IFR Clearances and Route Assignment

Version: 1.0 2022.08

INSTRUCTOR LESSON PLAN

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LESSON PLAN DATA SHEET

Course Name	En Route Radar Associate Controller Training Part A: Basic Concepts
Course Number	55054001
Lesson Title	IFR Clearances and Route Assignment
Duration	3 hours, 30 minutes (includes lesson, practice exercise, and ELT)
Version	1.0 2022.08
Reference(s)	JO 7110.65, Air Traffic Control; JO 7210.3 Facility Operation and Administration; AIM, Aeronautical Information Manual; FAA-H-8083-16B, Instrument Procedures Handbook; JO 7340.2, Contractions; U.S. Terminal Procedures Publication, SC-4, NW-1, NE-1; FAA Chart User's Guide; TI 6110.108, ERAM Quick Reference Controller Card
Prerequisites	NONE
Handout(s)	⊙ Practice Exercise HO01_L05 *(Print prior to class)*
Exercise / Activity	Refer to handout for: ⊙ Practice Exercise: Departure Clearances
Scenario	NONE
Assessments	⊙ YES - Written *(Refer to ELT01_L05, print prior to class)*
Materials and Equipment	⊙ Pencil and/or pen
Other Pertinent Information	⊙ **Ensure lesson materials are downloaded to the classroom computer** ⊙ Course 57834, IFR CLEARANCES and ROUTE ASSIGNMENT, or current course, is available as supplemental training for this lesson ⊙ This lesson is based on ERAM EAE410 ⊙ The lesson has been reviewed and reflects current orders and manuals as of April 2022

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

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
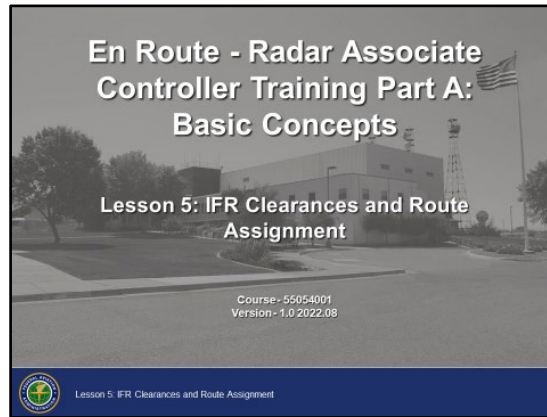
Overview

In earlier courses, 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.

LESSON INTRODUCTION (*CONT'D*)

**Lesson
Objectives**

Objectives

👉 *Review the lesson objectives.*

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

⊙ Clearance requirements

⊙ Procedures for departing IFR aircraft

⊙ Procedures for IFR clearances

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.

CLEARANCES

ATC Clearances

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

AIM, par. 4-4-3

ATC Clearances

📚 AIR TRAFFIC CLEARANCE - Instructions issued by ATC to authorize flight within controlled airspace for the purpose of avoiding collision between known aircraft and/or terrain.

⊙ Contains items such as:

- Clearance limit

  - When the clearance limit is an airport, the word AIRPORT must follow the airport name

  - May be a NAVAID or other fix

  - When a NAVAID, intersection, or waypoint, is used, include the type

- Route of flight

  - Departure route, if necessary

  - Airways, routes, courses, headings, azimuths, arcs, or vectors

  - Issued for the altitude or flight level filed by the pilot

- Altitude data

  - The altitude or flight level to maintain

  - If the altitude assigned is different from the altitude requested by the pilot, ATC will inform the pilot when to expect clearance to the requested altitude

CLEARANCES *(CONT'D)*

**Clearance
Structure**

JO 7110.65, par.
4-2-1

Clearance Structure

⊙ Issue the following clearance items, as appropriate, in the order listed
below:

- Aircraft ID

- Clearance Limit

- Standard Instrument Departure (SID)

- Route of flight

- Altitude data

- Mach number

- Holding instructions

- Any special instructions

- Frequency and beacon code information

CLEARANCES *(CONT'D)*

Aircraft Identification

JO 7110.65, par. 4-2-1

Aircraft Identification

⊙ All clearances begin with the proper aircraft identification

Examples: "DELTA TWENTY-TWO CLEARED…"

"KINGAIR FOUR FOUR HOTEL KILO CLEARED…"

CLEARANCES *(CONT'D)*

Clearance Limit, Destination Airport

JO 7110.65, par. 4-2-1

Clearance Limit, Destination Airport

⊙ The point to which an aircraft is granted an air traffic control clearance

- Normally the airport of intended landing
- Include the airport name and the word AIRPORT

✈ CLEARED TO (destination) AIRPORT

Examples: "CLEARED TO DALLAS LOVE AIRPORT…"

"CLEARED TO SEDONA AIRPORT…"

"CLEARED TO LAGUARDIA AIRPORT…"

CLEARANCES *(CONT'D)*

Clearance Limit, Intermediate Fix

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

Clearance Limit, Intermediate Fix

⊙ Under certain conditions, a short range clearance is issued to a NAVAID, intersection, or waypoint

• Include the type if known

⊙ If a delay is expected, issue complete holding instructions

⊙ If no delay is expected, state NO DELAY EXPECTED

✈ CLEARED TO (intersection or waypoint name and type)

Examples: "CLEARED TO YORK VORTAC, NO DELAY EXPECTED"

"CLEARED TO FORT UNION VORTAC HOLD NORTHEAST AS PUBLISHED…"

CLEARANCES *(CONT'D)*

Standard Instrument Departure (SID)

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

Standard Instrument Departure (SID)

⊙ Assign a SID

• Include a transition if necessary

✈ (SID name and number) DEPARTURE

Examples: "STROUDSBURG ONE DEPARTURE"

"STROUDSBURG ONE DEPARTURE, SPARTA TRANSITION"

CLEARANCES *(CONT'D)*

Route of Flight
- **The route to be flown based on the altitude requested by the pilot**
  - Below FL180: Victor airways, T Routes
  - FL180 and above: Jet Routes, Q Routes
  - Any altitude: Course, heading, azimuth, arc, or vector
- **Also include:**
  - Routing expected if any part of the route beyond a short range clearance limit differs from that filed
- **Example:**
  - "…EXPECT DIRECT TAOS VORTAC VICTOR EIGHTY-THREE…"

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Route of Flight

⊙ The route to be flown based on the altitude requested by the pilot

- Below FL180: Victor airways, T Routes

- FL180 and above: Jet Routes, Q Routes

- Any altitude: course, heading, azimuth, arc, or vector

⊙ Include routing expected if any part of the route beyond a short range clearance limit differs from that filed

✈ EXPECT FURTHER CLEARANCE VIA (airways, routes, or fixes)

Example: "…EXPECT DIRECT TAOS VORTAC VICTOR EIGHTY-THREE…"

CLEARANCES *(CONT'D)*

Altitude Data

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

Altitude Data

⊙ Issue altitude data in the order flown

- If the altitude assigned is different from the altitude requested, inform the pilot when to expect climb or descent clearance to the requested altitude

CLEARANCES *(CONT'D)*

Mach Number

JO 7110.65,
pars. 4-2-1,
8-3-3

AIM pars. 4-4-
12, 5-5-9

Mach Number

⊙   Assign speed adjustments using a Mach number, if applicable

✈ MAINTAIN MACH (Mach number)

Example: "MAINTAIN MACH POINT SEVEN FOUR OR GREATER"

NOTE: The use of Mach numbers is restricted to turbojet aircraft with Mach meters.

CLEARANCES *(CONT'D)*

Holding Instructions

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

Holding Instructions

- Issue the following:
  - Clearance limit
    - If any part of the route beyond a clearance limit differs from the last routing cleared, issue the route the pilot can expect beyond the clearance limit
  - Holding instructions
    - May be eliminated when no delay is expected
  - Expect Further Clearance (EFC) time
    - Do not specify this item if no delay is expected

Explain how temporary holds with no delay are sometimes referred to as "paper stops."

EXPECT FURTHER CLEARANCE VIA (routing)

Example: "EXPECT FURTHER CLEARANCE VIA DIRECT STILLWATER V-O-R, VICTOR TWO TWENTY-SIX SNAPY INTERSECTION, DIRECT NEWARK"

CLEARANCES *(CONT'D)*

Special Information

JO 7110.65, par. 4-2-1
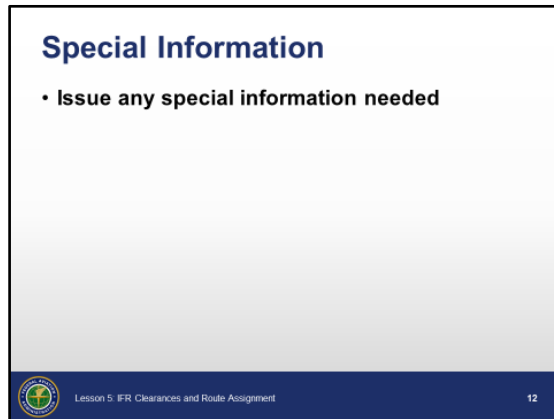
Special Information

⊙ Issue any special information needed

CLEARANCES *(CONT'D)*

Frequency and Beacon Code Information

JO 7110.65, pars. 2-1-17, 4-2-1
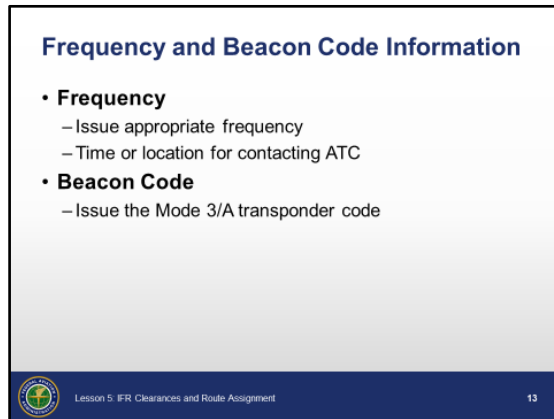
Frequency and Beacon Code Information

⊙ Frequency

• Issue appropriate frequency

• Time, fix, altitude, or specifically when to contact a facility

⊙ Beacon Code

• Issue the Mode 3/A transponder code

CLEARANCES *(CONT'D)*

Clearance Example

JO 7110.65, par. 4-2-1

Clearance Example

👉 *This slide is animated, 7 clicks.*

⊙ Aircraft ID

🖱 *Click to show aircraft ID.*

- UNITED FIFTY-FIVE

⊙ Clearance Limit

🖱 *Click to show clearance limit.*

- CLEARED TO O'HARE AIRPORT

⊙ Standard Instrument Departure (SID)

🖱 *Click to show SID.*

- VIA AKUNA SEVEN DEPARTURE

⊙ Route of flight

🖱 *Click to show route of flight.*

- MCALESTER SPRINGFIELD JAY 105 WELTS SHAIN-ONE

⊙ Altitude data in order flown

🖱 *Click to show altitude data.*

- CLIMB AND MAINTAIN FIVE THOUSAND, EXPECT FLIGHT LEVEL THREE ONE ZERO ONE ZERO MINUTES AFTER DEPARTURE

CLEARANCES *(CONT'D)*

Clearance Example (Cont'd)

JO 7110.65, par. 4-2-1

⊙ Mach number, if applicable (not issued in this example)

⊙ Holding instructions (not issued in this example)

⊙ Any special instructions (not issued in this example)

⊙ Frequency and beacon code information

🖱️ *Click to show frequency.*

- CONTACT BRAVO CENTER ONE TWO FIVE POINT ZERO

🖱️ *Click to show beacon code.*

- SQUAWK THREE ONE SIX TWO

CLEARANCES *(CONT'D)*

Clearances to USAF Aircraft

JO 7110.65, par. 4-2-1

Clearances to USAF Aircraft

⊙ When issuing a clearance to an airborne USAF aircraft containing an altitude assignment, do not include more than one of the following in the same transmission:

- Frequency change
- Transponder change
- Heading
- Altimeter setting
- Traffic information containing an altitude

CLEARANCES *(CONT'D)*

**Knowledge
Check**

Knowledge Check

You are issuing a short range clearance to a departing aircraft with a different route than filed. Which statement is correct?

A. The pilot is responsible for further routing after the clearance limit
B. Have the new route ready and wait for the pilot to request the route
C. Include the new expected route in the clearance

Lesson 5: IFR Clearances and Route Assignment   16

Question: You are issuing a short range clearance to a departing aircraft with a different route than filed. Which statement is correct?

 Answer: *C. Include the new expected route in the clearance*

CLEARANCES *(CONT'D)*

**Knowledge
Check**

Knowledge Check

Which phraseology example is correct when issuing a clearance limit?

A. "CLEARED TO DALLAS LOVE AIRPORT VIA..."
B. "CLEARED TO DALLAS LOVE FIELD VIA..."
C. "CLEARED TO DALLAS LOVE VIA…"

Lesson 5: IFR Clearances and Route Assignment   17

Question: Which phraseology example is correct when issuing a clearance limit?

 ***Answer:** A. "CLEARED TO DALLAS LOVE AIRPORT VIA..."*

CLEARANCES *(CONT'D)*

Knowledge Check

Knowledge Check

Which statement is correct concerning clearances to airborne USAF aircraft that contain an altitude?

A. Issue as many additional instructions as needed in the following order: frequency, transponder, heading, altimeter setting, traffic information containing an altitude

B. Do not include more than one of the following: frequency, transponder, heading, altimeter setting, traffic information containing an altitude

C. USAF aircraft have no restrictions

Lesson 5: IFR Clearances and Route Assignment   18

Question: Which statement is correct concerning clearances to airborne USAF aircraft that contain an altitude?

Answer: B. Do not include more than one of the following: frequency, transponder, heading, altimeter setting, traffic information containing an altitude

CLEARANCES *(CONT'D)*

Knowledge Check

Knowledge Check

What is the proper order to issue altitude information in a departure clearance?

A. Issue starting at the requested altitude and work down
B. Issue in the order flown
C. Issue all the altitudes then include any restrictions

Lesson 5: IFR Clearances and Route Assignment   19

Question: What is the proper order to issue altitude information in a departure clearance?

Answer: B. Issue in the order flown

CLEARANCES *(CONT'D)*

**Knowledge
Check**

Knowledge Check

**Which statement is correct about issuing a
short range clearance limit?**

A. Issue a short range clearance limit only when
requested by the pilot
B. Issue short range clearances only in a radar
environment
C. Issue complete holding instructions or "NO DELAY
EXPECTED"

Lesson 5: IFR Clearances and Route Assignment   20

Question: Which statement is correct about issuing a short range clearance
limit?

 *Answer: C. Issue complete holding instructions or "NO DELAY
EXPECTED"*

CLEARANCES *(CONT'D)*

Prefix Clearances for Relay

⊙ Clearances are relayed verbatim

⊙ 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

ATC ADVISES

ATC REQUESTS

👉 *Briefly outline how the terrain is obstructing the radio path and a relay through the higher aircraft will allow the clearance to be received.*

⊙ FSS and ARTCC Flight Data Units must prefix a clearance with the appropriate phrase:

• "ATC clears," "ATC advises," "ATC requests"

⊙ When relaying a departure clearance through FSS, dispatcher, etc.

• Always include the airport of departure

Example: "CLEARED FROM LAKE PROVIDENCE AIRPORT TO …"

DEPARTURE CLEARANCES

Departure Terminology

JO 7110.65, par. 4-3-1

Departure Terminology

⊙ Avoid using the term TAKEOFF except to actually clear an aircraft for takeoff or to cancel a takeoff clearance

⊙ Use these terms when necessary:

✈ DEPART

DEPARTURE

FLY

DEPARTURE CLEARANCES *(CONT'D)*

Airspace Review

JO 7110.65, par. 4-4-5, PCG

Aeronautical Chart User's Guide
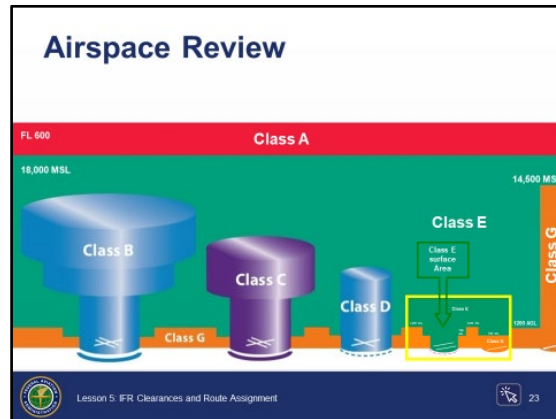
👆 *This slide is animated, 1 click.*

Airspace Review

⊙ Controlled airspace is a generic term that covers Class A, Class B, Class C, Class D, and Class E airspace
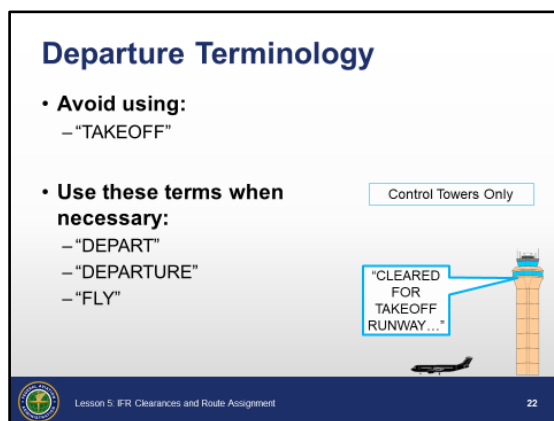
- Has defined dimensions within which air traffic control service is provided to IFR flights and to VFR flights in accordance with the airspace classification

- Surface areas are the lateral boundaries of Class B, C, D, or E airspace designated for an airport that begins at the surface and extends upward

⊙ Class D surface areas

- Airspace from the surface to 2,500' AGL that have an operational control tower

👆 *Explain how Class D and E surface areas allow issuing departure directions and headings to fly.*

🖱 *Click to zoom-in of Class E surface areas.*

⊙ Class E surface areas

- When designated as a surface area, the airspace will be configured to contain all instrument procedures

- Indicated on sectional charts as a dashed magenta line

⊙ Class G airspace

- Uncontrolled airspace

- Include routes through Class G airspace only when requested by the pilot

DEPARTURE CLEARANCES *(CONT'D)*

Departure Instructions: Class D

JO 7110.65, par. 4-3-2

👆 *This slide is animated, 2 clicks.*

Departure Instructions: Class D

⊙ Locations with airport traffic control service

- Specify direction of takeoff/turn or initial heading as necessary, consistent with published Departure Procedures (DP)

Example: Airport traffic control is available through GWO (Greenwood) Tower. Tower advises Runway 36 in use and requests a clearance for N22.

Example: You plan to expedite N22's departure with a north departure to join V11. The pilot will accept a north departure with turns.

🖱 *Click to show the departure track north with a left turn to 350° review the planned departure instructions and strip marking.*

Continued on next page

DEPARTURE CLEARANCES *(CONT'D)*

Departure Instructions, Class D (Cont'd)

JO 7110.65, par. 4-3-2

Click to show full clearance, review each clearance element.

⊙ Full clearance delivered to GWO tower:

"TWIN CESSNA TWO TWO, CLEARED TO DYERSBURG AIRPORT VIA DEPART NORTH, TURN LEFT, FLY HEADING THREE FIVE ZERO UNTIL JOINING VICTOR ELEVEN, VICTOR ELEVEN DYERSBURG. CLIMB AND MAINTAIN SEVEN THOUSAND, CONTACT BRAVO CENTER ONE TWO FIVE POINT ZERO LEAVING THREE THOUSAND, SQUAWK TWO FIVE FIVE TWO."

⊙ Aircraft identification

- TWIN CESSNA TWO TWO

⊙ Clearance limit

- CLEARED TO DYERSBURG AIRPORT

⊙ Departure instructions

- VIA DEPART NORTH, TURN LEFT, FLY HEADING THREE FIVE ZERO UNTIL JOINING VICTOR ELEVEN DYERSBURG

⊙ Route of flight

- VICTOR ELEVEN

Stress how "VICTOR ELEVEN" is stated twice, once as part of the departure instructions and again as the route of flight.

⊙ Altitude

- CLIMB AND MAINTAIN SEVEN THOUSAND

⊙ Frequency and beacon code

- CONTACT BRAVO CENTER ONE TWO FIVE POINT ZERO LEAVING THREE THOUSAND
- SQUAWK TWO FIVE FIVE TWO

DEPARTURE CLEARANCES *(CONT'D)*

Departure Instructions: Class E Surface Area

JO 7110.65, par. 4-3-2

This slide is animated, 1 click.

Discuss the magenta line depicting a Class E surface area around KVKS (Vicksburg).

Class E Surface Area

⊙ Locations without airport traffic control service, but within a Class E surface area

  • Specify direction of takeoff/turn or initial heading if necessary

  • Obtain/solicit the pilot's concurrence concerning a turn or heading before issuing them in a clearance

Example: N21 files direct JAN VORTAC (yellow arrow). You want a more definitive route (blue dotted line) and query the pilot through FSS.

FSS: "REQUEST CLEARANCE FOR CESSNA TWO ONE TO JACKSON"

Discuss our intention to place the aircraft on V417 prompting the question below.

Click to show dialog below.

Controller: "WILL CESSNA TWO ONE ACCEPT A NORTH DEPARTURE WITH TURNS?"

FSS: "AFFIRMATIVE"

Controller: "CLEARANCE…"

DEPARTURE CLEARANCES *(CONT'D)*

Departure Instructions, Class E Surface Area (Cont'd)

JO 7110.65, pars. 4-3-2, 4-3-4

👆 *This slide is animated, 2 clicks.*

🖱 *Click to show the departure track north with a right turn to 040° review the departure instructions and strip marking.*

"CESSNA TWO ONE CLEARED FROM VICKSBURG AIRPORT TO JACKSON AIRPORT VIA DEPART NORTH, TURN RIGHT, FLY HEADING ZERO FOUR ZERO UNTIL JOINING VICTOR FOUR SEVENTEEN, VICTOR FOUR SEVENTEEN MAGNOLIA VORTAC, THEN AS FILED. CLIMB AND MAINTAIN NINER THOUSAND, CONTACT BRAVO CENTER ONE TWO FIVE POINT ZERO LEAVING THREE THOUSAND, SQUAWK THREE FOUR TWO TWO. ADVISE CESSNA TWO ONE RELEASED FOR DEPARTURE."

🖱 *Click to show full clearance, review each clearance element.*

- ⊙ Aircraft ID:
  - CESSNA TWO ONE
- ⊙ Clearance limit:
  - CLEARED FROM VICKSBURG AIRPORT TO JACKSON AIRPORT
- ⊙ Departure instructions:
  - VIA DEPART NORTH, TURN RIGHT, FLY HEADING ZERO FOUR ZERO UNTIL JOINING VICTOR FOUR SEVENTEEN

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DEPARTURE CLEARANCES *(CONT'D)*

Departure Instructions, Class E Surface Area (Cont'd)

JO 7110.65, pars. 4-3-2, 4-3-4

⊙ Route of flight:

- VICTOR FOUR SEVENTEEN MAGNOLIA VORTAC, THEN AS FILED

👉 *"VICTOR FOUR SEVENTEEN" is stated twice.*

⊙ Altitude data in order flown:

- CLIMB AND MAINTAIN NINER THOUSAND

⊙ Frequency and beacon code information:

- CONTACT BRAVO CENTER ONE TWO FIVE POINT ZERO LEAVING THREE THOUSAND
- SQUAWK THREE FOUR TWO TWO

⊙ Departure release:

- ADVISE CESSNA TWO ONE RELEASED FOR DEPARTURE

DEPARTURE CLEARANCES *(CONT'D)*

**Departure
Instructions:
Class E Verify
Clearance**

JO 7110.65, par.
4-3-2

 This slide is animated, 1 click.

 This slide is the same clearance with a verification statement. Review how this phraseology may be used to check pilot concurrence.

Class E Surface Area: Verify Clearance

⊙ In lieu of asking for the pilot's concurrence a verification statement may be appended to the clearance:

 VERIFY THIS CLEARANCE WILL ALLOW COMPLIANCE WITH TERRAIN OR OBSTRUCTION AVOIDANCE

 Click to show full clearance.

• If pilot verifies compliance, issue departure release

DEPARTURE CLEARANCES *(CONT'D)*

Departure Instructions: Other Airports

JO 7110.65, par. 4-3-2

Departure Instructions: Other Airports

Departure Instructions: Other Airports

NOTE: Airports without air traffic control service and without Class E surface areas are located within Class G airspace.

⊙ Do not specify direction of takeoff or /turn after takeoff

 Click to show departure instructions and strip marking.

⊙ If necessary to specify an initial heading to be flown after takeoff, issue the initial heading so as to apply only within controlled airspace

Example: "…WHEN ENTERING CONTROLLED AIRSPACE, FLY HEADING TWO TWO ZERO UNTIL JOINING VICTOR FOUR TWENTY-SEVEN…"

 Click to show full clearance.

"CESSNA TWO FOUR CLEARED FROM LAKE PROVIDENCE AIRPORT TO MONROE AIRPORT. WHEN ENTERING CONTROLLED AIRSPACE, FLY HEADING TWO TWO ZERO UNTIL JOINING VICTOR FOUR TWENTY-SEVEN, VICTOR FOUR TWENTY-SEVEN. CLIMB AND MAINTAIN SIX THOUSAND. CONTACT BRAVO CENTER ONE TWO FIVE POINT ZERO LEAVING THREE THOUSAND. SQUAWK FIVE SIX SEVEN ZERO. VERIFY THIS CLEARANCE WILL ALLOW COMPLIANCE WITH TERRAIN OR OBSTRUCTION AVOIDANCE."

• If pilot verifies compliance, issue departure release

DEPARTURE CLEARANCES *(CONT'D)*

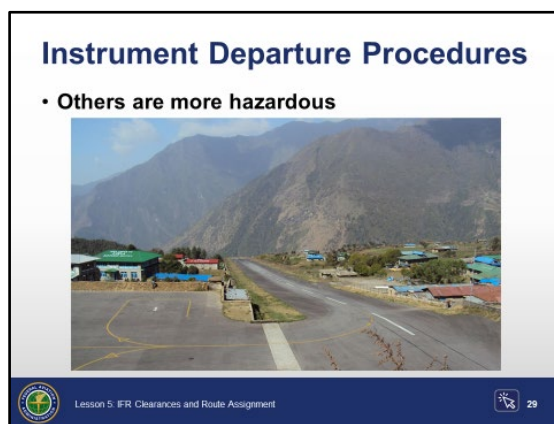**Instrument Departure Procedures**

 Slide is animated, 1 click.

Instrument Departure Procedures

⊙ Some airports have few obstructions

 Click to show picture with a more hazardous location.

⊙ Others are more hazardous

DEPARTURE CLEARANCES *(CONT'D)*

Instrument Departure Procedures (Cont'd)

JO 7110.65, par. 4-3-2, PCG

AIM, par. 5-2-9

FAA-H-8083-16B p. 1-8

⊙ Preplanned IFR procedures provide obstruction clearance from the terminal area to the en route structure

- Obstacle Departure Procedures (ODP)

  – Printed graphically or textually

    o Graphic ODPs have "(OBSTACLE)" printed in the procedure title and are found with the approach charts for each airport

    o Text ODPs are listed by airport in alphabetical order in the front of the U.S. Terminal Procedure Publication (TPP) booklet

    o If an airport has non-standard takeoff minimums, a "triangle T" is in the sections of the instrument procedure chart

  – May be flown without ATC clearance unless an alternate departure procedure (SID or radar vector) has been assigned by ATC

  – Where pilot compliance is necessary to ensure separation, include the procedure as part of the ATC clearance

- Standard Instrument Departures (SID)

  – Always printed graphically

  – Provides obstacle clearance

  – ATC clearance must be received prior to flying a SID

  – SIDs are primarily designed for system enhancement and to reduce pilot/controller workload

👉 *Stress how pilots may fly ODPs without a clearance, but SIDs require an ATC clearance.*

DEPARTURE CLEARANCES *(CONT'D)*

Visual Climb Over Airport (VCOA)

JO 7110.65, par. 4-3-2, PGC

AIM par. 5-2-9

Visual Climb Over Airport (VCOA)

VISUAL CLIMB OVER AIRPORT (VCOA) - A departure option for an IFR aircraft operating in visual meteorological conditions equal to or greater than the specified visibility and ceiling, to visually conduct climbing turns over the airport to the published "climb-to" altitude from which to proceed with the instrument portion of the departure.

NOTE: VCOA procedures are developed to avoid obstacles greater than 3 statute miles from the departure end of the runway as an alternative to complying with climb gradients greater than 200 feet per nautical mile.

⦿ Used in Visual Meteorological Conditions (VMC) that are equal to or greater than the specified visibility and ceiling

⦿ Allows climbing turns over the airport to the published "at or above" altitude

  • At that point, the pilot may proceed in instrument meteorological conditions to:

    – First en route fix using a diverse departure, or

    – Proceed via a published routing to a fix from where the aircraft may join the IFR en route structure

⦿ If an ODP is included in the clearance and VCOA is requested by the pilot or assigned by ATC when it is the only procedure published in the ODP, include an instruction to remain within the published visibility of the VCOA

Continued on next page

DEPARTURE CLEARANCES *(CONT'D)*

**Visual Climb
Over Airport
(Cont'd)**

JO 7110.65, par.
4-3-2

EXAMPLES: "Depart via the (airport name)(runway number) obstacle departure procedure. Remain within (number of miles) miles of the (airport name) during visual climb" if applicable. Or,

"Depart via the (graphic ODP name) obstacle departure procedure. Remain within (number of miles) miles of the (airport name) during visual climb" if applicable.

NOTE: Pilots will advise ATC of their intent to use the VCOA option when requesting their IFR clearance.

DEPARTURE CLEARANCES *(CONT'D)*

Aircraft Performance Expectations

FAA-H-8083-16B pp. 1-16 to 1-18, B-5

AIM, par. 5-2-9

Aircraft Performance Expectations

⊙ On takeoff:

- Aircraft will

    – Cross the end of the runway at least 35' AGL

    – Not turn below 400' AGL

    – Climb at least 200' per NM

- Ceiling and visibility minimum of at least 300' and 1 mile

⊙ If the above will not allow pilot to clear obstacles, FAA may:

- Limit IFR departures from a runway

    – Indicated on a procedure as NA (Not Authorized)

- Require steeper climb gradient

- Raise takeoff minimums

- Create a departure procedure

DEPARTURE CLEARANCES *(CONT'D)*

**ODP
Examples**

ODP Examples
- KVKS - Vicksburg Municipal Airport, Mississippi
- KJAC - Jackson Hole Airport, Wyoming
- KRUT - Rutland Regional Airport, Vermont

Lesson 5: IFR Clearances and Route Assignment   33

👉 *Review what to look for on the following slides. 3D terrain graphics will be presented in video format to depict the terrain within the vicinity of the runways. Instructor notes will highlight the specific departure restrictions needed for terrain and obstructions.*
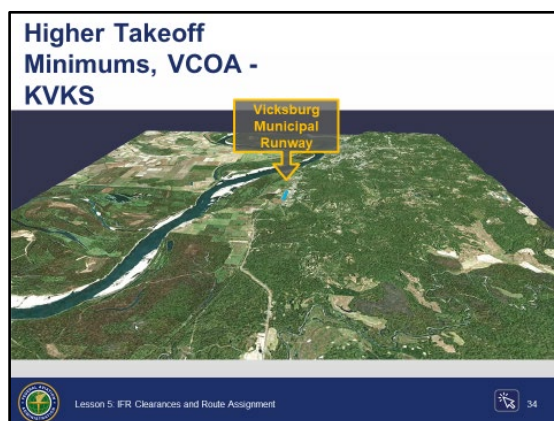
ODP Examples

⊙ KVKS - Vicksburg Municipal Airport, Mississippi

⊙ KJAC - Jackson Hole Airport, Wyoming

⊙ KRUT - Rutland Regional Airport, Vermont

DEPARTURE CLEARANCES *(CONT'D)*

Higher Takeoff Minimums, VCOA - KVKS

SC-4, p. L26

Higher Takeoff Minimums, VCOA - KVKS

Vicksburg Municipal Runway

Lesson 5: IFR Clearances and Route Assignment   34

VICKSBURG, MS
VICKSBURG MUNI (VKS)
 TAKEOFF MINIMUMS AND (OBSTACLE)
 DEPARTURE PROCEDURES
 AMDT 3 08NOV18 (18312) (FAA)
 TAKEOFF MINIMUMS:

   Rwy 1, std. w/min. climb of 290' per NM to 800 or 900 2-1/2 for VCOA. **Rwy 19**, 300-2 or std. w/min. climb of 425' per NM to 400.

   VCOA: **Rwy 1,** obtain ATC approval for VCOA when requesting IFR clearance. Climb in visual conditions to cross Vicksburg Muni airport at or above 900 before proceeding on course.

👍 This slide is animated, 3 clicks.

Higher Takeoff Minimums, VCOA - KVKS

🖱️ *Click to delete runway diagram and highlight runway on 3D map in light blue.*

👆 *Ask students to pay attention to the runway location as the map rotates and note the lack of dangerously high terrain.*

🖱️ *Click to start video of terrain near airport.*

🖱️ *Click to display takeoff minimums.*

👆 *Discuss how the flat terrain does not require a specific Departure Procedure to be developed.*

⊙   Relatively flat terrain

   •   Departure Procedure (DP) not developed

Continued on next page

DEPARTURE CLEARANCES *(CONT'D)*

Higher Takeoff Minimums, VCOA - KVKS (Cont'd)

SC-4, p. L26

FAA-H-8083-16B p. 1-8

👉 *Discuss the takeoff minimums and climb rates for Rwy 1 and Rwy 19. Specifically, how they are higher than the 200' per NM standard climb and 300'-1 mile ceiling-visibility.*

⊙ Takeoff minimums:

- Runway 1
    - Steeper climb, 290' per NM to 800'
    - VCOA requires 900' ceiling and 2 ½ miles visibility
- Runway 19
    - Higher takeoff minimums, 300' ceiling and 2 miles visibility or
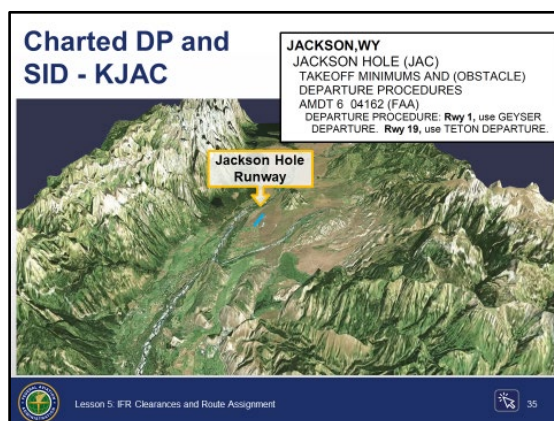   - Standard minima (300'- 1 mile) and climb of 425' per NM to 400'

NOTE: Takeoff minimums are listed by airport in alphabetical order in the front section of the U.S. Terminal Procedure Publication (TPP) booklet.

DEPARTURE CLEARANCES *(CONT'D)*

Charted DP and SID - KJAC

NW-1, p. L26

> **JACKSON,WY**
>   JACKSON HOLE (JAC)
>   TAKEOFF MINIMUMS AND (OBSTACLE)
>   DEPARTURE PROCEDURES
>   AMDT 6 04162 (FAA)
>   DEPARTURE PROCEDURE: **Rwy 1,** use GEYSER
>   DEPARTURE. **Rwy 19,** use TETON DEPARTURE.

👆 *This slide is animated, 3 clicks.*

Charted DP and SID KJAC

👆 *Discuss airport configuration with runway 1-19.*

🖱 *Click to delete runway diagram and highlight runway on 3D map in light blue.*

👆 *Ask students to pay attention to the runway location as the map rotates and note the dangerously high terrain west and east.*

🖱 *Click to start video of terrain near airport.*

🖱 *Click to display takeoff minimums.*

DEPARTURE CLEARANCES *(CONT'D)*

👉 *Discuss how the terrain necessitated two departure procedures in graphical form with the (OBSTACLE) notation adjacent to the instrument procedure charts in U.S. Terminal Procedure Publication (TPP) booklet.*

⊙ Dangerously high terrain to the west and east

⊙ Graphic departure procedure developed and noted in takeoff minimums

• Published adjacent to the instrument procedure charts in U.S. Terminal Procedure Publication (TPP) booklet

DEPARTURE CLEARANCES *(CONT'D)*

Charted DP and SID - KJAC (Cont'd)

NW-1, pp. 347-349

Charted DP and SID - KJAC
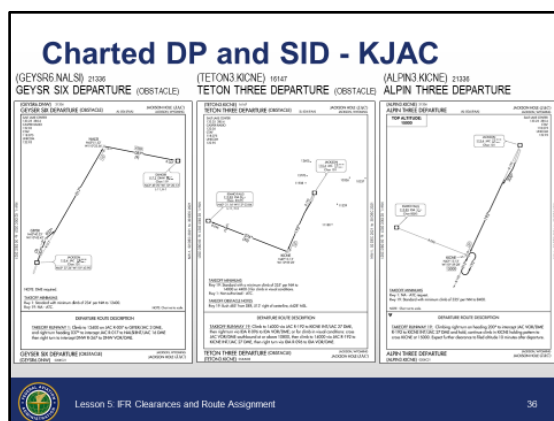
TAKEOFF MINIMUMS
Rwy 1: Standard with minimum climb of 234' per NM to 12400.
Rwy 19: NA - ATC.   NOTE: Chart not to scale.

DEPARTURE ROUTE DESCRIPTION

TAKEOFF RUNWAY 1: Climb to 12400 on JAC R-007 to GIYER/JAC 3 DME,
and right turn heading 037° to intercept JAC R-017 to NALSI INT/JAC 16 DME
then right turn to intercept DNW R-267 to DNW VOR/DME.

GEYSER SIX DEPARTURE (OBSTACLE)   JACKSON, WYOMING
(GEYSR6.DNW)   02DEC21   JACKSON HOLE (JAC)

⊙ Two graphical ODPs developed, e.g., GEYSER SIX DEPARTURE, TETON THREE DEPARTURE

- One for each runway
- Takeoff minimums depicted on chart
  - Standard ceiling/visibility (300'-1 mile)
  - 450' per NM climb rate to 14,000' (7,549' AGL)
- Pilot may fly without ATC clearance
- Labeled "(OBSTACLE)" to differentiate from a SID

⊙ One SID, e.g., ALPIN THREE DEPARTURE

- Runway 19 only
- Standard ceiling/visibility (300'-1 mile)
- 450' per NM climb rate needed to 15,000' (8,549' AGL)
- Must be ATC assigned

DEPARTURE CLEARANCES *(CONT'D)*

**Higher
Takeoff
Minimums
Runway
Restriction,
Text DP KRUT**

NE-1, p. L45
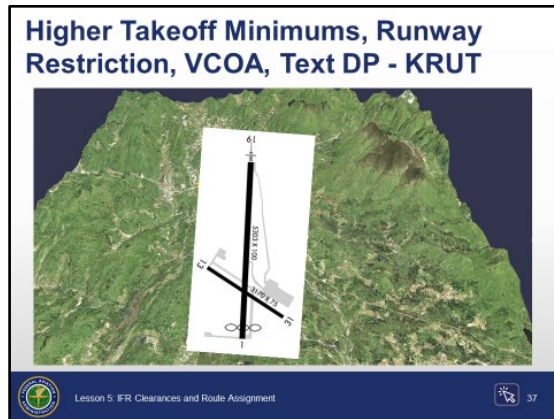
👉 *This slide is animated, 2 clicks.*

🖱️ *Click to delete runway diagram and highlight runway on 3D map in light blue.*

👉 *Ask students to pay to attention to the runway location as the map rotates and note dangerous terrain west, south and east.*

🖱️ *Click to start video of terrain near airport.*
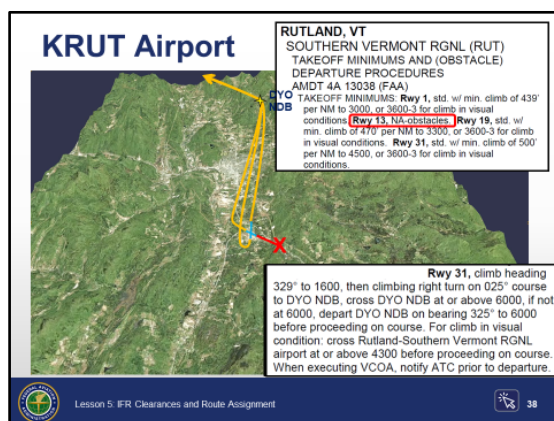
Higher Takeoff Minimums Runway Restriction, Text DP KRUT

⊙ High terrain west, south and east

DEPARTURE CLEARANCES *(CONT'D)*

Higher Takeoff Minimums Runway Restriction, Text DP KRUT (Cont'd)

NE-1, p. L45

RUTLAND, VT
SOUTHERN VERMONT RGNL (RUT)
TAKEOFF MINIMUMS AND (OBSTACLE)
DEPARTURE PROCEDURES
AMDT 4A 13038 (FAA)
   TAKEOFF MINIMUMS: **Rwy 1,** std. w/ min. climb of 439'
   per NM to 3000, or 3600-3 for climb in visual
   conditions. **Rwy 13,** NA-obstacles. **Rwy 19,** std. w/
   min. climb of 470' per NM to 3300, or 3600-3 for climb
   in visual conditions. **Rwy 31,** std. w/ min. climb of 500'
   per NM to 4500, or 3600-3 for climb in visual
   conditions.

👉 *This slide is animated, 4 clicks.*

🖱 *Click to display takeoff minimums.*

⊙ Runway 13

- IFR departure not authorized "NA-obstacles"

👉 *Discuss how the precipitous terrain at the departure end of Rwy 13 makes IFR departures not authorized (NA)*

⊙ Runway 1

- Standard ceiling/visibility (300'-1 mile)
- 439' per NM climb rate needed to 3,000'
- ODP over DYO NDB

🖱 *Click to display the Departure Procedure for Runway 1.*

👉 *Discuss the higher Takeoff Minimums and the Departure Procedure to the north over DYO (SMUTO) NDB and how the other runways will follow a similar route.*

Continued on next page

DEPARTURE CLEARANCES *(CONT'D)*

Higher Takeoff Minimums Runway Restriction, Text DP KRUT (Cont'd)

NE-1, p. L45

👆 *Discuss the departure for Rwy 19 and Rwy 31 that proceed over DYO NDB with higher takeoff minimums.*

⊙ Runway 19

- Standard ceiling/visibility
- 470' per NM climb rate needed to 3,300'
- ODP over DYO NDB

🖱 *Click to display ODP for Runway 19.*

⊙ Runway 31

- Standard ceiling/visibility
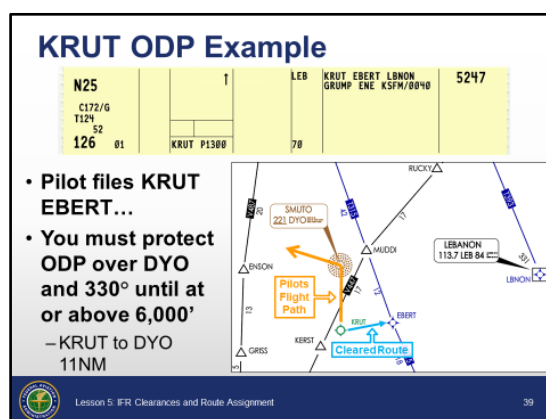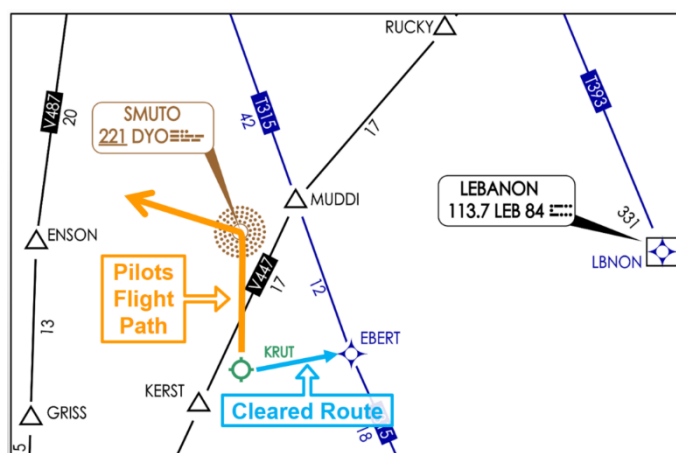- 500' per NM climb rate needed to 4,500'
- ODP over DYO NDB

🖱 *Click to display ODP for Runway 31.*

DEPARTURE CLEARANCES *(CONT'D)*

KRUT ODP Example

JO 7110.65, PCG

KRUT ODP Example

⊙ Because a pilot may fly ODPs without specific authorization, you must be aware of procedures that could maneuver aircraft some distance from the airport

- DYO is a significant distance from KRUT airport (11 NM)

- The pilots filed route KRUT EBERT does not indicate the ODP maneuver over DYO NDB

- A slow climb could possibly require an aircraft to depart DYO NDB on the prescribed 330° heading

DEPARTURE CLEARANCES *(CONT'D)*

Assigning a SID

JO 7110.65, par. 4-3-2, PCG

AIM, par. 5-2-9

FAA-H-8083-16B p. 1-29

Assigning a SID

◉ SIDs are primarily designed for system enhancement to expedite traffic flow and to reduce pilot/controller workload

- At busier airports they increase efficiency and reduce communications and departure delays

- Assign SIDs, as necessary, for traffic management and convenience

✈ (*SID name and number*) DEPARTURE

✈ (*SID name and number*) DEPARTURE, (*transition name*) TRANSITION

> **Example:** "AMERICAN FOUR CLEARED TO ST. LOUIS AIRPORT VIA BOLDE ONE DEPARTURE SPRINGFIELD TRANSITION VICTOR FOUR"

◉ If it is necessary to assign a crossing altitude, which differs from the SID altitude, emphasize the change to the pilot

✈ (*SID name and number*) DEPARTURE, EXCEPT CROSS (*revised altitude information*)

> **Example:** "STROUDSBURG ONE DEPARTURE, EXCEPT CROSS QUAKER AT FIVE THOUSAND"

Continued on next page

DEPARTURE CLEARANCES *(CONT'D)*

Assigning a SID (Cont'd)

JO 7110.65, par. 4-3-2

⊙ Specify altitudes when they are not included in the SID

✈️ (*SID name and number*) DEPARTURE. CROSS (*fix*) AT (*altitude*)

> **Example:** "STROUDSBURG ONE DEPARTURE, CROSS JERSEY INTERSECTION AT FOUR THOUSAND, CROSS RANGE INTERSECTION AT SIX THOUSAND"

⊙ If the pilot has indicated that he/she does not wish to use a SID, assign a preferred departure route

   • Preferential departure route is a specific departure route from an airport or terminal area to an en route point where there is no further need for flow control

DEPARTURE CLEARANCES *(CONT'D)*

Altitude Assignments

JO 7110.65, par. 4-3-2

Altitude Assignments

- Issue one of the following in the order of preference listed:
  - Altitude requested by the pilot
  - Altitude as near as possible to the altitude requested by the pilot
    - Inform the pilot when to expect clearance to the requested altitude unless instructions are contained in the specified SID
    - If the requested altitude is not expected to be available, inform the pilot what altitude can be expected and when/where to expect it
- When the SID contains published crossing restrictions, instruct aircraft to:

  ✈ CLIMB VIA SID

    Example: "CLEARED TO JOHNSTON AIRPORT, SCOTT ONE DEPARTURE, JONEZ TRANSITION, Q ONE FORTY-FIVE, <u>CLIMB VIA SID</u>"

- When a top altitude is not published or when it is necessary to issue an interim altitude, instruct aircraft to:

  ✈ CLIMB VIA SID EXCEPT MAINTAIN (*altitude*)

    Example: "CLEARED TO JOHNSTON AIRPORT, SCOTT ONE DEPARTURE, JONEZ TRANSITION, Q ONE FORTY-FIVE, <u>CLIMB VIA SID EXCEPT MAINTAIN FLIGHT LEVEL ONE EIGHT ZERO</u>"

DEPARTURE CLEARANCES *(CONT'D)*

**Altitude
Assignments
(Cont'd)**

JO 7110.65, par.
4-3-2

Altitude Assignments *(Cont'd)*

- **When a SID:**
  - Does not contain published crossing restrictions and/or
  - Is a SID with a Radar Vector segment, or
  - Is a Radar Vector SID, or
  - Is constructed with a Radar Vector segment and contains published crossing restrictions after the vector segment
- **Instruct aircraft to:**
  - MAINTAIN *(altitude)*
    or
  - CLIMB AND MAINTAIN *(altitude)*. EXPECT *(requested altitude)* AT *(time or fix)*.

Lesson 5: IFR Clearances and Route Assignment   42

⊙ When a SID:

- Does not contain published crossing restrictions and/or

- Is a SID with a radar vector segment, or

- Is a radar vector SID, or

- Is constructed with a radar vector segment and contains published crossing restrictions after the vector segment

Then:

- Instruct aircraft to

  ✈ MAINTAIN (*altitude*)

  or

  ✈ CLIMB AND MAINTAIN (*the altitude as near as possible to the pilot's requested altitude*). EXPECT (*the requested altitude or an altitude different from the requested altitude*) AT (*time or fix*),

  If applicable,

  ✈ *(pilot's requested altitude)* IS NOT AVAILABLE

DEPARTURE CLEARANCES *(CONT'D)*

**Clearances to
Air Force One**

JO 7110.65, par.
4-3-2

Clearances to Air Force One

◉ Clearance limit

- Do not specify the destination airport

  NOTE: Presidential detail is responsible for ensuring the accuracy of the destination airport.

   …DESTINATION AS FILED

◉ Initial altitude:

- To the maximum extent possible, provide unrestricted climb to:

  – 9,000' AGL or higher

  – If unable 9,000' AGL or higher, then the highest available altitude below 9,000' AGL

DEPARTURE CLEARANCES *(CONT'D)*

**Knowledge
Check**

Question: What is the proper way to issue departure headings to aircraft
departing from airports within Class G airspace?

 *Answer: C. "…WHEN ENTERING CONTROLLED AIRSPACE, FLY
HEADING…"*

DEPARTURE CLEARANCES *(CONT'D)*

Knowledge Check

Knowledge Check

What prefix phrase must you use to relay a clearance to an aircraft through another aircraft?

   A. "ATC CLEARS"
   B. "ATC RELAYS"
   C. "ATC WANTS"

Lesson 5: IFR Clearances and Route Assignment   45

Question: What prefix phrase must you use to relay a clearance to an aircraft through another aircraft?

Answer: A. "ATC CLEARS"

DEPARTURE CLEARANCES *(CONT'D)*

**Knowledge
Check**

Knowledge Check

At airports within a Class E surface area where airport traffic control service is NOT provided, when can you specify the initial heading to be flown after takeoff?

A. Anytime you decide, if necessary to expedite the departure
B. After obtaining/soliciting the pilot's concurrence concerning these items
C. Only on pilot request

Lesson 5: IFR Clearances and Route Assignment   46

Question: At airports within a Class E surface area where airport traffic control service is NOT provided, when can you specify the initial heading to be flown after takeoff?

Answer: B. After obtaining/soliciting the pilot's concurrence concerning these items

DEPARTURE CLEARANCES *(CONT'D)*

**Knowledge
Check**

Question: You issue a departure clearance at an airport with a published Obstacle Departure Procedure (ODP). Which statement is correct?

 Answer: *A. The pilot may fly the ODP when cleared for departure*

DEPARTURE CLEARANCES *(CONT'D)*

**Knowledge
Check**

Knowledge Check

What is the minimum altitude you should
assign to Air Force One if traffic is not a
factor?

   A. FL180
   B. 9,000' AGL
   C. 9,000' MSL

Lesson 5: IFR Clearances and Route Assignment   48

Question: What is the minimum altitude you should assign to Air Force One
if traffic is not a factor?

Answer: B. 9,000' AGL

DEPARTURE CLEARANCES *(CONT'D)*

Knowledge Check

Knowledge Check

Which example is the phraseology for issuing a departure direction?

A. "TAKEOFF NORTH…"
B. "DEPART NORTH…"
C. "EXIT THE TRAFFIC PATTERN NORTH…"

Lesson 5: IFR Clearances and Route Assignment   49

Question: Which example is the phraseology for issuing a departure direction?

Answer: B. "DEPART NORTH…"

DEPARTURE CLEARANCES *(CONT'D)*

Knowledge Check

Question: Which statement is correct concerning a Standard Instrument Departure (SID)?

 ***Answer:** C. SIDs always provide terrain clearance*

DEPARTURE CLEARANCES *(CONT'D)*

**Knowledge
Check**

Knowledge Check

You issue a departure clearance, but due to
traffic, you cannot assign the requested altitude.
What should you do?

A. Issue a safe altitude and inform pilot when to expect
   clearance to the requested altitude
B. Delay the departure until the requested altitude is
   available
C. Issue the lowest safe altitude and wait for the pilot to
   request higher

Lesson 5: IFR Clearances and Route Assignment   51

Question: You issue a departure clearance, but due to traffic, you cannot
assign the requested altitude. What should you do?

*Answer: A. Issue a safe altitude and inform the pilot when to expect
clearance to the requested altitude*

DEPARTURE CLEARANCES *(CONT'D)*

Knowledge Check

Question: What is the proper way to issue a clearance limit to Air Force One?

 Answer: *C. "CLEARED TO DESTINATION AS FILED"*

DEPARTURE CLEARANCES *(CONT'D)*

Knowledge Check

Knowledge Check

You are issuing a clearance through FSS/ARTCC Flight Data Units. What must be included in the clearance?

A. Prefix "ATC CLEARS…"
B. Airport of departure
C. Time check if a clearance void time is used

Lesson 5: IFR Clearances and Route Assignment — 53

Question: You are issuing a clearance through FSS/ARTCC Flight Data Units. What must be included in the clearance?

Answer: B. Airport of departure

DEPARTURE CLEARANCES *(CONT'D)*

**Knowledge
Check**

Knowledge Check

You issue a departure clearance with a climb via standard instrument departure but want the aircraft to stop below the highest published altitude. What is the phraseology?

A. "CLIMB VIA SID EXCEPT MAINTAIN..."
B. "CLIMB VIA SID STOP CLIMB AT..."
C. "AMEND CLIMB VIA SID ALTITUDE TO..."

Lesson 5: IFR Clearances and Route Assignment   54

Question: You issue a departure clearance with a climb via standard instrument departure but want the aircraft to stop below the highest published altitude. What is the phraseology?

Answer: A. "CLIMB VIA SID EXCEPT MAINTAIN..."

PRACTICE EXERCISE: DEPARTURE CLEARANCES

Practice Exercise: Departure Clearances
- **Purpose**
  - Issuing departure clearances using appropriate phraseology
- **Materials**
  - Practice Exercise: Departure Clearances
 - Pencil or pen
- **Directions**
  - This exercise will take approximately 30 minutes to complete. The instructor will present traffic situations and specific departure criteria. You will be required to write out a clearance incorporating these criteria in the proper format. Each situation will be presented individually and reviewed before proceeding to the next.

Lesson 5: IFR Clearances and Route Assignment   55

Purpose

Issuing departure clearances using appropriate phraseology

Materials

Handout: *HO01_L05*

- Practice Exercise: Departure Clearances
- Pencil or pen

Directions

This exercise will take approximately 30 minutes to complete. The instructor will present traffic situations and specific departure criteria. You will be required to write out a clearance incorporating these criteria in the proper format. Each situation will be presented individually and reviewed before proceeding to the next.

1. *Show the PowerPoint slide for each situation.*

2. *Read the criteria to the students and allow time for them to write out the clearance.*

3. *Advance to the next slide to show a clearance example.*

4. *Review each student's clearance before proceeding to the next situation.*

1.

Sector Freq. 125.0

KGWO

120°

V278 — 273 — SQS — -086 — V278 to CLOUT

341 007 023
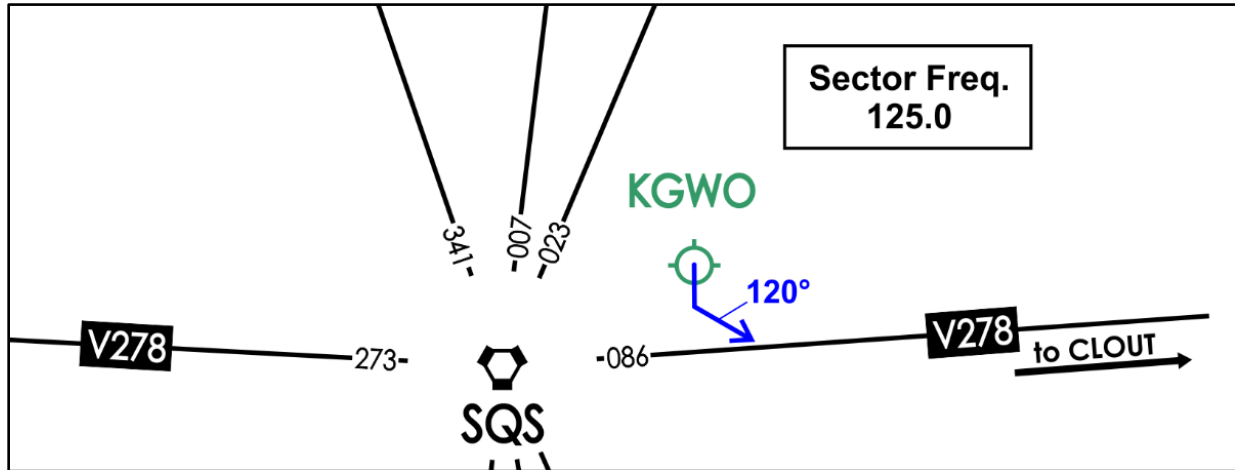
N11			↑		TOMLN	KGWO SQS V278 CLOUT	2533
						KSTF/ØØ53	
C182/G							
T125							
Ø2							
Ø13 Ø1		KGWO P1Ø3Ø			7Ø		

🖱️ *Click to show slide content and read the following to the student(s):*

GWO tower calls for a clearance for N11 to Starkville (KSTF), advises runway 18 is the active. Write the phraseology needed to clear N11 to KSTF at the requested altitude with a south departure to join V278 on a heading of 120°.

CESSNA ONE ONE CLEARED TO STARKSVILLE AIRPORT VIA DEPART SOUTH FLY

HEADING ONE TWO ZERO UNTIL JOINING VICTOR TWO SEVENTY-EIGHT,

VICTOR TWO SEVENTY-EIGHT CLOUT INTERSECTION DIRECT. CLIMB AND

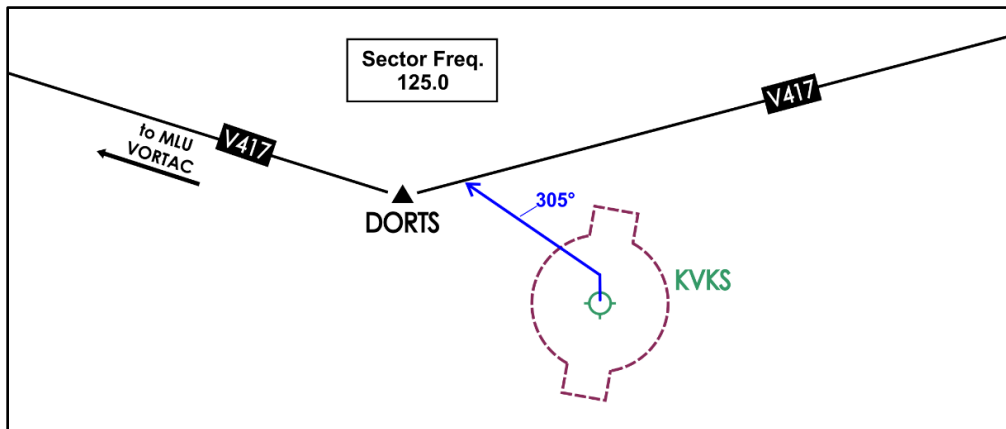*MAINTAIN SEVEN THOUSAND. CONTACT BRAVO CENTER ONE TWO FIVE POINT*

ZERO LEAVING THREE THOUSAND. SQUAWK TWO FIVE THREE THREE.

🖱️ *Click to show slide content with full clearance shown above.*

2.

Sector Freq. 125.0

to MLU VORTAC

V417

V417

DORTS

305°

KVKS

N12		↑		MLU	KVKS MLU KMLU/0053	3357
BE23/A						
T121						
02						
181 01		KVKS P0955		80		

🖱 *Click to show slide content and read the following to the student(s):*

FSS calls for a clearance for N12 to Monroe (KMLU). Write the phraseology needed to clear N12 to KMLU at the requested altitude with a north departure to join V417 on heading 305°.

*Obtain/solicit pilot concurrence for direction of takeoff and turn **or** at end of clearance,*

verify this clearance will allow compliance with terrain or obstruction avoidance.

SUNDOWNER ONE TWO CLEARED FROM VICKSBURG AIRPORT TO MONROE

AIRPORT VIA DEPART NORTH, TURN LEFT, FLY HEADING THREE ZERO FIVE

UNTIL JOINING VICTOR FOUR SEVENTEEN, VICTOR FOUR SEVENTEEN MONROE.

CLIMB AND MAINTAIN EIGHT THOUSAND. CONTACT BRAVO CENTER ONE TWO

FIVE POINT ZERO LEAVING THREE THOUSAND. SQUAWK THREE THREE FIVE

*SEVEN. ADVISE SUNDOWNER ONE TWO RELEASED FOR DEPARTURE*

🖱 *Click to show slide content with full clearance shown above.*

3.

Click to show slide content and read the following to the student(s):

GWO tower calls for a clearance for N13 to Greenville (KGLH), advises runway 23 is the active. Write the phraseology needed to clear N13 to KGLH via SQS (Sidon) VORTAC clearing the overflight traffic at 5,000'.

MOONEY ONE THREE CLEARED TO GREENVILLE AIRPORT VIA SIDON VORTAC

VICTOR TWO SEVENTY-EIGHT GREENVILLE DIRECT. CROSS SIX MILES WEST OF

SIDON AT OR BELOW FOUR THOUSAND, CLIMB AND MAINTAIN EIGHT

THOUSAND. CONTACT BRAVO CENTER ONE TWO FIVE POINT ZERO LEAVING

THREE THOUSAND. SQUAWK FOUR TWO SEVEN ONE.

Click to show slide content with full clearance shown above.

4.
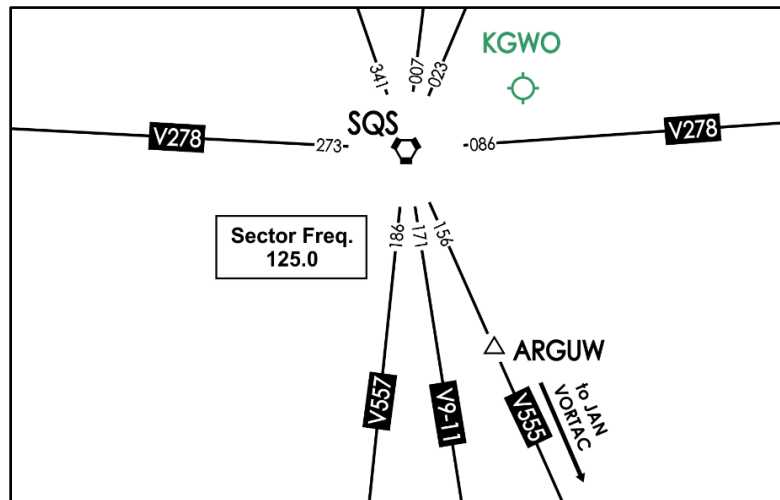
🖱️ *Click to show slide content and read the following to the student(s):*

GWO tower calls for a clearance for N14 to Jackson (KJAN), advises runway 23 is the active. Write the phraseology needed to clear N14 for departure. Due to traffic the flight will be cleared to ARGUW intersection via SQS V555 at 5,000' with routing to KJAN on V555. The flight will not hold at ARGUW (initial clearance limit) but the final altitude will be 7,000' after ARGUW.

SKYHAWK ONE FOUR CLEARED TO ARGUW INTERSECTION VIA SIDON VORTAC

VICTOR FIVE FIFTY-FIVE NO DELAY EXPECTED. EXPECT FURTHER ROUTING VIA

VICTOR FIVE FIFTY-FIVE JACKSON VORTAC DIRECT. CLIMB AND MAINTAIN FIVE

THOUSAND, EXPECT SEVEN THOUSAND AT ARGUW. NINER THOUSAND IS

NOT AVAILABLE. CONTACT BRAVO CENTER ONE TWO FIVE POINT ZERO

LEAVING THREE THOUSAND. SQUAWK ZERO SEVEN TWO ONE.

🖱️ *Click to show slide content with full clearance shown above.*

5.
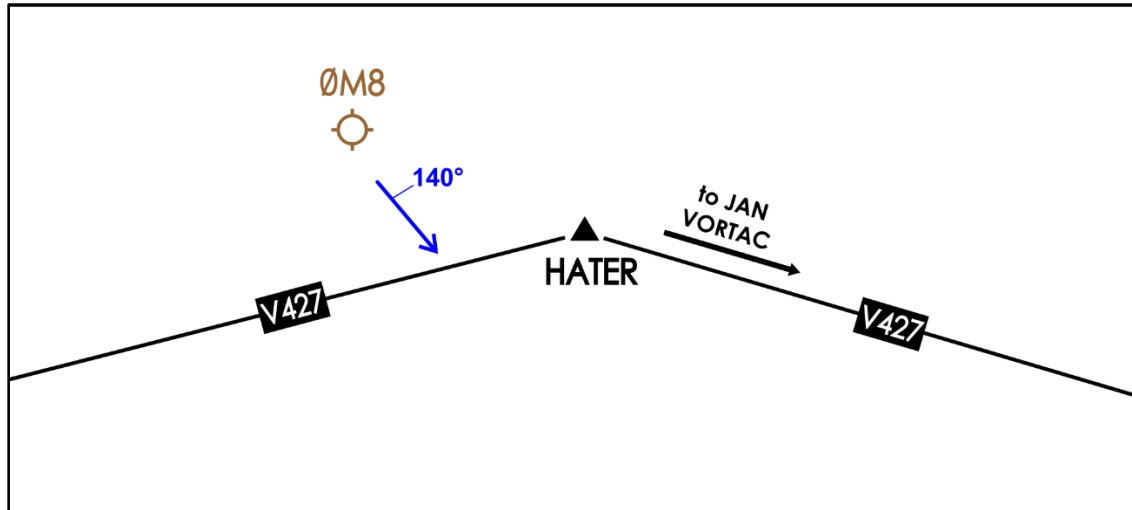
Click to show slide content and read the following to the student(s):

FSS calls for a clearance for N15 to Laurel (KLUL). 0M8 (Byerly) does not have a Class E surface area. Write the phraseology needed to clear N15 for departure to the requested altitude and join V427 on a 140° heading.

CESSNA ONE FIVE CLEARED FROM LAKE PROVIDENCE AIRPORT TO LAUREL

AIRPORT. WHEN ENTERING CONTROLLED AIRSPACE FLY HEADING ONE FOUR

ZERO UNTIL JOINING VICTOR FOUR TWENTY-SEVEN, VICTOR FOUR TWENTY-

SEVEN, JACKSON VICTOR ELEVEN LAUREL. CLIMB AND MAINTAIN SEVEN

THOUSAND. CONTACT BRAVO CENTER ONE TWO FIVE POINT ZERO LEAVING

THREE THOUSAND. SQUAWK ONE FOUR ZERO SIX. VERIFY THIS CLEARANCE

WILL ALLOW COMPLIANCE WITH TERRAIN OR OBSTRUCTION AVOIDANCE.

Click to show slide content with full clearance shown above.

ABBREVIATED DEPARTURE CLEARANCES

👉 *This slide is animated, 3 clicks.*

Abbreviated Departure Clearance

⊙ CLEARED…AS FILED procedures offer a significant time savings over reading the full route to the pilot

🖱 *Click to highlight full route.*

👉 *Explain how this full route takes a significant amount of time to read to the pilot.*

🖱 *Click to show abbreviated route and compare to the full route.*

⊙ Can be used if the following conditions are met:

• Route of flight filed with ATC has not been changed

– If the entire route will not be read to the pilot, it is important that the "as filed" portion is the same for pilot and controller

• ATC facilities have sufficient route information to exercise control responsibilities

– The route of flight information to be provided may be covered in letters of agreement

• Destination airport information is relayed between facilities prior to departure

– Pilots are responsible for providing destination airport information on initial radio call-up

• The assigned altitude is stated in the clearance

– Altitude requested by the pilot or as near as possible to the altitude requested by the pilot

🖱 *Click to show the full abbreviated route clearance.*

Abbreviated Departure Clearance, (Cont'd)

JO 7110.65, par. 4-3-3

AIM, par. 5-2-6

TI 6110.108

This slide is animated, 1 click.

⊙ If necessary, to modify a filed flight plan in order to achieve computer acceptance, include one of the following in remarks:

Discuss highlighted route field lacking SWTSR3 *STAR*

- FRC - Full route clearance is necessary
- FRC/(fix) - Full route clearance until the initial fix
    - Issue full route to specified fix or destination airport
- FRC or FRC/(fix) must always be the first item of intra-center remarks, "⊕"

Click to show FRC in remarks using overcast weather symbol.

⊙ When no changes are required in filed route, use the following:

✈ CLEARED TO (destination) AIRPORT AS FILED. MAINTAIN (altitude)

⊙ When no change is required in route except addition of SID transition, use the following:

✈ CLEARED TO (destination) AIRPORT (SID name and number) DEPARTURE, THEN AS FILED. MAINTAIN (altitude)

⊙ Specify the assigned altitude, and if required, add any additional instructions or information, including final requested altitude if different than assigned

NOTE: SIDs are excluded from "cleared as filed" procedures; therefore, if a SID is filed by the pilot, it must be restated in an abbreviated departure clearance.

ABBREVIATED DEPARTURE CLEARANCES *(CONT'D)*

Abbreviated Departure Clearance, (Cont'd)

JO 7110.65, par. 4-3-3, PCG

○ In a nonradar environment, specify one, two, or more fixes as necessary to identify the initial route of flight

• Avoid providing or implying course guidance below the Minimum IFR Altitude (MIA)

• Use the term VIA

Example: "CLEARED TO WATSON AIRPORT AS FILED VIA EMPORIA VORTAC, MAINTAIN SEVEN THOUSAND"

○ Do not apply abbreviated departure procedures when a pilot requests a detailed clearance or to military operations conducted within:

• ALTRVs

– Altitude Reservations under prescribed conditions normally employed for the mass movement of aircraft

• Stereo routes

– Routes developed to minimize flight plan handling and communications

• Operations above FL600

• Other military operations requiring special handling

ABBREVIATED DEPARTURE CLEARANCES *(CONT'D)*

Knowledge Check

Question: What is an abbreviated departure clearance?

 ***Answer:** B. Departure clearance using "Cleared as filed…"*

ABBREVIATED DEPARTURE CLEARANCES *(CONT'D)*

Knowledge Check

Question: What does "FRC/OVR" in remarks signify?

 Answer: *C. Full Route Clearance to OVR*

ABBREVIATED DEPARTURE CLEARANCES *(CONT'D)*

**Knowledge
Check**

> **Knowledge Check**
>
> Which flight group is authorized to receive an abbreviated departure clearance?
>
> A. Operations above FL600
> B. General aviation aircraft
> C. Stereo Routes
>
> Lesson 5: IFR Clearances and Route Assignment   71

Question: Which flight group is authorized to receive an abbreviated departure clearance?

Answer: B. General aviation aircraft

DEPARTURE RESTRICTIONS

Departure Restrictions

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

Departure Restrictions

- Assign the following to separate departures from other traffic or to restrict or regulate the departure flow:
  - Departure release
  - Release time
  - Hold for release
  - Expect departure clearance time
  - Call for release
  - Clearance void time
  - Ground stop

Lesson 5: IFR Clearances and Route Assignment   72

Departure Restrictions

⊙ Assign the following to separate departures from other traffic or to restrict or regulate the departure flow:

- Departure release

- Release time

- Hold for release

- Expect departure clearance time

- Call for release

- Clearance void time

- Ground stop

⊙ Departures from an airport without an operating control tower must be issued either a departure release, a hold for release, or a release time

**Departure
Release**

JO 7110.65, par.
4-3-4

Departure Release

☉ When conditions allow, release the aircraft as soon as possible

To another controller,

✈ *(aircraft identification)* RELEASED

*To a flight service specialist, or Flight Data Communication Specialist
(FDCS),*

✈ ADVISE *(aircraft identification)* RELEASED FOR DEPARTURE

To a pilot at an airport without an operating control tower,

✈ *(aircraft identification)* RELEASED FOR DEPARTURE

Example: "…ADVISE NOVEMBER TWO THREE FOUR RELEASED FOR
        DEPARTURE"

DEPARTURE RESTRICTIONS *(CONT'D)*

Release Time

JO 7110.65 par. 4-3-4

JO 7340.2

Release Time (RLS)

⊙ A departure time restriction issued to a pilot by ATC when necessary to separate a departing aircraft from other traffic

• Release times must be issued to pilots when necessary to specify the earliest time an aircraft may depart

• The facility issuing a release time to a pilot must issue a time check

⊙ Release times using a specified number of minutes do not require a time check

✈ (*Aircraft identification*) RELEASED FOR DEPARTURE AT (*time in hours and/or minutes*),

and if required,

✈ IF NOT OFF BY (*time*), ADVISE (*facility*) NOT LATER THAN (*time*) OF INTENTIONS. TIME (*time in hours, minutes, and nearest quarter minute*)

✈ (*Aircraft identification*) RELEASED FOR DEPARTURE IN (*number of minutes*) MINUTES

Example: "NOVEMBER TWO THREE FOUR RELEASED FOR DEPARTURE AT ONE SIX ONE EIGHT"

and if required,

✈ IF NOT OFF IN (*number of minutes*) MINUTES, ADVISE (*facility*) OF INTENTIONS WITHIN (*number of minutes*) MINUTES

DEPARTURE RESTRICTIONS *(CONT'D)*

Hold For Release

JO 7110.65 par. 4-3-4

Hold For Release (HFR)

⊙ Used by ATC to delay an aircraft for traffic, weather, volume, etc.

- Hold for release instructions are used to inform a pilot or a controller that an IFR departure clearance is not valid until a release time or additional instructions have been received

- When issuing hold for release instructions, include departure delay information

✈ HOLD FOR RELEASE, EXPECT (*time in hours and/or minutes*) DEPARTURE DELAY

⊙ When conditions allow, release the aircraft as soon as possible

- To another controller,

✈ (*aircraft identification*) RELEASED

- To a flight service specialist

✈ ADVISE (*aircraft identification*) RELEASED FOR DEPARTURE

- To a pilot at an airport not served by a control tower,

✈ (*aircraft identification*) RELEASED FOR DEPARTURE

DEPARTURE RESTRICTIONS *(CONT'D)*

Expect Departure Clearance Time

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

Expect Departure Clearance Time (EDCT)

⊙ Runway release time assigned to an aircraft in a traffic management program

- Shown on the flight progress strip as an EDCT

- Flights are expected to depart no earlier than 5 minutes before, and no later than 5 minutes after the EDCT

- Do not release aircraft on their assigned EDCT if a Ground Stop (GS) applicable to that aircraft is in effect

DEPARTURE RESTRICTIONS *(CONT'D)*

**Call For
Release (CFR)**

JO 7110.65, par.
4-3-4
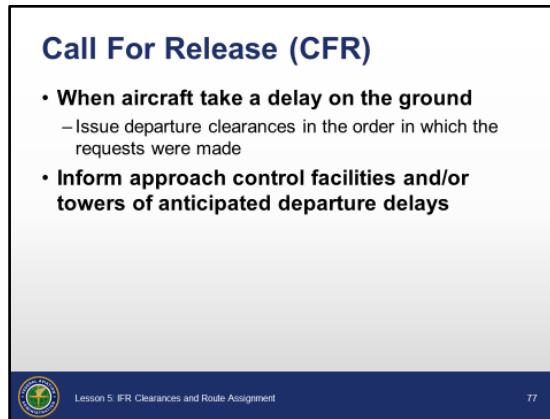
Call For Release (CFR)

⊙ A restriction where ARTCCs require a terminal facility to initiate verbal
   coordination to secure approval for release of a departure into the en
   route environment

   • When aircraft elect to take delay on the ground before departure

     – Issue departure clearances to them in the order in which the
        requests for clearance were originally made, if practicable

   • Inform approach control facilities and/or towers of anticipated
      departure delays

     – When CFR is in effect, release aircraft so they are airborne within
        a window that extends from 2 minutes prior and ends 1 minute
        after the assigned time, unless otherwise coordinated

DEPARTURE RESTRICTIONS *(CONT'D)*

**Clearance
Void Time**

JO 7110.65, par.
4-3-4

Clearance Void Time

⊙ Used by ATC to advise an aircraft that the departure clearance is automatically canceled if takeoff is not made prior to a specified time

- The pilot must obtain a new clearance or cancel his/her IFR flight plan if not off by the specified time

- Airports not served by control towers, provide alternative instructions requiring the pilots to advise ATC of their intentions no later than 30 minutes after the clearance void time if not airborne

- Facility delivering a clearance void time to a pilot must issue a time check

  – A void time issued using a specified number of minutes does not require a time check

✈ CLEARANCE VOID IF NOT OFF BY (clearance void time),

and if required,

✈ IF NOT OFF BY (clearance void time), ADVISE (facility) NOT LATER THAN (time) OF INTENTIONS. TIME (time in hours, minutes, and the nearest quarter minute)

or

✈ CLEARANCE VOID IF NOT OFF IN (number of minutes) MINUTES

and if required,

✈ IF NOT OFF IN (number of minutes) MINUTES, ADVISE (facility) OF INTENTIONS WITHIN (number of minutes) MINUTES

Example: "CLEARANCE VOID IF NOT OFF BY TWO TWO THREE FIVE. IF NOT OFF BY TWO TWO THREE FIVE, ADVISE BRAVO CENTER NOT LATER THAN TWO TWO FOUR FIVE OF INTENTIONS"

DEPARTURE RESTRICTIONS *(CONT'D)*

Ground Stop

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

Ground Stop

⊙ Requires aircraft meeting specific criteria to remain on the ground

- The criteria may be specific to:
  - Airport
  - Airspace
  - Equipment
- Ground stops normally occur with little or no warning
- Do not release aircraft on their assigned EDCT if a ground stop applicable to that aircraft is in effect
  - Unless approval has been received from the originator of the ground stop

Examples:

- Departures to San Francisco
- Departures entering YORKTOWN sector
- Category I and II aircraft landing Charlotte

DEPARTURE RESTRICTIONS *(CONT'D)*

Coordination with Receiving Facility

JO 7110.65, par. 4-3-8

👉 *This slide is animated, 1 click.*

Coordination with Receiving Facility

⊙ Coordinate if the departure point is less than 15 minutes flying time from the transferring facility's boundary

  • If automatic transfer of data between automated systems will occur flying time may be reduced to 5 minutes

🖱 *Click to show fight strip with routing over SQS (Sidon) VORTAC to avoid coordination with CMB LOW sector.*

  – A mileage from the boundary may replace the time parameter when mutually agreeable to both facilities

⊙ The actual departure time or a subsequent strip posting time must be forwarded to the receiving facility unless assumed departure times are agreed upon and that time is within 3 minutes of the actual departure time

DEPARTURE RESTRICTIONS *(CONT'D)*

**Information
Forwarded to
Receiving
Facility**

JO 7110.65, par.
2-2-6, 4-3-8

![hand pointing icon] *This slide is animated 1 click.*

Information Forwarded to Receiving Facility

⊙ Where appropriate, use computer equipment in lieu of manual
   coordination procedures

   • Do not use the remarks section of flight progress strips in lieu of voice
     coordination to pass control information

⊙ Forward the following information to the receiving facility

   • Aircraft identification

   • Number of aircraft if more than one

     – Heavy aircraft indicator "H/" if appropriate

     – Type of aircraft

     – Aircraft equipment suffix

   • Assigned altitude and Estimated Time of Arrival (ETA) over last
     reporting point/fix in transferring facility's area

     – Or assumed departure time when the departure point is the last
       point/fix in the transferring facility's area

   • Altitude at which aircraft will enter the receiving facility's area if other
     than the assigned altitude

   • True airspeed

   • Point of departure

   • Route of flight remaining

DEPARTURE RESTRICTIONS *(CONT'D)*

Information Forwarded to Receiving Facility (Cont'd)

JO 7110.65, pars. 2-2-6, 4-3-8

Click to show remaining items.

- Destination airport and clearance limit
    - If other than destination airport
- ETA at destination airport
    - Not required for military or scheduled air carrier aircraft
- Altitude requested by the aircraft if assigned altitude differs from requested altitude
    - Within a facility only

NOTE: When an aircraft has crossed one facility's area and assignment at a different altitude is still desired, the pilot will reinitiate the request with the next facility.

- When flight plan data must be forwarded manually and an aircraft has been assigned a beacon code by the computer, include the code as part of the flight plan
- Longitudinal separation being used in nonradar operations between aircraft at the same altitude
    - If it results in these aircraft having less than 10 minutes separation at the facilities' boundary
    - Unless specified in a Letter of Agreement (LOA)
- Any additional non-routine operational information pertinent to flight safety

DEPARTURE RESTRICTIONS *(CONT'D)*

**VFR Release
of IFR
Departures**

JO 7110.65, par.
4-3-9

VFR Release of IFR Departures

⊙ When an aircraft which has filed an IFR flight plan requests a VFR
  departure through a terminal facility, FSS, or air/ground communications
  station:

  • You may authorize an IFR flight planned aircraft to depart VFR

  • Inform the pilot of the proper frequency

  • State where or when to contact the facility responsible for issuing the
    clearance

✈ V-F-R DEPARTURE AUTHORIZED. CONTACT (*facility*) ON
  (*frequency*) AT (*location or time, if required*) FOR CLEARANCE

⊙ If unable to issue clearance, inform pilot and:

  • Suggest delay be taken on the ground

  • If pilot insists on departing VFR and obtaining IFR clearance in the
    air, inform the facility/sector holding the flight plan:

    – Pilot's intentions

    – VFR departure time (if possible)

DEPARTURE RESTRICTIONS *(CONT'D)*

**Knowledge
Check**

Knowledge Check

Who must issue a time check for clearance void times?

    A. FBO at the departure field
    B. Facility issuing the clearance to the pilot
    C. Flight dispatcher

Lesson 5: IFR Clearances and Route Assignment   83

Question: Who must issue a time check for clearance void times?

Answer: B. Facility issuing the clearance to the pilot

DEPARTURE RESTRICTIONS *(CONT'D)*

Knowledge Check

Knowledge Check

What is the departure window associated with a Call For Release (CFR)?

   A. 2 minutes prior and ends 1 minute after the assigned time
   B. 5 minutes prior and ends 5 minutes after the assigned time
   C. 10 minutes prior and ends 5 minutes after the assigned time

Lesson 5: IFR Clearances and Route Assignment   84

Question: What is the departure window associated with a Call For Release (CFR)?

Answer: A. 2 minutes prior and ends 1 minute after the assigned time

DEPARTURE RESTRICTIONS *(CONT'D)*

Knowledge Check

Knowledge Check

What should be included with a HFR time?

A. High flow route clearance
B. A clearance void time
C. Departure delay information

Question: What should be included with a HFR time?

Answer: C. Departure delay information

DEPARTURE RESTRICTIONS *(CONT'D)*

**Knowledge
Check**

Question: Actual departure times must be forwarded to an external facility if assumed departure time differs by what amount?

 Answer: *A. 3 minutes*

DEPARTURE RESTRICTIONS *(CONT'D)*

**Knowledge
Check**

Question: A pilot with an IFR flight plan requests a VFR departure but due to
volume, you know a clearance cannot be issued in the near
future. What should you do?

Answer: C. Suggest a delay be taken on the ground

DEPARTURE RESTRICTIONS *(CONT'D)*

**Knowledge
Check**

Knowledge Check

**What must be issued to departures from
airports without an operating control tower?**

A. Wind and altimeter check
B. Departure release
C. Runway heading alignment confirmation

Lesson 5: IFR Clearances and Route Assignment   88

Question: What must be issued to departures from airports without an
operating control tower?

 Answer: *B. Departure release*

SELECTED IFR CLEARANCES

Through Clearance

JO 7110.65, par. 4-2-6

📖 *This slide is animated, 1 click.*

Through Clearance

⊙ You may clear aircraft through intermediate stops

📖 *Click to show aircraft descending to land and departing to the east.*

✈ CLEARED THROUGH (airport) TO (fix)

⊙ A through clearance is not an approach clearance

📖 *Discuss your facility's strip marking for a through clearance.*

⊙ Advantages

  • One clearance takes the place of two

⊙ Disadvantages

  • Routes and airports involved are tied up until aircraft's position is obtained

⊙ Issue departure restrictions as necessary, such as clearance void time

SELECTED IFR CLEARANCES *(CONT'D)*

**Airfile Aircraft
Guidelines**

JO 7110.65, par.
4-2-9

Airfile Aircraft Guidelines

⊙ Process airfile aircraft as follows:

- Ensure aircraft is within your area of jurisdiction, unless coordinated

- Obtain information necessary to provide IFR service

- Issue clearance to:

    – Destination airport, short range clearance limit, or instruct pilot to contact FSS if flight plan cannot be processed

NOTE: These procedures do NOT imply that processing airfiles has priority over other ATC duties.

IFR to VFR

JO 7110.65, par.
4-2-8

IFR to VFR

- Clear an aircraft planning IFR operations for the initial part of the flight and VFR for the latter part to the fix at which the IFR part ends

Lesson 5: IFR Clearances and Route Assignment   91

IFR to VFR

⊙ Clear an aircraft planning IFR operations for the initial part of the flight and VFR for the latter part to the fix at which the IFR part ends

SELECTED IFR CLEARANCES *(CONT'D)*

VFR to IFR

JO 7110.65, par.
4-2-8

VFR to IFR

⊙ Treat an aircraft planning VFR operations for the initial part of the flight and IFR for the latter part as a VFR departure

- Issue a clearance to this aircraft when it requests IFR clearance approaching the fix where it proposes to start IFR operations

✈ CLEARED TO (destination) AIRPORT AS FILED

- Assign a beacon code to Mode C equipped aircraft to allow for Minimum Safe Altitude Warning (MSAW) alarms

⊙ When a VFR aircraft operating below the minimum altitude for IFR operations requests an IFR clearance and the pilot informs you, or you are aware, that they are unable to climb in VFR conditions to the minimum IFR altitude:

- Before issuing a clearance, ask if the pilot is able to maintain terrain and obstruction clearance during a climb to the minimum IFR altitude

✈ (Aircraft call sign), ARE YOU ABLE TO MAINTAIN YOUR OWN TERRAIN AND OBSTRUCTION CLEARANCE UNTIL REACHING (appropriate MVA/MIA/MEA/OROCA)

📚 OFF-ROUTE OBSTRUCTION CLEARANCE ALTITUDE (OROCA) - An off-route altitude which provides obstruction clearance with a 1,000' buffer in non-mountainous terrain areas and a 2,000' buffer in designated mountainous areas within the United States. This altitude may not provide signal coverage from ground-based navigational aids, air traffic control radar, or communications coverage.

Continued on next page

VFR to IFR (Cont'd)

JO 7110.65, pars. 4-2-8, 10-2-7

- If the pilot is able to maintain their own terrain and obstruction clearance, issue the appropriate IFR clearance
- If the pilot states that they are unable to maintain terrain and obstruction clearance, instruct the pilot to maintain VFR and to state intentions
- If VFR aircraft requests assistance when it encounters or is about to encounter IFR weather conditions, determine the facility best able to provide service
- If a frequency change is necessary:
    - Advise the pilot of the reason for the change
    - Request the aircraft contact the appropriate control facility
    - Inform that facility of the situation
- If the aircraft is unable to communicate with the control facility:
    - Relay information and clearances

NOTE: Pilots of pop-up aircraft are responsible for terrain and obstruction clearance until reaching MIA or MEA; however, assigning a clearance/procedure transfers that responsibility to the controller. Do NOT assign or imply specific course guidance that could be in effect below the MIA or MEA.

North American Route Program (NRP)

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

North American Route Program

📚 NORTH AMERICAN ROUTE PROGRAM (NRP) - A set of rules and procedures which are designed to increase the flexibility of user flight planning within published guidelines

⊙ If the aircraft is moved due to weather, traffic, or other tactical reasons

- "NRP" must be retained in the remarks section of the flight plan

⊙ If the route of flight is altered due to a pilot request

- "NRP" must be removed from the remarks section of the flight plan

⊙ "NRP" must not be entered in the remarks section of a flight plan, unless:

- Prior coordination is accomplished with the Air Traffic Control System Command Center (ATCSCC) or as prescribed by international NRP flight operations procedure

⊙ The en route facility within which an international flight entering the contiguous U.S. requests to participate in the NRP must enter "NRP" in the remarks section of the flight plan

⊙ Aircraft operating under the North American Route Program (NRP) are not subject to route limiting restrictions (e.g., published preferred IFR routes, letter of agreement requirements, standard operating procedures)

- Avoid route and/or altitude changes for aircraft participating in the North American Route Program (NRP) and that are displaying "NRP" in the remarks section of their flight plan

SELECTED IFR CLEARANCES *(CONT'D)*

**Route
Structure
Transitions**

JO 7110.65, par.
4-4-2

Route Structure Transitions

⊙ Transitions within or between route structures, may be accomplished via
   multiple methods. Clear aircraft by one or more of the following:

 • Vector aircraft:

  – To/from radials, courses, or azimuths of the Air Traffic Service
    (ATS) route assigned

 • Assign a SID/STAR

 • Clear departing or arriving aircraft:

  – To climb or descend via radials, courses, or azimuths of the ATS
    route assigned

  – Direct to or between the NAVAIDs forming the ATS route
    assigned

SELECTED IFR CLEARANCES *(CONT'D)*

Route Structure Transitions (Cont'd)

JO 7110.65, pars. 4-4-1, 4-4-2

Route Structure Transitions *(Cont'd)*

– Clear aircraft to climb or descend via:
  ➤ ATS route, specified radials, courses, or azimuths of NAVAIDs
– Clear RNAV aircraft between designated or established ATS routes via random RNAV routes to a NAVAID, waypoint, airport or fix on the new route
– Provide radar monitoring to RNAV equipped aircraft transitioning via random RNAV routes
– Offset from published or established ATS route at a specified distance and direction for random (impromptu) RNAV Routes

Lesson 5: IFR Clearances and Route Assignment · 95

- Clear aircraft to climb or descend via:

  – ATS routes, specified radials, courses, or azimuths of NAVAIDs

- Clear RNAV aircraft between designated or established ATS routes via random RNAV routes to a NAVAID, waypoint, airport or fix on the new route

- Provide radar monitoring to RNAV equipped aircraft transitioning via random RNAV routes

  – EXCEPTION: GNSS equipped aircraft /G, /L, /S, and /V not on a random impromptu route

- Offset from published or established ATS route at a specified distance and direction for random (impromptu) RNAV Routes

✈ OFFSET(distance) RIGHT/LEFT OF (route)

Example: "OFFSET EIGHT MILES RIGHT OF VICTOR SIX"

SELECTED IFR CLEARANCES *(CONT'D)*

DME Arcs of NAVAIDS

JO 7110.65, pars. 2-5-2, 4-4-1, PCG

FAA-H-8083-16B, p 4-43

FAA-H-8083-25B, pp G-10, G-17

DME Arcs of NAVAIDS
- **Flight track a constant distance from the station or waypoint**
- **Predicated on DME collocated with a facility**
  - Cannot be based on an ILS or LOC DME source
  - DME arcs on approach plates will have a lead radial
- **Assign a DME arc by stating**
  - Distance from the NAVAID followed by "MILE ARC"
  - Direction from the NAVAID
  - Eight principal points of the compass
  - "OF," and the name of the NAVAID

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👆 *This slide is animated, 2 clicks.*

DME Arcs of NAVAIDS

⊙ A flight track that is a constant distance from the station or waypoint

⊙ DME arcs are predicated on DME collocated with a facility providing omnidirectional course information, such as a VOR, VOR/DME, or VORTAC

- A DME arc cannot be based on an ILS or LOC DME source because omnidirectional course information is not provided

- DME arcs on approach plates will have a lead radial to alert the pilot approaching a point where the turn from the DME arc to the inbound course is started
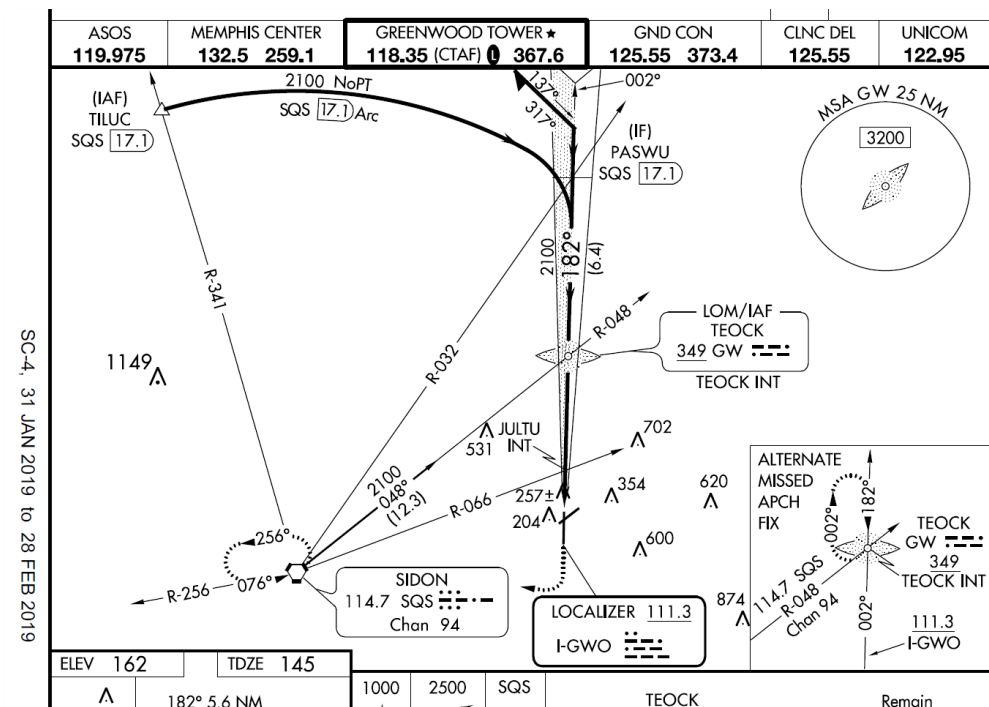
DME Arcs of NAVAIDS (Cont'd)

JO 7110.65, pars. 2-5-2, 4-4-1, PCG

FAA-H-8083-16B, 4-43

FAA-H-8083-25B, G-10, G-17

ASOS	MEMPHIS CENTER	GREENWOOD TOWER ★	GND CON	CLNC DEL	UNICOM
119.975	132.5 259.1	118.35 (CTAF) ① 367.6	125.55 373.4	125.55	122.95

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ELEV	162		TDZE	145

🖱️ *Click to show DME arc example.*

🖱️ *Click again to hide.*

⊙ Assign a DME arc by stating

- Distance in miles from the NAVAID followed by the words MILE ARC
- Direction from the NAVAID
  – Eight principal points of the compass
- The word OF, and the name of the NAVAID

Example: "ONE SEVEN POINT ONE MILE ARC NORTH OF SIDON VORTAC."

Radius of a NAVAID

JO 7110.65, pars. 2-5-2, 4-4-1, PCG

Radius of a NAVAID

⊙ Courses, azimuths, bearings, quadrants, or radials within a radius of a NAVAID

- State direction from NAVAID in terms of the quadrant; e.g., NE, SE, SW, NW

    – Quadrant - A quarter part of a circle, centered on a NAVAID, oriented clockwise from magnetic north as follows:

        o NE quadrant 000-089
        o SE quadrant 090-179
        o SW quadrant 180-269
        o NW quadrant 270-359

- Follow with the distance in miles from the NAVAID

✈ CLEARED TO FLY (*general direction from NAVAID*) OF (*NAVAID name and type*) BETWEEN (*specified*) COURSES TO/BEARINGS FROM/RADIALS (*NAVAID name when a NDB*) WITHIN (*number of miles*) MILE RADIUS

or

✈ CLEARED TO FLY (specified) QUADRANT OF (NAVAID name and type) WITHIN (number of miles) MILE RADIUS.

Examples: "CLEARED TO FLY EAST OF ALLENTOWN VORTAC BETWEEN THE ZERO FOUR FIVE AND THE ONE THREE FIVE RADIALS WITHIN FOUR ZERO MILE RADIUS"

"CLEARED TO FLY NORTHEAST QUADRANT OF PHILLIPSBURG VORTAC WITHIN FOUR ZERO MILE RADIUS"

SELECTED IFR CLEARANCES *(CONT'D)*

Knowledge Check

Question: What is the definition of "quadrant" from the Pilot/Controller Glossary?

 Answer: *B. Quarter part of a circle centered on a NAVAID*

**Knowledge
Check**

Knowledge Check

A flight with "NRP" in remarks changes the route of flight at the pilot's request. What is the proper procedure?

    A. Deny all route requests from "NRP" aircraft
    B. Allow the New Route Possible request and leave "NRP" in the remarks
    C. Remove "NRP" from remarks

Lesson 5: IFR Clearances and Route Assignment   99

Question: A flight with "NRP" in remarks changes the route of flight at the pilot's request. What is the proper procedure?

Answer: *C. Remove "NRP" from remarks*

**Knowledge
Check**

Knowledge Check

What is the phraseology used to issue a DME arc south of Pendleton VORTAC at 15 miles?

A. "ONE FIVE MILE ARC SOUTH OF PENDLETON VORTAC"
B. "DME ARC SOUTH OF PENDLETON VORTAC AT ONE FIVE MILES"
C. "DME ARC OF PENDLETON VORTAC AT ONE FIVE MILES SOUTH"

Lesson 5: IFR Clearances and Route Assignment   100

Question: What is the phraseology used to issue a DME arc south of Pendleton VORTAC at 15 miles?

Answer: A. "ONE FIVE MILE ARC SOUTH OF PENDLETON VORTAC"

**Knowledge
Check**

Knowledge Check

What is the phraseology to clear an aircraft to fly a parallel course to an air traffic service route?

    A. "OFFSET EIGHT MILES RIGHT OF VICTOR SIX"
    B. "PARALLEL VICTOR SIX EIGHT MILES RIGHT"
    C. "FLY ALONG SIDE VICTOR SIX BY EIGHT MILES"

Lesson 5: IFR Clearances and Route Assignment   101

Question: What is the phraseology to clear an aircraft to fly a parallel course to an air traffic service route?

Answer: *A. "OFFSET EIGHT MILES RIGHT OF VICTOR SIX"*

**Knowledge
Check**

Knowledge Check

What magnetic radials make up the southeast quadrant of a NAVAID?

A. 100-180°
B. 120-200°
C. 090-179°

Lesson 5: IFR Clearances and Route Assignment   102

Question: What magnetic radials make up the southeast quadrant of a
NAVAID?

Answer: C. 090-179

SELECTED IFR CLEARANCES *(CONT'D)*

Knowledge Check

Question: What is a key factor when issuing a clearance to airfile aircraft?

 Answer: B. Ensure the aircraft is within your area of jurisdiction

SELECTED IFR CLEARANCES *(CONT'D)*

Substitute Routes

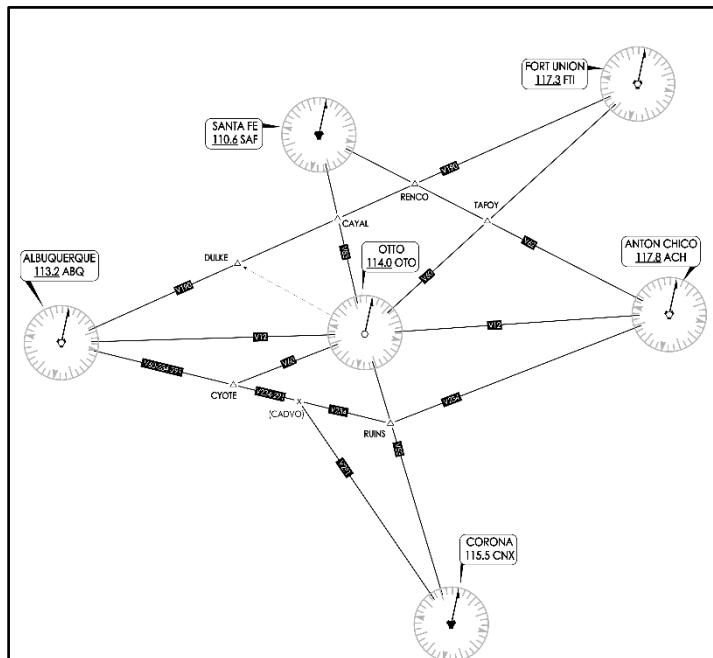JO 7110.65, pars. 4-4-1, 4-4-4, PCG

FAA Chart User's Guide

👉 *This slide is animated, 2 clicks.*

Substitute Routes

⊙ When any part of an airway or route is unusable because of NAVAID status, clear aircraft that are not RNAV capable via one of the following alternative routes:

• Route depicted on current U.S. Government charts/publications

  – Use the word SUBSTITUTE immediately preceding the alternative route in the clearance

🖱 *Click to show sample map before NAVAID outage.*

Continued on next page

SELECTED IFR CLEARANCES *(CONT'D)*

Substitute Routes (Cont'd)

JO 7110.65, pars. 4-4-1, 4-4-4, PCG

FAA Chart User's Guide

🖱️ *Click to show substitute routes.*

✈️ SUBSTITUTE (ATS route) FROM (fix) to (fix)

- Route defined by specifying NAVAID radials, courses, or azimuths

- Route defined as direct to or between NAVAIDs

- Vectors

👆 *Discuss if the center NAVAID Otto is out of service that substitute fix is created and airways (brown circles) will extend from other NAVAIDs to join at the previous location.*

- Defined by this symbol:

-o-o-o-o-o-o-o-
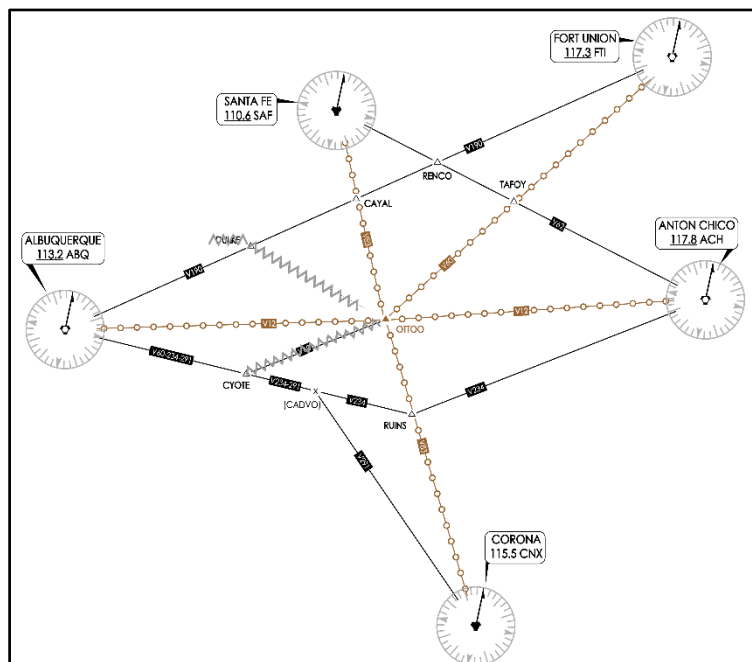
NOTE: Inform area navigation aircraft that will proceed to the NAVAID location of the NAVAID outage.

SELECTED IFR CLEARANCES *(CONT'D)*

**Class G
Airspace**

JO 7110.65, par.
4-4-5

Class G Airspace

⊙ Include routes through Class G airspace only when requested by the pilot

- Flight plans filed for random RNAV routes through Class G airspace are considered a request by the pilot

- Flight plans containing military training route segments in/through Class G airspace are considered a request by the pilot

Clearance Amendments

JO 7110.65, par. 4-2-5

👆 *This slide is animated, 1 click.*

Clearance Amendments

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

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

✈ CHANGE (portion of route) TO READ (new portion of route)

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

✈ (Amendment to route), REST OF ROUTE UNCHANGED

Continued on next page

Clearance Amendments (Cont'd)

JO 7110.65, par. 4-2-5

Click to show N21A flight strip example.

| N21A | FTR | 08⁰⁹ ↓90 | | DTA | KTUL./.ECO V41 DTA V174 ALF KAIR/ | 4702 |

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 N21A      FTR    08⁰⁹   ↓ 90          DTA    KTUL./.ECO V41 DTA        4702
                                               V174 ALF KAIR/
 C182/A    0800
 T165  G155                                          FRANK V71
     66
 341   01          ECO
```

⊙ Issue the entire route by stating the amendment

Example: Cessna 21A has been cleared to the Airville Airport via V41 Delta VOR V174 Alpha VOR, direct Airville Airport, maintain 9,000. After takeoff, the aircraft is rerouted via V41 Frank intersection, V71 Delta VOR, V174 Alpha VOR. The controller issues one of the following as an amended clearance:

✈ CHANGE…TO READ…

Example: "CESSNA TWO ONE ALPHA CHANGE VICTOR FORTY-ONE DELTA TO READ VICTOR FORTY-ONE FRANK, VICTOR SEVENTY-ONE DELTA"

✈ …REST OF ROUTE UNCHANGED

Example: "CESSNA TWO ONE ALPHA CLEARED VIA VICTOR FORTY-ONE FRANK, VICTOR SEVENTY-ONE DELTA, REST OF ROUTE UNCHANGED"

• Restate entire route and altitude

Example: "CESSNA TWO ONE ALPHA CLEARED VIA VICTOR FORTY-ONE FRANK, VICTOR SEVENTY-ONE DELTA, VICTOR ONE SEVENTY-FOUR ALPHA V-O-R, DIRECT AIRVILLE AIRPORT, MAINTAIN NINER THOUSAND"

**Arrival
Information**

JO 7110.65,
pars. 2-1-16,
2-1-17, 4-8-8

Arrival Information

⊙ If flight is within a surface area for which the tower has responsibility:

- Coordinate with the appropriate nonapproach control tower on an individual aircraft basis before issuing a clearance

    – Unless otherwise specified in a letter of agreement

⊙ Transfer radio communications

- Before an aircraft enters the receiving controller's area of jurisdiction

    – Unless otherwise coordinated, or

    – Specified by a letter of agreement or a facility directive

⊙ If an IFR aircraft intends to land at an airport not served by a tower or FSS

- Approve a change to the advisory service frequency when you no longer require direct communications

    🛪 CHANGE TO ADVISORY FREQUENCY APPROVED

SELECTED IFR CLEARANCES *(CONT'D)*

**Knowledge
Check**

Question: What is the phraseology used when you no longer require direct communication to aircraft landing at an airport without a tower or FSS?

 Answer: *A. "CHANGE TO ADVISORY FREQUENCY APPROVED"*

SELECTED IFR CLEARANCES *(CONT'D)*

**Knowledge
Check**

Knowledge Check

What is the phraseology used at the end of a
route change clearance to indicate the remainder
is the same as the current route of flight?

    A. "…REMAINDER OF ROUTE IS THE SAME"
    B. "…REST OF ROUTE UNCHANGED"
    C. "…NO CHANGE TO REST OF ROUTE"

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Question: What is the phraseology used at the end of a route change
clearance to indicate the remainder is the same as the current
route of flight?

***Answer:** B. "…REST OF ROUTE UNCHANGED"*

CONCLUSION

Lesson Summary

Review and elaborate briefly on the following topics. Ask students if they have questions about any of the concepts covered in the lesson.

Summary

⊙ Clearance requirements

- Air traffic clearance and structure

  – Aircraft identification

  – Clearance limit

  – Standard instrument departure

  – Route of flight

  – Altitude data

  – Mach number

  – Holding instructions

  – Special instructions

  – Frequency and beacon code information

- Clearances to USAF aircraft

- Prefix clearances

CONCLUSION

**Lesson
Summary
(Cont'd)**

⊙ Procedure for departing IFR aircraft

- Departure terminology

- Departure instructions:

  – Class D

  – Class E surface areas

  – Other airports

- Instrument departure procedures

  – Departure procedures

  – Visual climb over airport

  – Standard instrument departure

- Altitude assignments

- Air Force One departure clearances

- Abbreviated departure clearance

  – Modifications to route

- Departure restrictions

  – Clearance void times

  – Hold for release

  – Release times

  – Expect departure clearance time

  – Call for release

  – Ground stop

- Coordination with receiving facility

- Information forwarded to receiving facility

- VFR release of IFR departures

CONCLUSION

Lesson Summary (Cont'd)

⊙ Procedures for IFR clearances

- Through clearance

- Airfile aircraft guidelines

- Composite flight plan

    – IFR to VFR

    – VFR to IFR

- North American route program

- Route structure transitions

    – DME arcs of NAVAIDs

    – Radius of a NAVAID

- Substitute routes

- Class G airspace

- Clearance amendments

- Arrival information

👉 *Hand out and administer the End-of-Lesson Test. Provide feedback on missed items, including why particular answers are correct, as well as why some responses are incorrect.*