Initial En Route Qualification Training

Instructor
Lesson 12
Departure Procedures

Course 50148001

LESSON PLAN DATA SHEET

COURSE NAME: INITIAL EN ROUTE QUALIFICATION TRAINING
COURSE NUMBER: 50148001

LESSON TITLE: DEPARTURE PROCEDURES

DURATION: 7+30 HOURS

DATE REVISED: 2022-02
VERSION: V.2022-02

REFERENCE(S): FAA ORDER JO 7110.65, AIR TRAFFIC CONTROL

HANDOUT(S): departures.f2k - EXERCISE STRIPS

EXERCISE(S)/ ACTIVITY(S): ACTIVITY: DEPARTURE COORDINATION AND CLEARANCES
EXERCISE: STRIPMARKING FOR DEPARTURES

END-OF-LESSON TEST: YES *(REFER TO ELT12.PDF)*

PERFORMANCE TEST: NONE

MATERIALS: NONE

OTHER PERTINENT INFORMATION: *INSTRUCTOR KEY FOR THE ELEARNING(S) IS INCLUDED AS AN APPENDIX IN 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

Initial En Route Qualification Training

Lesson 12
Departure Procedures

V.2022-02
Presented by
FAA Academy
Air Traffic Division

Federal Aviation Administration

The next lessons in the En Route Stage 1 course will focus on the procedural rules used to separate and control aircraft. Building on the skills and knowledge from the IFR Clearances and Route Assignments lesson, you will now be required to correctly issue departure clearances and procedures that result in a safe and efficient traffic flow.

This control function is the first procedure air traffic controllers use to transition an IFR aircraft from the airport to the en route environment. Utilizing all the procedures you have mastered to this point and adding departure procedures will facilitate your development as a safe and efficient air traffic controller.

INTRODUCTION *(Continued)*

Opening Scenario

DEPARTURE PROCEDURES

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☞ **NOTE:** *Play the audio file included in the presentation by clicking on the SPEAKER ICON on the slide.*

Learning to issue a departure clearance is an important milestone on the way to becoming a fully certified radar controller. In the field, as the radar-associate controller you will issue most of the departure clearances from non-approach control airports. It will be your responsibility to ensure the aircraft enter the en route environment safely.

Purpose

In this lesson, we will cover procedures, phraseology, and methods for issuing departure clearances to aircraft.

INTRODUCTION *(Continued)*

**Lesson
Objectives**

LESSON OBJECTIVES

• On an End-of-Lesson Test, and in accordance with FAA Order JO 7110.65, you will identify procedures for:
 	
  – Issuing initial departure instructions and clearances
  – Issuing abbreviated departure clearances
  – Issuing departure restrictions
  – Coordinating with the receiving facility

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☞ **NOTE:** *Teach from graphic.*

DEPARTURE CLEARANCE

Departure Terminology
JO 7110.65, par. 4-3-1

⊙ Use these terms to issue departure clearances when necessary:

- "DEPART"
- "FLY"
- "DEPARTURE"

⊙ Avoid using "TAKEOFF" except when clearing an aircraft for takeoff or canceling a takeoff clearance. The word "TAKEOFF" is used **only** in the tower/terminal environment.

Departure Clearance Items
JO 7110.65, par. 4-3-2

✈

Phraseology Example

PHRASEOLOGY EXAMPLE - RELAY

FDU: Aero Center Flight Data, request clearance Cessna Two Three Four, from Vicksburg to Natchez."

Center: "Cessna Two Three Four, cleared **from Vicksburg Airport** to…"

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☞ **NOTE:** Click once to highlight the relevant portion of the phraseology.

⊙ Include the following items in IFR departure clearances:

- Airport of departure when issuing a departure clearance for relay to an aircraft by a noncontrol facility (Flight Data Unit, dispatcher, etc.)

NOTE: This phraseology enables the controller to avoid errors that may occur when an aircraft has multiple proposals in the system. The phraseology ties the clearance down as being valid from the **named** airport **only**.

DEPARTURE CLEARANCE *(Continued)*

Departure Clearance Items (Cont'd)
JO 7110.65, par. 4-3-2

CLEARANCE LIMIT

DEPARTURE AIRPORT

DESTINATION AIRPORT

• Normally destination airport
• May be short range if necessary

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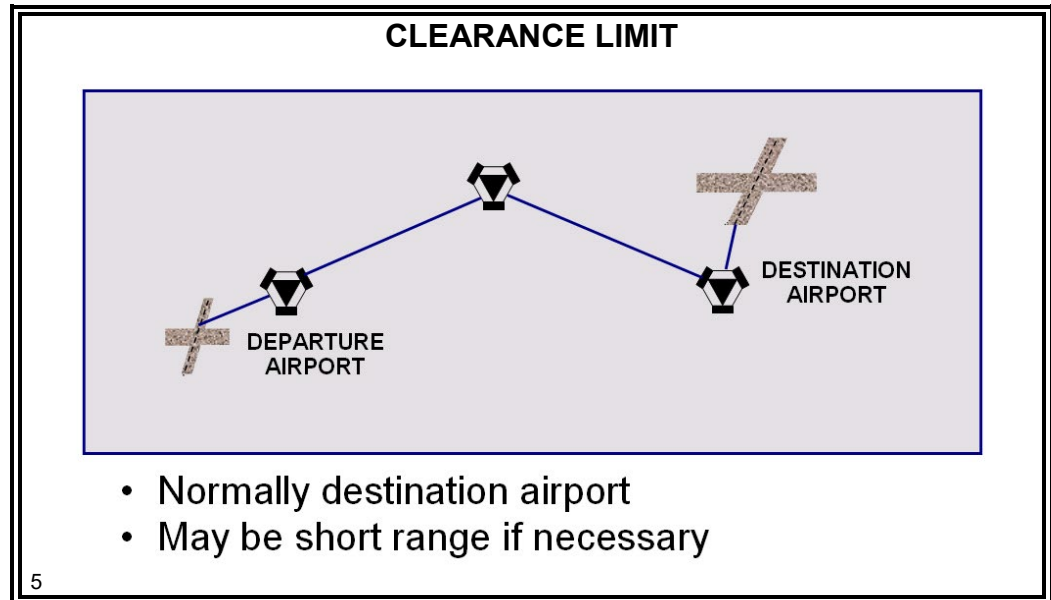
- Clearance limit

  - Specify destination airport even though outside controlled airspace

  - Issue short-range clearance limit as provided for in any established procedures

  - When the clearance limit is a NAVAID, the type of NAVAID must follow the NAVAID name.

✈ **Phraseology**

"Cherokee one Papa Bravo Cleared to Sidon VORTAC……"

- When the clearance limit is an intersection or waypoint and the type is known, the type must follow the intersection or waypoint name.

✈ **Phraseology**

"Cherokee one Papa Bravo Cleared to HEDUD Intersection……"

DEPARTURE CLEARANCE *(Continued)*

**Initial
Departure
Instructions**
JO 7110.65,
par. 4-3-2

✈

**Phraseology
Example**

PHRASEOLOGY EXAMPLE – RUNWAY-IN-USE
Greenwood Tower Advises Runway 23 in Use

N234		T→SW	↑70	HLI	KGWO SQS V11 HLI	1501
		TR 350/⇒V11			M41/0030	
C310/A						
T180						**D-A**
66						
073 01		KGWO P1630		70		

"November Two Three Four, cleared to Holly Springs Airport via depart southwest, turn right, fly heading three five zero until joining Victor Eleven, Victor Eleven as filed. Climb and maintain seven thousand. Squawk one five zero one."

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☞ **NOTE:** *Click once to highlight the relevant portion of the phraseology.*

⊙ At airports with airport traffic control service, specify as necessary:

- Direction of takeoff/turn, or
- Initial heading/azimuth

☞ **NOTE:** *Departures shown with beacon codes are illustrating an automated/radar environment where 15 minute coordination rule does **not** apply and EDCs might **not** be shown. Departures without beacon codes are illustrating a nonautomated/non-radar environment; therefore, the 15 minute coordination rule applies and EDCs will probably be shown.*

This phraseology should be used at Greenwood when using the 1 and 2 minute departure rules, which are covered in a later lesson.

DEPARTURE CLEARANCE *(Continued)*

Initial Departure Instructions (Cont'd)
JO 7110.65, par. 4-3-2

✈

Phraseology Example

> **PHRASEOLOGY EXAMPLE – PILOT CONCURRENCE**
>
> **ZAE FDU:** "Flight Data, request clearance Queen Air Five Six Seven, from Vicksburg Airport to Louis Armstrong Airport."
>
> **Center:** **"Will the pilot of Queen Air Five Six Seven accept a northeast departure with (left/right) turns?"**
>
> **ZAE FDU:** "Affirmative."
>
> **Center:** "Queen Air Five Six Seven cleared…**Verify this clearance will allow compliance with local traffic pattern, and terrain or obstruction avoidance.**"
>
> 7

☞ *NOTE: Click once to highlight the relevant portion of the phraseology.*

⊙ At airports **without** airport traffic control service within Class E surface area, specify as necessary:

- Direction of takeoff/turn or initial heading/azimuth to be flown

  – Solicit pilot's concurrence before issuing these in a clearance

- After issuing direction of takeoff and/or heading to pilot:

  – Compatibility with a procedure issued may be verified by the pilot for compliance with local traffic pattern, terrain, or obstruction avoidance

✈
Phraseology Example

"Verify this clearance will allow compliance with local traffic pattern and terrain or obstruction avoidance."

NOTE: "Verify" phraseology is required at 0M8 and VKS anytime a departure clearance (including initial departure instructions) is issued that differs from the pilot's filed route.

- Clearances given to Flight Data Unit (FDU) – Controllers must release the aircraft and issue a frequency to contact the Departure Sector.

EXAMPLE: Advise (ACID) Released for Departure, Contact AERO Center One Two Five Point Zero.

Initial Departure Instructions (Cont'd)
JO 7110.65, par. 4-3-2

✈

Phraseology Example

DEPARTURE PROCEDURE EXAMPLE

N234		⚓ 150/⇒V427	↑90	MHZ	0M8 MHZ V18 KMEI/0048	
C172/A			X18NW MHZ		V427	
T150		V<1545(55)	‡60			
66						**D-A**
01	~~EDC 1530~~	0M8 P1530		90		

"November Two Three Four, cleared from Byerley Airport to Meridian Airport **via when entering controlled airspace, fly heading one five zero until joining Victor Four Twenty-Seven,** Victor Four Twenty-Seven, Magnolia, Victor Eighteen. Cross one eight miles northwest Magnolia VORTAC established on Victor Four Twenty-Seven at or above six thousand. Climb and maintain niner thousand. Clearance void if not off by one five four five. If not off by one five four five, advise Aero Center not later than one five five five of intentions. Verify this clearance will allow compliance with local traffic pattern and terrain or obstruction avoidance. Advise (ACID) Released for Departure, Contact AERO Center One Two Five Point Zero."

N234	0M8 1530	(50)	↑90	MEI	0M8 MHZ V18 KMEI /0048	
C172/A		15	X18NW		V427	
T150			‡ 60			
66						
02	+20	MHZ	(↑90)			

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☞ **NOTE:** *Click once to highlight the relevant portion of the phraseology.*

⊙ At all other airports

- Do **not** specify direction of takeoff/turn after takeoff

- If necessary, specify initial heading/azimuth to be flown after takeoff to apply **only** within controlled airspace

☞ **NOTE:** Explain how crossing restriction is required here to miss Jackson approach.

NOTE: Coordinate before issuing clearance.

☞ **NOTE:** Explain that a pilot in uncontrolled airspace may fly any heading desired, as long as the aircraft is established on the assigned heading when entering controlled airspace.

NOTE: "Verify" phraseology is required at 0M8 and KVKS anytime a departure clearance (including initial departure instructions) is issued that differs from the pilot's filed route.

NOTE: Clearance void time will be covered later in this lesson.

DEPARTURE CLEARANCE *(Continued)*

Initial Departure Instructions (Cont'd)
JO 7110.65, par. 4-3-2

⊙ Where **only** written departure procedures are published for an airport and pilot compliance is necessary to ensure separation:

- Include the procedure as part of the clearance

✈
Phraseology Example

"Depart via the (airport name) (runway number) departure procedure."

DEPARTURE CLEARANCE *(Continued)*

Knowledge Check

KNOWLEDGE CHECK

◈ **QUESTION:** When is the term "TAKEOFF" used in departure clearances?

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

ANSWER: *Never in the en route environment*

KNOWLEDGE CHECK

◈ **QUESTION:** When is the departure airport included in a clearance?

10

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

ANSWER: *When the clearance is relayed through a noncontrol facility*

KNOWLEDGE CHECK

◈ **QUESTION:** What may be specified, if necessary, to departing aircraft at airports with air traffic control service?

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

ANSWER: *Direction of takeoff/turn or initial heading/azimuth to be flown*

DEPARTURE CLEARANCE *(Continued)*

KNOWLEDGE CHECK

◈ **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?

  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

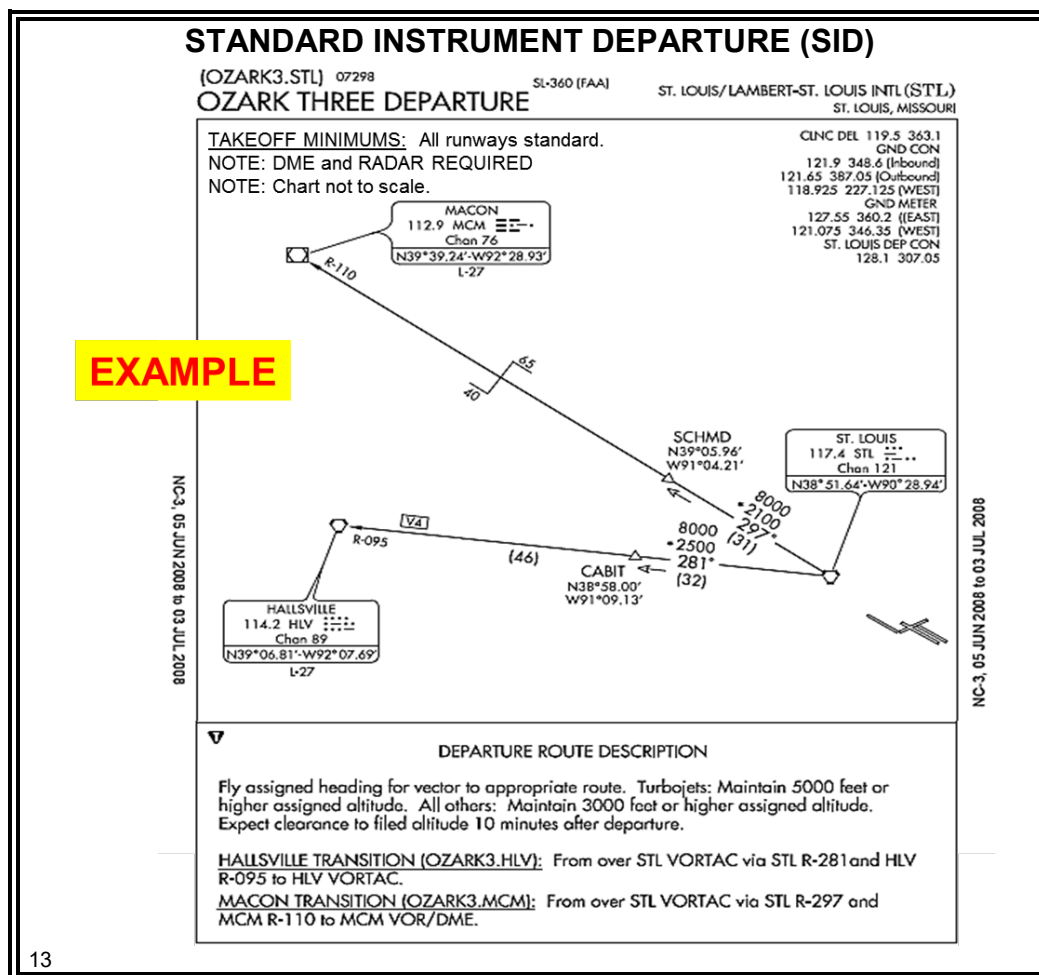12

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

ANSWER: B

DEPARTURE CLEARANCE *(Continued)*

Standard Instrument Departure (SID)

JO 7110.65, par. 4-3-2

STANDARD INSTRUMENT DEPARTURE (SID)

(OZARK3.STL) 07298   SL-360 (FAA)   ST. LOUIS/LAMBERT-ST. LOUIS INTL (STL)
OZARK THREE DEPARTURE   ST. LOUIS, MISSOURI

TAKEOFF MINIMUMS: All runways standard.
NOTE: DME and RADAR REQUIRED
NOTE: Chart not to scale.

CLNC DEL 119.5 363.1
GND CON
121.9 348.6 (Inbound)
121.65 387.05 (Outbound)
118.925 227.125 (WEST)
GND METER
127.55 360.2 ((EAST)
121.075 346.35 (WEST)
ST. LOUIS DEP CON
128.1 307.05

MACON
112.9 MCM
Chan 76
N39°39.24'-W92°28.93'
L-27

EXAMPLE

SCHMD
N39°05.96'
W91°04.21'

ST. LOUIS
117.4 STL
Chan 121
N38°51.64'-W90°28.94'

8000
*2100
297°
(31)

8000
*2500
281°
(32)

V4
R-095

(46)

CABIT
N38°58.00'
W91°09.13'

HALLSVILLE
114.2 HLV
Chan 89
N39°06.81'-W92°07.69'
L-27

NC-3, 05 JUN 2008 to 03 JUL 2008

R-110

65
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DEPARTURE ROUTE DESCRIPTION

Fly assigned heading for vector to appropriate route. Turbojets: Maintain 5000 feet or higher assigned altitude. All others: Maintain 3000 feet or higher assigned altitude. Expect clearance to filed altitude 10 minutes after departure.

HALLSVILLE TRANSITION (OZARK3.HLV): From over STL VORTAC via STL R-281 and HLV R-095 to HLV VORTAC.

MACON TRANSITION (OZARK3.MCM): From over STL VORTAC via STL R-297 and MCM R-110 to MCM VOR/DME.

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- ⊙ Assign a SID and include a transition, if necessary.

  - SIDs may be assigned if **not** included in the original flight plan with the pilot's concurrence

    - If the pilot does **not** concur, he/she **must** notify ATC

✈ **Phraseology**

"(SID name and number) DEPARTURE."

"(SID name and number) DEPARTURE, (transition name) TRANSITION."

✈ **Phraseology Example**

"Southwest Twelve Eleven cleared to KOKC Airport via OZARK Three Departure Hallsville Transition J181 TUL direct."

Continued on next page

DEPARTURE CLEARANCE *(Continued)*

Standard Instrument Departure (SID) (Cont'd)
JO 7110.65, par. 4-3-2

SID FLIGHT STRIP EXAMPLE

SWA1211		↑		HLV	KSTL OZARK3 HLV J181 TUL KOKC	
B737/L						
T432						
		KSTL P1200		280		

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☞ **NOTE:** Teach from graphic.

RNAV STANDARD INSTRUMENT DEPARTURE

15
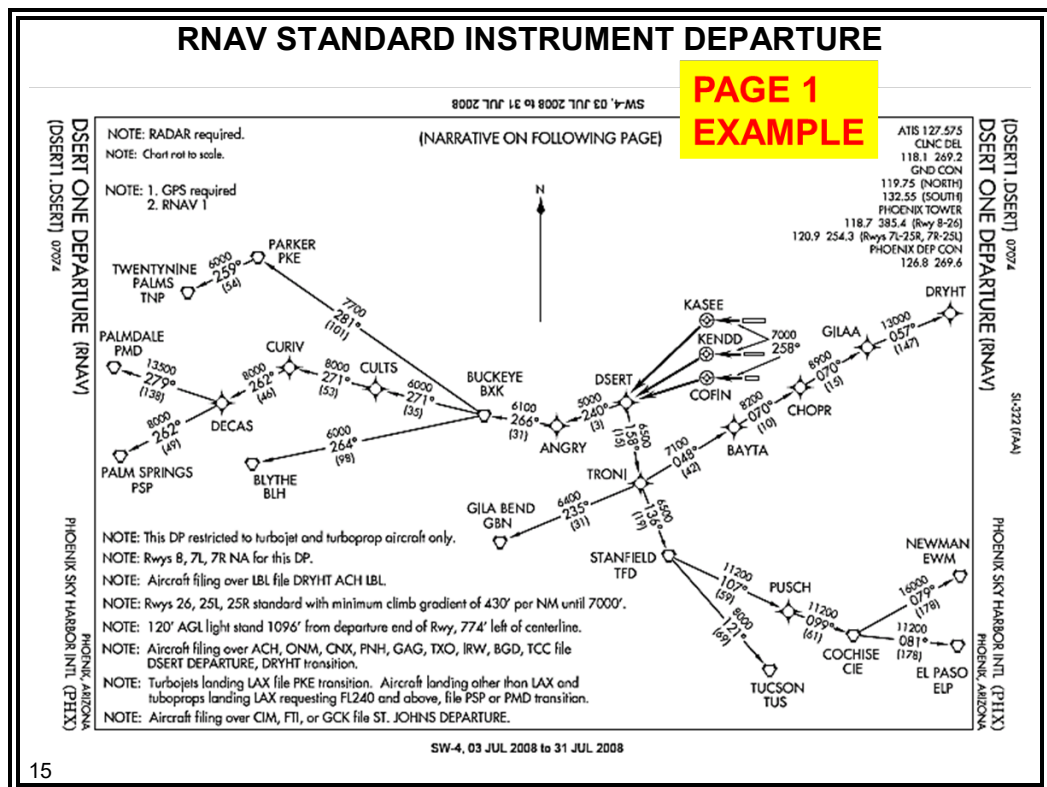
☞ **NOTE:** Teach from graphic. This SID is provided for familiarization **only**.

Continued on next page

DEPARTURE CLEARANCE *(Continued)*

Standard Instrument Departure (SID) (Cont'd)
JO 7110.65, par. 4-3-2

RNAV STANDARD INSTRUMENT DEPARTURE

(DSERT1.DSERT) 02276   SL-322 (FAA)

DSERT ONE DEPARTURE (RNAV)   PHOENIX SKY HARBOR INTL (PHX)
                                               PHOENIX, ARIZONA

▽

DEPARTURE ROUTE DESCRIPTION

TAKE-OFF RUNWAY 26: Climb to 7000 via 258° course to KASEE WP, then direct DSERT WP, Thence . . . .
TAKE-OFF RUNWAY 25R: Climb to 7000 via 258° course to KENDD WP, then direct DSERT WP, Thence . . . .
TAKE-OFF RUNWAY 25L: Climb to 7000 via 258° course to COFIN WP, then direct DSERT WP, Thence . . . .
. . . . then via assigned transition/altitude.

LOST COMMUNICATIONS: Expect filed altitude 3 minutes after departure

PAGE 2 EXAMPLE

BLYTHE TRANSITION (DSERT1.BLH): (Restricted to FL220 and below).
COCHISE TRANSITION (DSERT1.CIE)
DRYHT TRANSITION (DSERT1.DRYHT)
EL PASO TRANSITION (DSERT1.ELP)
GILA BEND TRANSITION (DSERT1.GBN)
NEWMAN TRANSITION (DSERT1.EWM)
PALM SPRINGS TRANSITION (DSERT1.PSP)
PALMDALE TRANSITION (DSERT1.PMD)
PARKER TRANSITION (DSERT1.PKE)
STANFIELD TRANSITION (DSERT1.TFD)
TUCSON TRANSITION (DSERT1.TUS)
TWENTYNINE PALMS TRANSITION (DSERT1.TNP)

SW-4, 03 JUL 2008 to 31 JUL 2008

SW-4, 03 JUL 2008 to 31 JUL 2008

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☞ **NOTE:** Teach from graphic.

NOTE: SIDs are rarely issued by en route controllers.

DEPARTURE CLEARANCE *(Continued)*

Preferential Routes
JO 7110.65, Pilot/Controller Glossary

PREFERENTIAL DEPARTURE ROUTE EXAMPLE					
SWA1211 B737/G T432			↑	TUL	KOKC IRW061 TUL222 TUL J181 KSTL
		KOKC P1200		280	

The IRW061 TUL222 is a PDR that is applied by the ZKC computer.

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📖 A **Preferential Departure Route (PDR)** 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.

📖 A **Preferential Departure and Arrival Route (PDAR)** is a route between two terminals which are within or immediately adjacent to one ARTCC's area.

☞ **NOTE:** Explain the importance of PDRs, PARs, and PDARs when issuing route clearances to aircraft. They will be covered in more depth in a later lesson.

Route of Flight
JO 7110.65,
par. 4-3-2

PHRASEOLOGY EXAMPLE - ROUTE

N234		*T→SW TR* *350/⇒ V11* ↑	↑*70*	HLI	KGWO SQS V11 HLI M41/0030	1501
C310/A T180						
66						**D-A**
073 01		KGWO P1630		70		

"November Two Three Four, cleared to Holly Springs Airport via depart southwest, turn right, fly heading three five zero until joining Victor Eleven, Victor Eleven as filed. Climb and maintain seven thousand. Squawk one five zero one."

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☞ ***NOTE:*** *Click once to highlight the relevant portion of the phraseology.*

⊙ Specify one or more of the following:

- Airway
- Route
- Course
- Heading
- Azimuth
- Arc
- Vector

⊙ When a short-range clearance limit is utilized:

- Advise the pilot of the routing to expect beyond the short-range clearance limit that differs from filed route

✈ **Phraseology**

"EXPECT FURTHER CLEARANCE VIA (airways, routes, or fixes)."

Altitude Assignments
JO 7110.65, par. 4-3-2

✈
Phraseology Example

PHRASEOLOGY EXAMPLE – ALTITUDE NOT AVAILABLE					
N1217S C172/A T160 66 01	T→NE TL 330/⇒ V417 V<1710(20) KVKS P1705	↑60	MLU 40 **W**	KVKS DORTS V417 MLU V18 KSHV/0044	D-A

"November One Two One Seven Sierra, cleared from Vicksburg Airport to Shreveport Airport via depart northeast, turn left, fly heading three three zero until joining Victor Four Seventeen, Victor Four Seventeen Monroe as filed. **Climb and maintain six thousand. Four thousand is not available.** Clearance void if not off by one seven one zero. If not off by one seven one zero, advise Aero Center not later than one seven two zero of intentions. Verify this clearance will allow compliance with local traffic pattern and terrain or obstruction avoidance. Advise (ACID) Released for Departure, Contact AERO Center One Two Five Point Zero."

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☞ ***NOTE:*** *Click once to highlight the relevant portion of the phraseology.*

NOTE: The altitude is **not** available in this example because the requested altitude is below the MEA for V417 after DORTS. Other examples of when altitude is **not** available can include Special Use Airspace (SUA), traffic, FL180 when altimeters are below 29.92, etc.

⊙ Assign altitudes in the order of preference listed:

- Altitude requested by the pilot

- Nearest possible to the requested altitude and:

  – Inform the pilot when the requested altitude will be available, unless specified in a SID

  – If requested altitude is **not** available, inform the pilot:

    → What the final altitude is expected to be

    → When/where to expect the final altitude

✈
Phraseology

"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),

and if applicable,

(pilot's requested altitude) IS NOT AVAILABLE."

Continued on next page

Altitude Assignments (Cont'd)
JO 7110.65, par. 4-3-2

Phraseology Example

PHRASEOLOGY EXAMPLE – EXPECT ALTITUDE

N235			↑	↑110	HLI	KVKS VKS MHZ SQS HLI M41/ 0110	3365
LJ24/A							
T450		*V<1620(30)*					**D-A**
66							
073 01		KVKS P1600			(190 @ SQS)		

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"November Two Three Five, cleared from Vicksburg Airport to Holly Springs Airport via Vicksburg Radio Beacon, direct Magnolia, direct Sidon direct Holly Springs direct. **Climb and maintain one one thousand. Expect flight level one niner zero at Sidon.** Squawk three three six five. Clearance void if not off by one six two zero. If not off by one six two zero, advise Aero Center not later than one six three zero of intentions."

☞ **NOTE:** Click once to highlight the relevant portion of the phraseology.

☞ **NOTE:** Because this is in an automated radar environment and the aircraft is more than 5 minutes from the boundary, it is **not** necessary to coordinate before issuing clearance.

☞ **NOTE:** This is an example of a radar clearance and stripmarking.

DEPARTURE CLEARANCE *(Continued)*

Altitude Assignments (Cont'd)
JO 7110.65, par. 4-3-2

➔

Phraseology Example

PHRASEOLOGY EXAMPLE – WHEN TO EXPECT ALTITUDE					

N356UM			↑50	IGB	KVKS VKS MHZ IGB

N356UM
BE30/I
T260   *V<1155(1225)*
    66
191   01   KVKS P1125   (130 *10<D*)

↑50   IGB   KVKS VKS MHZ IGB
KSTF/0035   4431

D-A

"King Air Three Five Six Uniform Mike, cleared from Vicksburg Airport to Starkville Airport via Vicksburg Radio Beacon, direct Magnolia, direct Bigbee, direct. **Climb and maintain five thousand. Expect one three thousand one zero minutes after departure.** Squawk four four three one. Clearance void if not off by one one five five. If not off by one one five five, advise Aero Center not later than one two two five of intentions."

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☞ *NOTE: Click once to highlight the relevant portion of the phraseology.*

– Issue final altitude prior to aircraft reaching:

→ Fix

→ Time specified in clearance

NOTE: This clearance and stripmarking is used in a radar environment.

☞ **NOTE:** Because this is in an automated radar environment and the aircraft is more than 5 minutes from the boundary, it is **not** necessary to coordinate before issuing clearance.

Continued on next page

DEPARTURE CLEARANCE *(Continued)*

Knowledge Check

KNOWLEDGE CHECK
◇ **QUESTION:** What is the order of preference when assigning altitudes?
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☞ **NOTE:** Click once to show answer.

ANSWER: *Altitude requested by pilot, then nearest to requested altitude*

KNOWLEDGE CHECK
◇ **QUESTION:** What is the phraseology to issue the clearance as marked on the strip?

UAL34			↑100	HEZ	KJAN MHZ V245 AEX V212 LFK V13 CLEEP KIAH	
B733/A		↑				**D-A**
T450						
66		⟨0805⟩/				
02	~~EDC 0800~~	KJAN P0805	↑160	(160 @ *BARNE*)		ZHU

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

NOTE: Coordinate before issuing clearance.

ANSWER: *"United Thirty-Four, cleared to George Bush Intercontinental Airport via Victor Two Forty-Five, Alexandria, Victor Two Twelve, Lufkin, Victor Thirteen, CLEEP, direct. Climb and maintain one zero thousand. Expect one six thousand at BARNE."*

Knowledge Check (Cont'd)

KNOWLEDGE CHECK

◈ **QUESTION:** What is the phraseology to issue the clearance as marked on the strip?

N234			↑	↑*50*	MHZ	0M8 BLE MHZ MCB KLUL/0048	2465
C172/A							
T160		*V<1025(35)*					**D-A**
66							
294	01	0M8 P1008			(100 *10<D*)		
24							

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

☞ **NOTE:** Because this is in an automated radar environment and the aircraft is more than 5 minutes from the boundary, it is **not** necessary to coordinate before issuing clearance.

ANSWER: *"Cessna Two Three Four, cleared from Byerley Airport to Laurel Airport via Lake Providence Radio Beacon, direct Magnolia, direct McComb, direct. Climb and maintain five thousand. Expect one zero thousand one zero minutes after departure. Squawk two four six five. Clearance void if not off by one zero two five. If not off by one zero two five, advise Aero Center not later than one zero three five of intentions."*

ABBREVIATED DEPARTURE CLEARANCE

Conditions
JO 7110.65,
par. 4-3-3

⊙ Issue an abbreviated departure clearance if its use reduces verbiage and the following conditions are met:

NOTE: In this course, the nonradar lab will seldom use abbreviated departure clearances; however, the radar lab will use them frequently.

- Filed route of flight is unchanged prior to departure:

  – By pilot

  – By company

  – By operations officer

  – By input operator

  – In the stored flight plan program

- All ATC facilities concerned have sufficient route of flight information to exercise control responsibilities

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EXAMPLE – INSUFFICIENT ROUTE INFORMATION
When flight data processing is not available:

- The pilot filed: KJAN MHZ V18 KMLU
- If approach control receives only "CLEARED AS FILED," it could be interpreted as any of the following:
  – KJAN MHZ V427 KMLU
  – KJAN MHZ V417 KMLU
  – KJAN direct KMLU
  – KJAN MHZ V18 KMLU

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– Therefore, when JAN APCH and MLU APCH have **no** Flight Data Input Output (FDIO), "cleared as filed" may **not** be used

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Continued on next page

Conditions (Cont'd)
JO 7110.65, par. 4-3-3

- Destination airport information **must** be relayed between facilities:

    – When flight will depart IFR

    – Prior to departure

→
Phraseology Example

PHRASEOLOGY EXAMPLE – INTERPHONE CALLS

ZAE FDU or tower calls center:

"Request clearance for Northwest Four Sixty-One to Memphis Airport."

OR

Center preparing to initiate clearance to tower or ZAE FDU:

"Clearance for American Four Sixty-One to Memphis Airport."

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- Assigned altitude is **always** stated in an abbreviated clearance

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

- FRC - Full Route Clearance necessary, or

- FRC/(fix) - Full Route Clearance until the initial fix

    – It **must always** be the first item of intracenter remarks

NOTE: The remarks section of a flight plan, including FRC, will be covered in more detail in the Computer Messages lesson.

    – The controller **must** issue a full route clearance to the specified fix or the destination airport

⊙ Specify the destination airport in the clearance.

Conditions (Cont'd)
JO 7110.65, par. 4-3-3

✈ **Phraseology**

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

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

⊙ When a route revision is required, use one of the following:

✈ **Phraseology**

"CLEARED TO (destination) AIRPORT AS FILED, EXCEPT CHANGE ROUTE TO READ (amended route portion). MAINTAIN (altitude)."

or

"CLEARED TO (Destination) AIRPORT (SID and SID transition, as appropriate), THEN AS FILED. MAINTAIN (altitude)."

✈ **Phraseology Examples**

"Cleared to Dallas-Ft. Worth Airport as filed, except change route to read Monroe Cedar Creek 6 Arrival…"

"Cleared to Nashville Airport via direct Sidon Victor Five Thirty-Five, Holly Springs, then as filed…"

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

NOTE: At GWO, cleared as filed may be used in a nonradar environment as long as one or more fixes is specified so that the tower may issue traffic advisories and/or provide visual separation.

✈ **Phraseology Example**

"Cleared to Holly Springs Airport as filed via Sidon, maintain…"

PHRASEOLOGY EXAMPLE						
N411L			↑110	HLI	KGWO SQS V535 HLI V11 CNG KPAH	
LJ25/A T460		↑				D-A
66						
01		KGWO P1200		110		

"November Four One One Lima, cleared to Paducah Airport as filed, via Sidon. Climb and maintain one one thousand…"

27

ABBREVIATED DEPARTURE CLEARANCE *(Continued)*

Conditions (Cont'd)
JO 7110.65, par. 4-3-3

⊙ Restrictions for use of abbreviated departure clearances.

• Do **not** use abbreviated clearances:

– For pilots requesting detailed clearance

– For military operations conducted within:

→ Altitude reservations

→ Stereo routes

→ Operations above FL600

→ Other operations requiring special handling

NOTE: Military operations will be covered in later lessons and courses.

– When "FRC" appears in the remarks section (space 26) of the flight progress strip

---

Knowledge Check

> **KNOWLEDGE CHECK**
>
> ◈ **QUESTION:** Which of the following is **not** a condition for issuing an abbreviated departure clearance?
>
> A. The destination airport must be relayed between facilities prior to departure.
>
> B. All ATC facilities concerned have sufficient route information to exercise control responsibilities.
>
> C. The clearance must be confirmed by the pilot.
>
> 28

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

ANSWER: C

DEPARTURE RESTRICTIONS

Clearance Void Time
JO 7110.65, par. 4-3-4

➔
Phraseology Example

<div>

CLEARANCE VOID TIME EXAMPLE

N519BS		⚠ 150/⇒V427 ↑	↑90	MHZ	0M8 MHZ V18 KMEI/0043	
C182/A			X18NW MHZ		V427	
T180		V<1540(50)	‡60			D-A
66	~~EDC~~	1530 /				
01	~~1530~~	0M8 P1530		90		

"Cessna Five One Niner Bravo Sierra, cleared from Byerley Airport to Meridian Airport via when entering controlled airspace, fly heading one five zero until joining Victor Four Twenty-Seven, Victor Four Twenty-Seven, Magnolia, then as filed. Cross One Eight miles northwest Magnolia VORTAC established on Victor Four Twenty-Seven at or above six thousand. Climb and maintain niner thousand. **Clearance void if not off by one five four zero. If not off by one five four zero, advise Aero Center not later than one five five zero of intentions.** Verify this clearance will allow compliance with local traffic pattern and terrain or obstruction avoidance. Advise (ACID) Released for Departure, Contact AERO Center One Two Five Point Zero.""

N519BS	0M8 1530	48	↑90	MEI	0M8 MHZ V18 KMEI/0043	
C182/A			X18NW ‡60		V427	
T180		15				
66						
02	+18	MHZ	↑90	90		

29

</div>

☞ **NOTE:** *Click once to highlight the relevant portion of the phraseology.*

NOTE: Coordinate before issuing clearance.

⊙ Assign the following for separation or to restrict/regulate departure flows:

- Clearance void time

  – At airports **not** served by a tower:

    → Provide alternative instructions

    → Request the pilot to advise ATC of intentions **no later than** 30 minutes after the clearance void time if **not** airborne

☞ **NOTE:** Discuss common practices used in field facilities concerning clearance void times and why 30 minutes may be considered excessive. Explain how different times work in different situations, for example a controller may elect to use a very short clearance void time in order to ensure that an aircraft departs prior to an arrival.

    → The facility delivering a void time to a pilot **must** issue a time check

Continued on next page

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DEPARTURE RESTRICTIONS *(Continued)*

Clearance Void Time (Cont'd)
JO 7110.65,
par. 4-3-4

✈

Phraseology

"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 nearest quarter minute)."

Note: When issuing a void time if the time to "Advise" is in the following hour the time is written using four digits

➢ V<1655(1700)

Continued on next page

DEPARTURE RESTRICTIONS *(Continued)*

Hold For Release
JO 7110.65, par. 4-3-4

✈

Phraseology Example

HOLD FOR RELEASE EXAMPLE 1

N359DB		↑	↑160 X8NE SQS ↓70	UJM	KGWO SQS V9 UJM KSUS/0124	
PAY3/A T260 66		HFR 2 min (2214)/				D-A
01		KGWO P2214		(↑160)	160	

"November Three Five Niner Delta Bravo, cleared to Spirit of St. Louis Airport as filed via Sidon. Cross eight miles northeast Sidon VORTAC at or below seven thousand. Climb and maintain one six thousand. **Hold for release, expect two minute departure delay."**

N359DB		↑	↑160 X8NE SQS ↓70	UJM	KGWO SQS V9 UJM KSUS/0124	
PAY3/A T260 66		HFR 2 min (2214)/				D-A
01		KGWO P2214		(↑160)	160	

To release the aircraft to another controller:
"**November Three Five Niner Delta Bravo, released**."

30

☞ *NOTE: Click once to highlight the relevant portion of the phraseology.*

NOTE: Coordinate before issuing clearance.

- Hold For Release (HFR)

    – Use this to inform a pilot or controller that a departure clearance is **not** valid until additional instructions are received

    – Include departure delay information

✈
Phraseology

"(Clearance information) HOLD FOR RELEASE, EXPECT (time in hours and/or minutes) DEPARTURE DELAY."

✈
Phraseology Example

"FedEx Twenty, cleared to Memphis Airport as filed, maintain one two thousand. Hold for release, expect one zero minute departure delay."

    – Release aircraft as soon as conditions permit

        → To another controller:

✈
Phraseology

"(Aircraft identification) RELEASED."

Continued on next page

Hold For Release (Cont'd)
JO 7110.65, par. 4-3-4

Phraseology Example

HOLD FOR RELEASE EXAMPLE 2

N53G			↑80	HEZ	KVKS HEZ V245 KAEX/0033	
BE60/A		*HFR 10 min*			*(HEZ026R)*	
T210						D-A
66		*(1218)* /				
	01	KVKS P1218	*(↑80)*	80		ZHU

"November Five Three Golf, cleared from Vicksburg Airport to Alexandria Airport via Natchez zero two six radial, Natchez, then as filed. Climb and maintain eight thousand. Verify this clearance will allow compliance with local traffic pattern and terrain or obstruction avoidance. **Hold for release, expect one zero minute departure delay.**"

N53G			↑80	HEZ	KVKS HEZ V245 KAEX/0033	
BE60/A		*HFR 10 min*			*(HEZ026R)*	
T210		*V<1225(30)*				D-A
66		*(1218)* /				
	01	KVKS P1218	*(↑80)*	80		ZHU

To release the aircraft to a Flight Data Communication Specialist:
"**Advise November Five Three Golf, released for departure.** Clearance void if not off by one two two five. If not off by one two two five, advise Aero Center not later than one two three zero of intentions."

31

☞ *NOTE: Click once to highlight the relevant portion of the phraseology.*

NOTE: Coordinate before issuing clearance.

→ To a Flight Data Communication Specialist:

Phraseology

"ADVISE (aircraft identification) RELEASED FOR DEPARTURE."

→ To a pilot at an airport **not** served by a control tower:

Phraseology

"(Aircraft identification) RELEASED FOR DEPARTURE."

DEPARTURE RESTRICTIONS *(Continued)*

Release Time
JO 7110.65,
par. 4-3-4,
Pilot/Controller
Glossary

📖   **Release Time** is a departure time restriction issued to a pilot to separate a departing aircraft from other traffic.

- Release time

    – Issue this to specify the earliest time an aircraft may depart

    – The facility issuing a release time to a pilot **must** include a time check

✈
Phraseology

"(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)."

✈
Phraseology Example

"Huffy Four Five, released for departure at one two one two."

Expect Departure Clearance
JO 7340.2
✈
Phraseology

⊙   When **not** able to issue a clearance at time of request, issue an Expect Departure Clearance (EDC) at the time the clearance can be expected from ATC.

"(ACID) EXPECT DEPARTURE CLEARANCE AT (TIME)."

✈
Phraseology Example

"November Two Five Lima Romeo expect departure clearance at one three one seven."

☞ **NOTE:** Discuss the difference between an EDCT program from TMU and the use of EDC as a technique to coordinate and formulate clearances.

DEPARTURE RESTRICTIONS *(Continued)*

Expect Departure Clearance Time
JO 7110.65, par. 4-3-4 d & e, Pilot/Controller Glossary

📖   **Expect Departure Clearance Time (EDCT)** is the runway release time assigned to an aircraft in a traffic management program and shown on the flight progress strip as an EDCT.

⊙   When EDCTs are assigned through traffic management programs multiple facilities are required to meet timing criteria.

⊙   Do not release an aircraft on their assigned EDCT if a ground stop for that aircraft is in effect, unless approval from the ground stop originator is received.

Ground Stop
JO 7110.65, par. 4-3-5, Pilot/Controller Glossary

📖   **Ground Stop (GS)** The GS is a process that requires aircraft that meet a specific criteria to remain on the ground. The criteria may be airport specific, airspace specific, or equipment specific; for example, all departures to San Francisco, or all departures entering Yorktown sector, or all Category I and II aircraft going to Charlotte. GSs normally occur with little or **no** warning.

⊙   If a Ground Stop (GS) applicable to an aircraft is in effect, do **not** release the aircraft without approval of the originator of the GS.

Call for Release
JO 7110.65, Pilot/Controller Glossary

📖   **Call for Release (CFR)** Wherein the overlying ARTCC requires a terminal facility to initiate verbal coordination to secure ARTCC approval for release of a departure into the en route environment.

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

Delay Sequencing
JO 7110.65, pars. 4-3-6, 4-3-7

⊙   If aircraft elect to take delay on the ground:

- Issue departure clearances in the order of the original requests, if practicable

⊙   Inform approach control facilities and/or towers of any anticipated delays.

DEPARTURE RESTRICTIONS *(Continued)*

Knowledge Check

<table>
<tr><td colspan="2" align="center">KNOWLEDGE CHECK</td></tr>
<tr><td>◇</td><td>QUESTION: What is the phraseology to release an aircraft to another controller?

32</td></tr>
</table>

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

ANSWER: "(ACID) RELEASED"

<table>
<tr><td colspan="2" align="center">KNOWLEDGE CHECK</td></tr>
<tr><td>◇</td><td>QUESTION: What is the phraseology to release an aircraft to an FDU specialist?

33</td></tr>
</table>

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

ANSWER: "ADVISE (ACID) RELEASED FOR DEPARTURE."

<table>
<tr><td colspan="2" align="center">KNOWLEDGE CHECK</td></tr>
<tr><td>◇</td><td>QUESTION: What is the phraseology to issue a release directly to a pilot at an airport with no control tower?

34</td></tr>
</table>

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

ANSWER: "(ACID) RELEASED FOR DEPARTURE."

DEPARTURE RESTRICTIONS *(Continued)*

> **KNOWLEDGE CHECK**
>
> ◇ **QUESTION:** When you are unable to issue a departure clearance at the time of request, what phraseology is used to advise the aircraft when it can expect a departure clearance from ATC?
>
> 35

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

ANSWER: *"(ACID) EXPECT DEPARTURE CLEARANCE AT (TIME)."*

> **KNOWLEDGE CHECK**
>
> ◇ **QUESTION:** What is the phraseology to advise another controller or pilot a departure clearance is not valid until additional instructions are received?
>
> 36

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

ANSWER: *"(Clearance information) HOLD FOR RELEASE, EXPECT (time in hours and/or minutes) DEPARTURE DELAY."*

DEPARTURE RESTRICTIONS *(Continued)*

KNOWLEDGE CHECK

◈ **QUESTION:** What facility is responsible for issuing a time check to a pilot whose clearance includes a void time?

    A. The facility delivering the void time

    B. ARTCC

    C. The facility that establishes communications with the pilot once airborne

37

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

ANSWER: A

KNOWLEDGE CHECK

◈ **QUESTION:** When aircraft elect to delay on the ground, how should a clearance be issued?

    A. Faster aircraft first

    B. Air carrier aircraft receive priority

    C. In order of request, if practicable

38

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

ANSWER: C

COORDINATION WITH RECEIVING FACILITY

Coordination
JO 7110.65,
par. 4-3-8

⊙ Coordination is required prior to departure when the departure point is less than 15 minutes flying time from the transferring facility's boundary.

- If automated data transfer is used, the time **may be reduced** to 5 minutes or replaced with mileage from the boundary parameter when agreeable to both facilities

Information Forwarded to Receiving Facility
JO 7110.65,
pars. 2-2-6, 4-3-8

⊙ Forward the following information to the receiving facility:

- Aircraft identification
- Point of departure
- Either:

  – Assumed departure time
  – Subsequent fix posting time

- Altitude data and applicable restrictions
- Actual departure time

  – When time differs by **more than** 3 minutes from assumed departure time

- ETA at destination airport, except:

  – Military
  – Scheduled air carriers

Information Forwarded to Receiving Facility (Cont'd)
JO 7110.65, pars. 2-2-6, 2-4-12, 4-3-8

COORDINATION EXAMPLE 1

Coordination of Departure with Multiple Strips

N910PB		↑		MHZ	KGWO SQS V9 MCB KMSY/0103	
C441/A				↳		
T250						
66	EDC	*1652* /				
01	*1652*	KGWO P1652		160		

(In SQS bay)

N910PB	GWO P1652	⟨10⟩		MCB	KGWO SQS V9 MCB KMSY/0103	
C441/A	*1652*	17		↓		
T250						
66						
02	+18	MHZ		⟨↑160⟩ 160		ZHU

(In MHZ bay)

39

☞ **NOTE:** Discuss coordinating time and altitude information from the Magnolia strip.

✈ **Phraseology Example**

☞ **NOTE:** Discuss coordinating time and altitude information from the Magnolia strip. ***Also, caller states the type of coordination to be accomplished when advantageous. For example, handoff or APREQ.***

D66:   "Picayune Low, Jackson Low APREQ."

PCU Low: "Picayune Low."

D66:   "In suspense, November Niner One Zero Papa Bravo, estimated Magnolia VORTAC at one seven one zero, climbing to one six thousand."

PCU Low: "November Niner One Zero Papa Bravo climbing to one six thousand approved, GB."

D66:   "LR."

COORDINATION WITH RECEIVING FACILITY *(Continued)*

COORDINATION EXAMPLE 2 **Coordination of Assumed Departure Time**					

N54DB
 	
 C172/A
 T150
    66
      01
 40
		↑
		
		 1600 /
		 KJAN P1600
				GLH
				 ↗
				 80
					KJAN MHZ V74 GLH V278
					 KTXK/0058

			↑80		

☞ **NOTE:** Discuss coordinating the assumed departure time and altitude from the proposal strip.

✈
Phraseology Example

D66:   "D67, D66 APREQ."

D67:   "D67."

D66:   "In suspense, November Five Four Delta Bravo, assumed Jackson departure one six zero zero, climbing to eight thousand."

D67:   "November Five Four Delta Bravo climbing to eight thousand approved, BH."

D66:   "LR."

AIRFILE AIRCRAFT

Guidelines
JO 7110.65,
par. 4-2-9

⊙ 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

- Instruct pilot to contact Aero Center FDU to file IFR flight plan

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

EXERCISE: STRIPMARKING FOR DEPARTURES

Exercise

	DEPARTURES EXERCISE
	Purpose: to practice marking flight progress strips for departure clearances **Directions:** complete the strips based on information provided by instructor

41

Directions   In this exercise, you will practice marking strips based on departure clearances.

Your instructor will provide a set of flight progress strips. Students will be called to the board one at a time to coordinate and issue a clearance for each aircraft while marking the corresponding strip(s) appropriately.

☞ **NOTE:** *This exercise requires one set of strips for every student.*
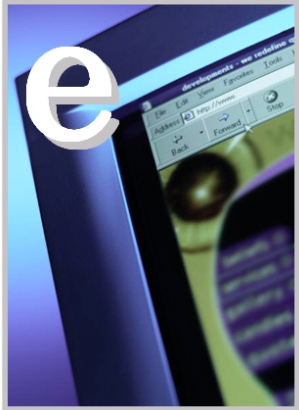
Use the board to display the strips a few at a time. Preplan any crossing restrictions and mark this information on the strips for the students. Call the students to the board one at a time to coordinate and issue a clearance for each aircraft while they mark the corresponding strip(s) appropriately.

ACTIVITY: DEPARTURE COORDINATION AND CLEARANCES

Activity

DEPARTURE COORDINATION AND CLEARANCES ACTIVITY
Purpose: to ensure understanding of departure coordination, clearance procedures, and phraseology
42

☞ **NOTE:** Have the students access the IET eLearning menu and select the activity for Lesson 12.

Description   In this activity, you will practice identifying and using the correct phraseology for departure clearances. In addition, you will work with the stripmarking associated with departures.

Directions   Access the IET eLearning menu. Select **Lesson 12 – Departure Procedures**. Click on the title to launch the **Departure Coordination and Clearances** 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.

IN CONCLUSION

Lesson Review

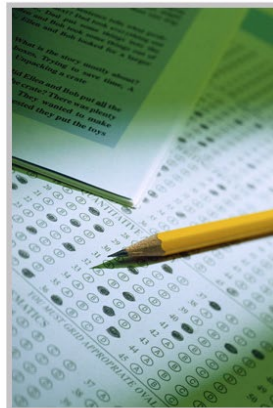| LESSON REVIEW |
| --- |
| **The following topics were covered in this lesson:** |
| – Initial departure instructions |
| – Abbreviated departure clearance |
| – Departure restrictions |
| – Coordination with receiving facility |
| 43 |

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

End-of-Lesson Test

END-OF-LESSON TEST
Departure Procedures
44

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

MAIN MENU | RESOURCES | EXIT

- ⊙ 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

BACK ◀ 2 of 10 ▶ NEXT

- ⊙ 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.

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

Lesson Title	Lesson 12, Departure Procedures

eLearning Objective	The objective of this eLearning activity is to reinforce coordinating departures and completing departure clearances.

eLearning Activity

⊙ Lesson 12 contains one eLearning Activity:

- Departure Coordination and Clearances

Activity Description

In this activity, students are presented with marked flight strips and a series of questions verifying coordination and completing the departure clearance. Then, students are presented with audios of departure clearances and asked to select the audio that matches the marked flight strip. Finally, students are presented with marked flight strips and asked to select the strip that matches the audio of the departure clearance.

Activity Content

⊙ Page 1 contains an activity introduction.

⊙ Pages 2-4 all refer to the same flight strip.

- Page 2 contains a series of multiple choice questions regarding the departure flight strip.

- Page 3 contains an activity in which students **must** complete the departure coordination using phraseology from various drop-down menus.

- Page 4 contains an activity in which students **must** complete the departure clearance using phraseology from various drop-down menus.

Continued on next page

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

Activity Content (Cont'd)

- ⊙ Pages 5-7 all refer to the same flight strip.

  - Page 5 contains a series of multiple choice questions regarding the departure flight strip.

  - Page 6 contains an activity in which students **must** complete the departure coordination using phraseology from various drop-down menus.

  - Page 7 contains an activity in which students **must** complete the departure clearance using phraseology from various drop-down menus.

- ⊙ Pages 8-10 refer to the same flight strip.

  - Page 8 contains an activity in which students **must** complete the departure coordination using phraseology from various drop-down menus.

  - Page 9 contains a series of multiple choice questions regarding the departure flight strip.

  - Page 10 contains an activity in which students **must** complete the departure clearance using phraseology from various dropdown menus.

- ⊙ Pages 11-13 are multiple choice audio questions. The interaction includes one marked flight strip and multiple audio files. Students **must** compare the audio files to the flight strip and select the audio that represents the departure clearance.

- ⊙ Pages 14-16 are multiple choice flight strip questions. The interaction includes one audio file of a departure clearance and multiple flight progress strips. Students **must** compare the audio file to the flight strips and select the strip that represents the departure clearance.

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

Activity Specifics

- ◉ Multiple choice questions

  - • On pages 2-16, students have one attempt to correctly respond to questions and receive feedback.

- ◉ Fill-in-the-blank drop-downs

  - • Students **must** select one response from each of the drop-down lists before clicking **DONE**.

  - • Feedback is given using correct and incorrect icons next to each field.

  - • After viewing feedback, students should click **PLAY AUDIO** at the end of each question series to listen to the correct coordination and view the correct text.

- ◉ Audio multiple choice interactions

  - • On audio multiple choice interactions, students **must** listen to all audio files on a screen before the answer can be selected. Audio files can be played multiple times, if necessary.