



**Federal Aviation
Administration**

Initial En Route Qualification Training

Lesson 14 Holding Procedures

Course 50148001

LESSON PLAN DATA SHEET

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

LESSON TITLE: HOLDING PROCEDURES

DURATION: 7+00 HOURS

DATE REVISED: 2025-02
VERSION: V.2025-02

REFERENCE(S): FAA ORDER JO 7110.65, AIR TRAFFIC CONTROL;
FAA ORDER JO 8260.3, HOLDING PATTERN CRITERIA;
AERONAUTICAL INFORMATION MANUAL (AIM)

HANDOUT(S): hold.f2k - HOLDING EXERCISE STRIPS

**EXERCISE(S)/
ACTIVITY(S):** EXERCISE: PRACTICING WITH HOLDING STRIPS

**END-OF-LESSON
TEST:** YES

**PERFORMANCE
TEST:** NONE

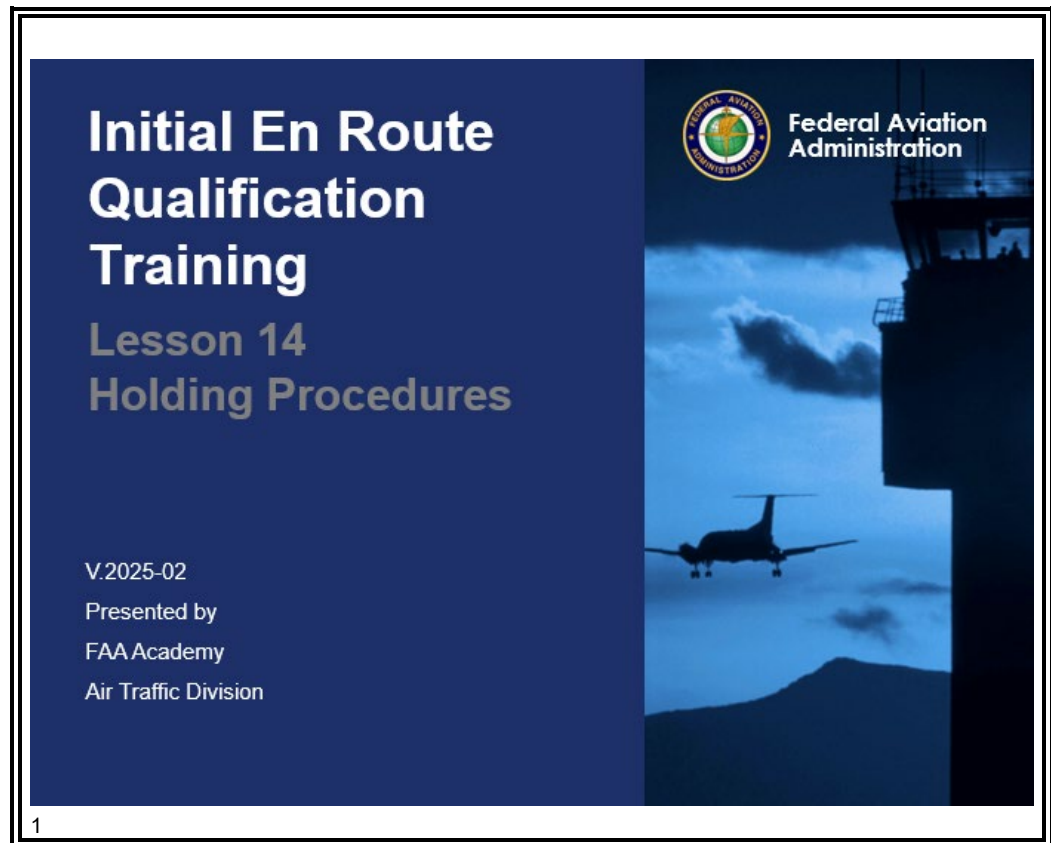
MATERIALS: NONE

**OTHER PERTINENT
INFORMATION:**

DISCLAIMER

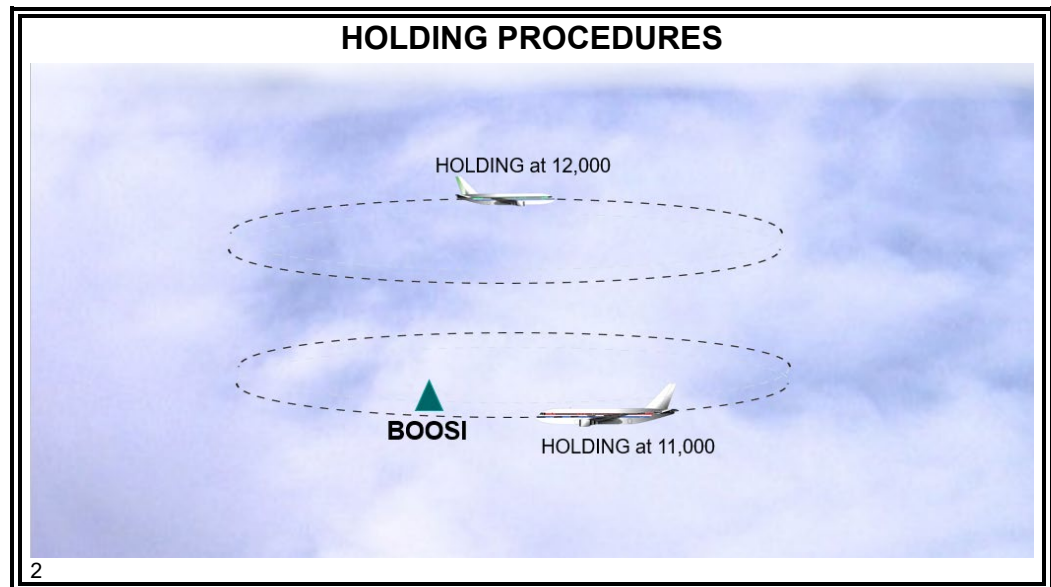
Air Traffic training materials are provided by the Federal Aviation Administration Office of Technical Training. The training materials are subject to revision, amendment and/or corrections. The materials are to be used for the intended purpose only and are not intended for distribution beyond the purpose of training. Updates (if required) shall be provided through a formal distribution process. Unsolicited updates will not be processed.

INTRODUCTION



You have learned procedures for issuing departure clearances, and making altitude and route assignments. However, there are times, such as for weather and traffic saturation, when holding aircraft is required to promote safe and efficient traffic flow. You will now learn the procedures for issuing holding instructions.

INTRODUCTION *(Continued)*



Holding is one of the tools used by controllers to effectively separate delayed aircraft, sequence traffic for terminal arrivals, and maintain a safe and orderly sector. Holding is most commonly used for weather delays, in-trail spacing, and managing sector volume.

Purpose

In this lesson we will discuss when and how to issue holding instructions. We will cover phraseology and stripmarking procedures used in various holding situations. In addition, we will discuss time requirements for issuing holding instructions and clearance beyond a clearance limit.

INTRODUCTION *(Continued)*

Lesson Objectives

LESSON OBJECTIVES

- On an End-of-Lesson Test and in accordance with FAA Orders JO 7110.65 and 8260.3, you will identify rules, procedures, and phraseology for holding aircraft.

3

HOLDING

Applications

- ⊙ Separation
 - En route
 - Arrivals/departures
 - ⊙ Sequencing
 - ⊙ Weather/meteorological conditions
 - ⊙ Traffic Management
 - **Traffic management initiatives** are measures designed to adjust the flow of traffic into a given airspace, along a given route, or bound for a given airport to ensure the most effective utilization of the airspace.
 - Function of Traffic Management Unit (TMU)
-

Terms and Definitions

JO 7110.65,
Pilot/Controller
Glossary



A **hold procedure** is a predetermined maneuver, which keeps aircraft within a specified airspace while awaiting further clearance from air traffic control.



A **holding fix** is a specified fix identifiable to a pilot by NAVAIDs or visual reference to the ground used as a reference point in establishing and maintaining the position of an aircraft while holding.

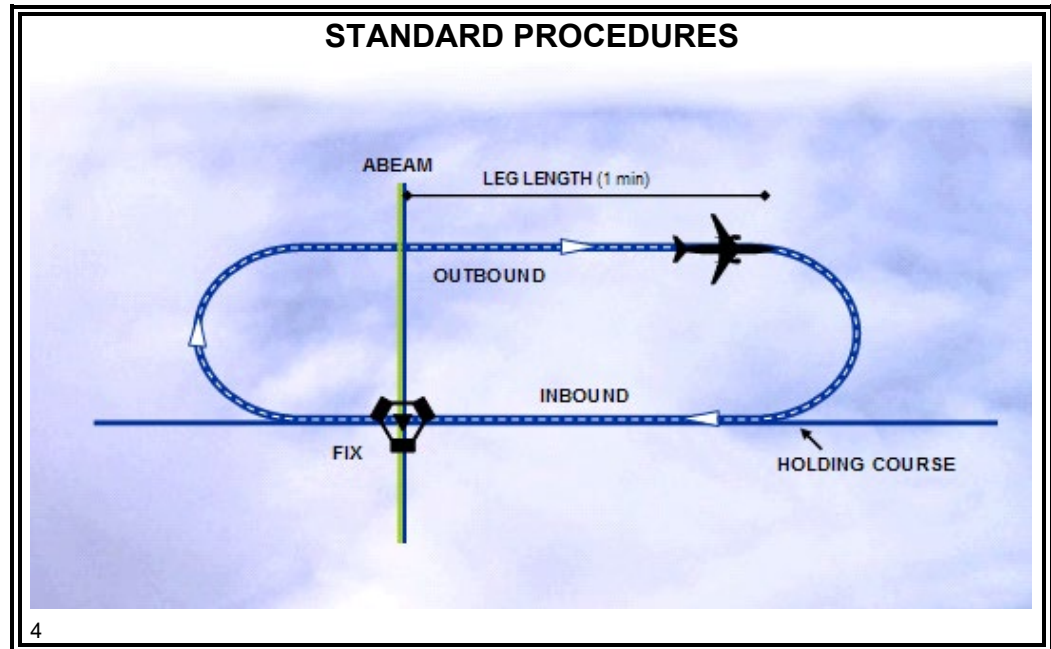


Expect Further Clearance (EFC) (time) is the time a pilot can expect to receive clearance beyond a clearance limit.

HOLDING PATTERNS

Standard Procedures

AIM, par. 5-3-8;
JO 7110.65,
Pilot/Controller
Glossary



☉ Turns

- Standard pattern
 - Right turns
- Nonstandard pattern
 - Left turns

☉ Leg length

- At or below 14,000 feet MSL
 - 1 minute
- Above 14,000 feet MSL
 - 1 ½ minutes

HOLDING PATTERNS *(Continued)*

Templates JO 8260.3

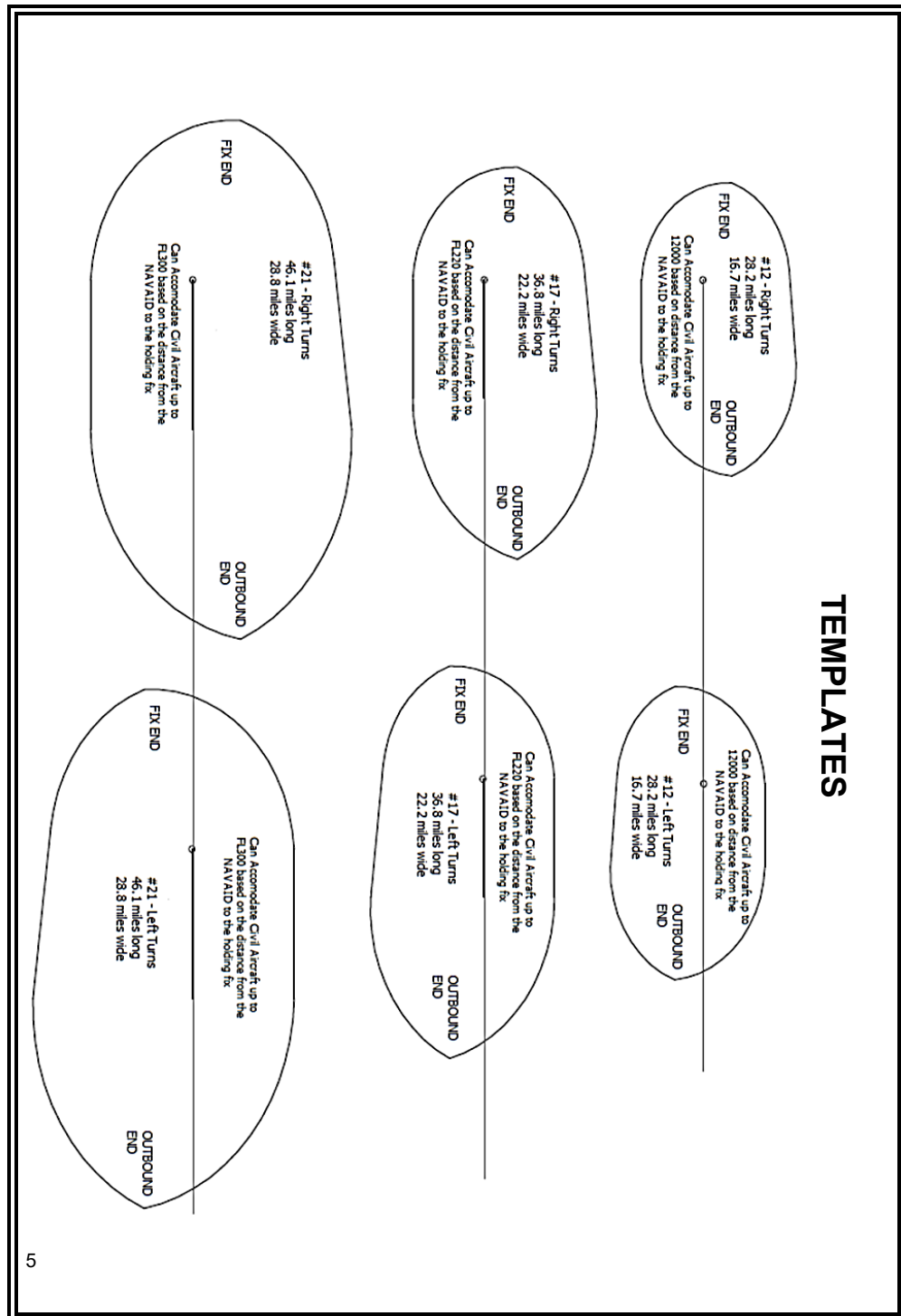
- ⊙ How much airspace is protected for an aircraft in holding is determined by:
 - Aircraft speed – the faster the speed the more airspace needed
 - Civil aircraft hold between 200 Knot Indicated Airspeed (KIAS) and 265 KIAS
 - Military aircraft hold at 230 KIAS with exceptions for certain aircraft
 - All aircraft may be held at lower airspeeds if issued by controller or published with a speed restriction
 - Aircraft altitude – the higher the altitude the more airspace needed
 - Distance of Holding Fix from NAVAID – the further the distance the more airspace needed
- ⊙ Holding pattern templates have been developed to aid controllers and airspace specialist to more easily determine the dimensions of protected airspace for each holding situation.
 - There are 31 holding pattern templates that vary in size based the aircraft configuration

NOTE: At Aero Center, holding pattern templates are used at KJAN, KGWO, KMLU, and KVKS to determine the amount of airspace to protect for aircraft in holding. The templates will be provided to you in the Lateral Separation lesson.

Continued on next page

HOLDING PATTERNS (Continued)

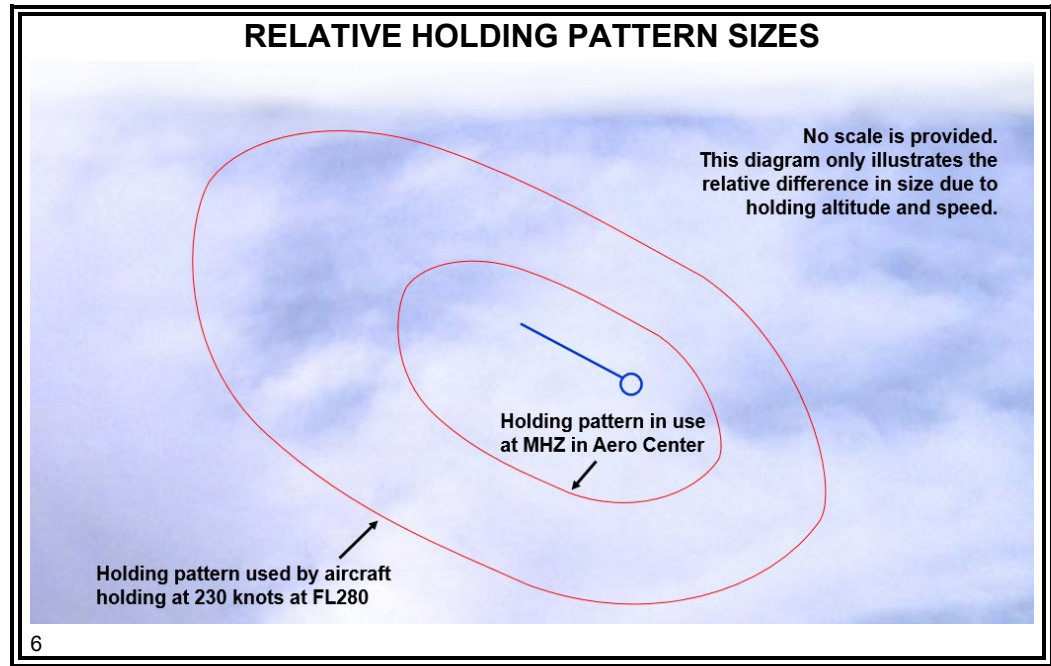
Templates
(Cont'd)
JO 8260.3



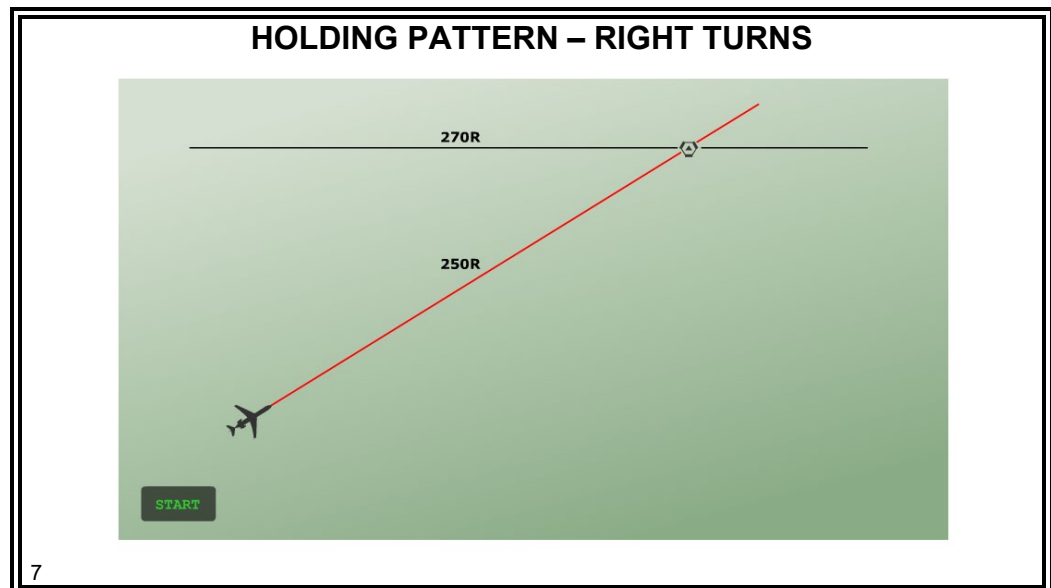
- This slide shows several examples of holding pattern templates and how much airspace they encompass.

HOLDING PATTERNS *(Continued)*

Example

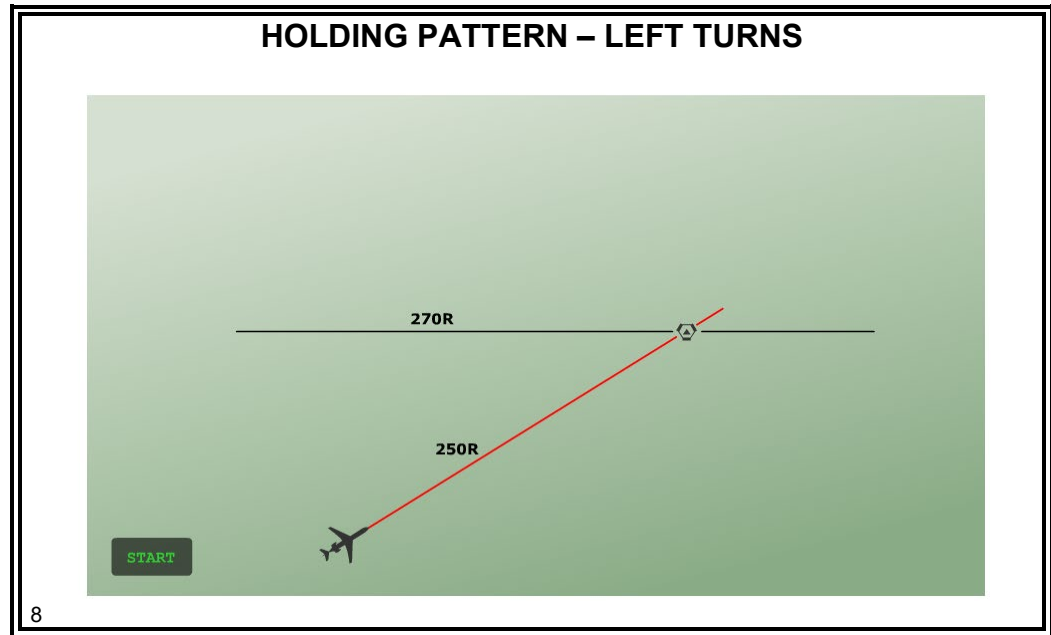


Right Turns



HOLDING PATTERNS *(Continued)*

Left Turns



HOLDING PATTERNS *(Continued)*

Noncharted Pattern

JO 7110.65,
par. 4-6-4



Phraseology Example

HOLDING INSTRUCTIONS

Clearance Limit Issued with Holding Instructions

N148BY	IGB 1059	21 ↓	60✓	KGWO <u>1126</u>	KMGM IGB V278 SQS KGWO/1126	VR H SW 256 LT 1136
BE10/A T240		11				
66		21				
04		SQS			67⇄60	

“November One Four Eight Bravo Yankee, cleared to Sidon VORTAC, hold southwest on the two five six radial, left turns. Expect further clearance one one three six.”

9

NOTE: The holding pattern airspace (HPAS) at Sidon VORTAC overlaps D67. The protected airspace of holding patterns will be taught in Lateral Separation.

⊙ When issuing holding instructions, specify:

- Holding fix/waypoint
 - May be omitted if included at the beginning of the transmission as the clearance limit
- Direction of holding from fix/waypoint using eight compass points
- Radial, course, bearing, track, azimuth, and airway or route on which aircraft is to hold



Phraseology

“HOLD (direction) OF (fix/waypoint) ON (specified radial, course, bearing, track, airway, azimuth(s), or route)”

Continued on next page

HOLDING PATTERNS *(Continued)*

Noncharted
Pattern
(Cont'd)

✈
Phraseology
Example

HOLDING INSTRUCTIONS							
Leg Length is Specified							
N56Q	MLU 0017	48 00	↓	90✓	KJAN	KSHV./MLU V18 MHZ KJAN	1445
BE65A T165 G165 66 004 01		48 MHZ					HEDUD SW V18 0108

10

“November Five Six Quebec, cleared to HEDUD intersection, hold southwest on Victor Eighteen, one zero mile leg. Expect further clearance zero one zero eight.”

- Leg length
 - In miles if DME or RNAV is to be used
 - In minutes if pilot requests, or controller considers it necessary

If leg length is specified:

“(Number of minutes/miles) MINUTE/MILE LEG.”

✈
Phraseology

Continued on next page

HOLDING PATTERNS *(Continued)*

**Noncharted
Pattern
(Cont'd)**
JO 7110.65,
pars. 4-6-1, 4-6-4

✈
**Phraseology
Example**

LEFT TURNS						
N989GH	MLU 1118	31 11	↓	110✓	VKS 1136	KDTN MLU V417 DORTS VKS KVKS/1136
MU2/A T220		31				
66						
01		DORTS				

11

“November Niner Eight Niner Golf Hotel, cleared to Vicksburg Radio Beacon, hold southwest on the one niner five bearing from the Vicksburg Radio Beacon, left turns. Expect further clearance one one four six.”

- Direction of turns if:
 - Left turns are to be made
 - Pilot requests
 - Controller deems it necessary

If direction of turn is specified:

✈
Phraseology

“LEFT/RIGHT TURNS.”

- Expect Further Clearance (EFC)

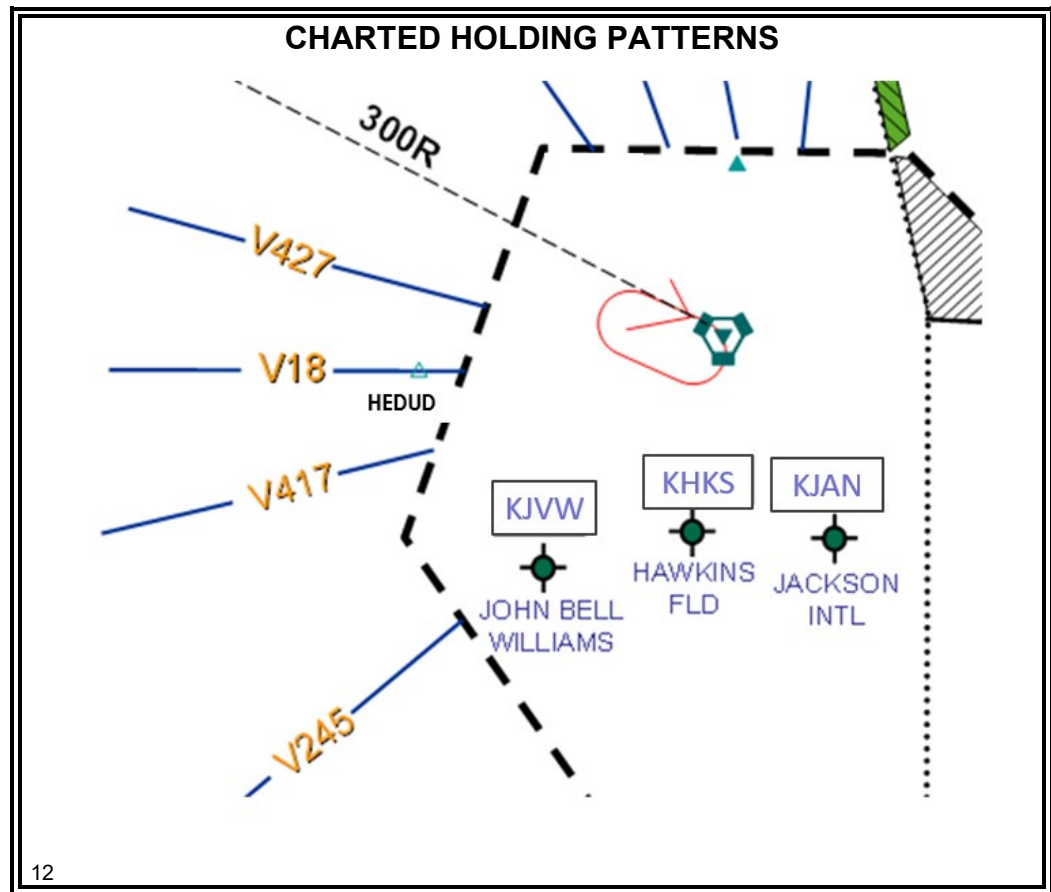
✈
Phraseology

“EXPECT FURTHER CLEARANCE (time).”

HOLDING PATTERNS (Continued)

Charted Pattern

JO 7110.65,
par. 4-6-1



- ⦿ Omit all holding instructions except charted direction and statement “as published.”



Phraseology

“CLEARED TO (fix), HOLD (direction) AS PUBLISHED.”

- **Always** issue complete holding instructions when the pilot requests them

NOTE: Most generally used holding patterns are published on low/high altitude en route charts, area charts, and STAR charts.

Continued on next page

HOLDING PATTERNS *(Continued)*

Charted Pattern (Cont'd)

JO 7110.65,
par. 4-6-1



Phraseology Example

HOLDING INSTRUCTIONS

Charted Pattern

BTA3567	HEZ 1113	29 ↓	150✓	KJAN	KIAH./HEZ V245 MHZ KJAN	H ^{NW} 1139
E120/A T280		11				
66		29				
01		MHZ	↓ 60		BTA- JETLINK	26 SW

“Jet Link Thirty-Five Sixty-Seven, cleared to Magnolia VORTAC, hold northwest as published. Expect further clearance one one three niner.”

13

- ⦿ When a holding pattern is charted, issue Expect Further Clearance (EFC) time if delay is expected.



Phraseology

“CLEARED TO (fix), HOLD (direction), AS PUBLISHED, EXPECT FURTHER CLEARANCE (time).”

HOLDING PATTERNS *(Continued)*

Knowledge Check

KNOWLEDGE CHECK

❖ **QUESTION:** When issuing holding instructions, you should always specify _____.

- A. direction of turns and holding fix
- B. direction of turns, if left turns are to be made
- C. leg length in minutes or miles

14

KNOWLEDGE CHECK

❖ **QUESTION:** When issuing holding instructions, what is the first item specified after the clearance limit?

- A. Radial, airway, or route on which to hold
- B. Leg length
- C. Direction of holding from fix

15

Continued on next page

HOLDING PATTERNS *(Continued)*

Knowledge
Check
(Cont'd)

KNOWLEDGE CHECK

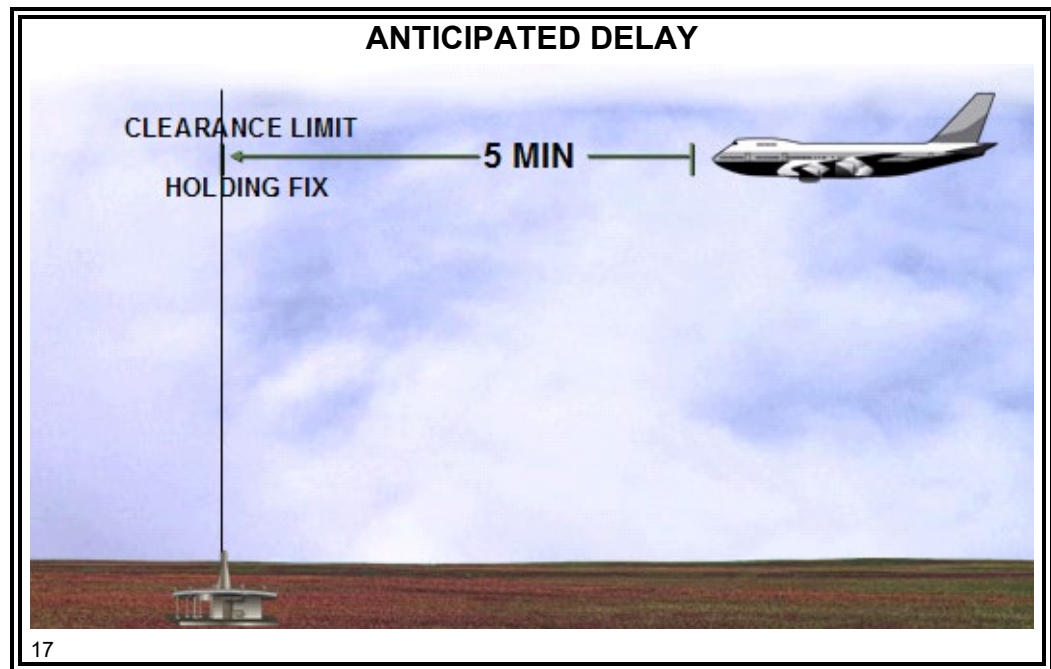
◆ **QUESTION:** When would you specify direction of turns in a holding pattern?

16

CLEARANCE TO HOLDING FIX

Anticipated Delay

JO 7110.65,
par. 4-6-1



- ⦿ When delay is expected, issue holding instructions at least 5 minutes before aircraft estimate to reach clearance limit.
 - Provides pilot time to start speed reduction
 - Compensates for small differences in pilot/center ETAs at the holding fix
- ⦿ Issue the following items (as applicable):
 - Clearance limit
 - If any part of route beyond a clearance limit differs from the last routing cleared, issue the route the pilot can expect beyond the clearance limit



Phraseology

“EXPECT FURTHER CLEARANCE VIA (routing).”

Continued on next page

CLEARANCE TO HOLDING FIX *(Continued)*

Anticipated Delay

(Cont'd)

JO 7110.65,
par. 4-6-1



Phraseology

- Holding instructions
 - May be eliminated when you inform the pilot that **no** delay is expected

“CLEARED TO (fix), NO DELAY EXPECTED.”

- Expect Further Clearance (EFC)
 - Do **not** issue if **no** delay is expected
 - If delay is longer than anticipated, issue new EFC prior to expiration of current EFC



Phraseology

“EXPECT FURTHER CLEARANCE (time).”

Knowledge Check

KNOWLEDGE CHECK

❖ **QUESTION:** United Two Ten is estimating Magnolia VORTAC at 1623. What is the latest time holding instructions should be issued?

- A. 1613
- B. 1618
- C. 1620

18

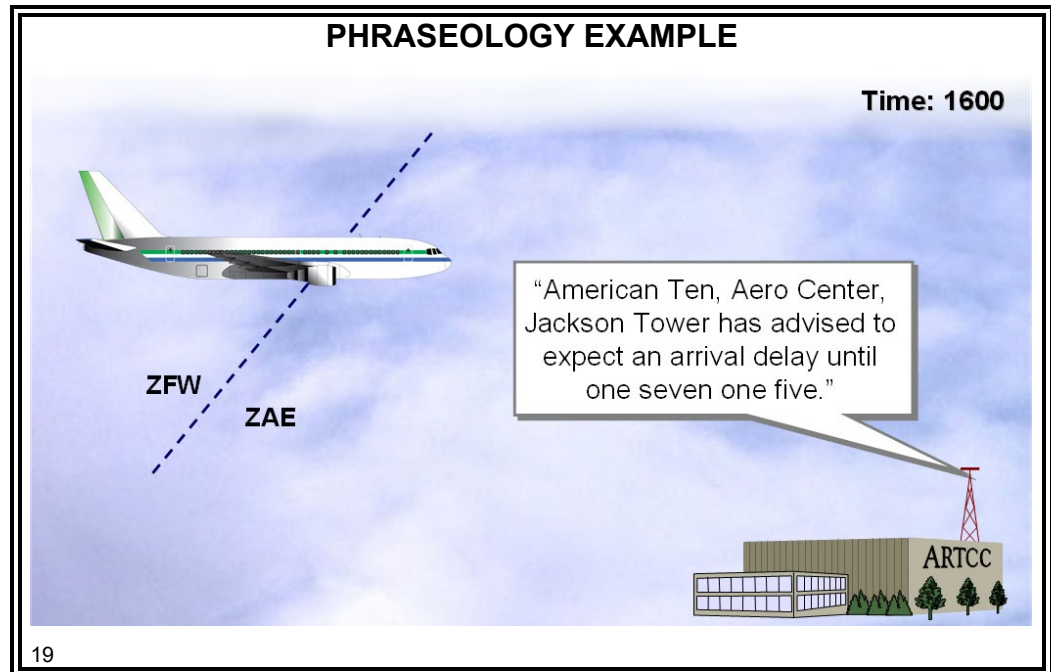
DELAYS

Delays

JO 7110.65,
par. 4-6-3



Phraseology Example



- ⊙ Advise Front Line Manager or TMU coordinator when:
 - Aircraft are delayed
 - Delays are expected
- ⊙ When arrival delays reach or are expected to reach 30 minutes:
 - Issue total delay information as soon as possible after the aircraft enters the center's area
 - Issued by first controller to communicate with aircraft
 - May omit when available via ATIS, unless pilot requests

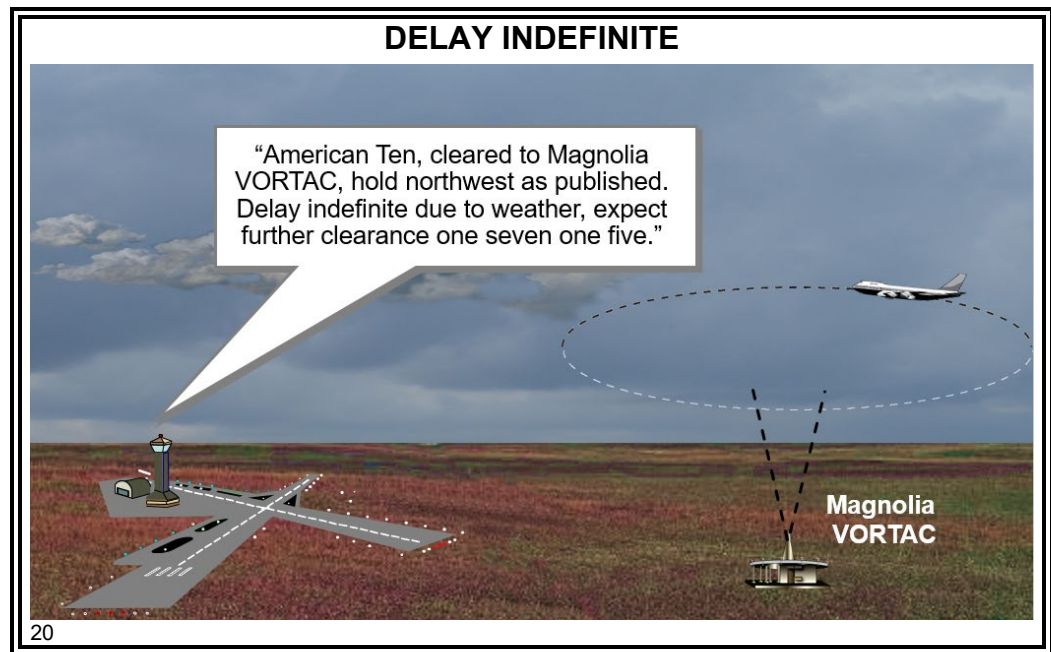
DELAYS (Continued)

Delay Indefinite

JO 7110.65,
par. 4-6-1



Phraseology Example



- ⦿ Advise pilot "delay indefinite" and reason, if known.
- ⦿ Issue EFC time.
 - After determining the reason for the delay, advise the pilot as soon as possible
- ⦿ Make every effort to provide pilot with best possible estimate of delay and reason.



Phraseology

"DELAY INDEFINITE (reason, if known), EXPECT FURTHER CLEARANCE (time)."

DELAYS *(Continued)*

Knowledge Check

KNOWLEDGE CHECK

❖ **QUESTION:** When a delay is anticipated and the holding pattern is charted, you should issue the direction the aircraft will hold and _____.

- A. leg length
- B. turns
- C. EFC

21

KNOWLEDGE CHECK

❖ **QUESTION:** When you delay or expect to delay aircraft, you should advise _____.

- A. the sector or approach control that will be affected
- B. your Front Line Manager or the Traffic Management Coordinator
- C. Air Traffic Control System Command Center

22

Continued on next page

DELAYS *(Continued)*

Knowledge
Check
(Cont'd)

KNOWLEDGE CHECK

- ❖ **QUESTION:** The phraseology for issuing an EFC for a lengthy delay is _____.
- A. "DELAY INDEFINITE, (reason, if known), STAND BY"
 - B. "EXPECT FURTHER CLEARANCE IN ONE HOUR"
 - C. "DELAY INDEFINITE, (reason, if known), EXPECT FURTHER CLEARANCE (time)"

23

CLEARANCE BEYOND FIX

**Clearance
Items to Issue**
JO 7110.65,
par. 4-6-2

→
**Phraseology
Example**

CLEARANCE BEYOND FIX						
UAL412 B731/L T410 66 03	GLH 1113	19 11 19 SQS	170✓	IGB	KLIT GLH V278 IGB KATL	HV
"United Four Twelve, cleared to Atlanta Airport via Victor Two Seventy-Eight Bigbee direct."						
N426A BE20/G T260 66 03	GLH 1254	05 13 05 SQS	150✓	IGB	KLIT GLH V278 IGB KUBS	HV
"King Air Four Two Six Alpha, cleared to Columbus Airport via last routing cleared."						
24						

- ⊙ Issue clearance beyond clearance limit
 - As soon as possible, or
 - At least five minutes prior to aircraft reaching fix
- ⊙ Clearance items to issue
 - Clearance limit or approach clearance
 - Route of flight, specifying one of the following:
 - Complete details of route
 - Phrase: "VIA LAST ROUTING CLEARED"
 - **Only** when the most recently issued routing is valid
 - When verbiage is reduced
 - Assigned altitude, if different from present altitude

CLEARANCE BEYOND FIX *(Continued)*

No Clearance Beyond Fix Issued

AIM, par. 5-3-8

- ⦿ Pilot is expected to hold as depicted on charts (low/high altitude en route, area, STAR).
 - ⦿ If **no** charted pattern and **no** holding instructions have been issued, pilot should request instructions prior to reaching fix.
 - If unable to obtain holding instructions, pilot should:
 - Hold in standard pattern on course approaching fix
 - Request further clearance as soon as possible
-

Knowledge Check

KNOWLEDGE CHECK

❖ **QUESTION:** When should you issue clearance beyond the clearance limit?

- A. Five minutes prior to the clearance limit
- B. When the pilot requests
- C. Further clearance is not required

25

Continued on next page

CLEARANCE BEYOND FIX *(Continued)*

Knowledge
Check
(Cont'd)

KNOWLEDGE CHECK

❖ **QUESTION:** The phraseology for specifying the route of flight when clearing an aircraft beyond a clearance limit is _____.

- A. "VIA LAST ROUTING CLEARED"
- B. "VIA FLIGHT PLAN ROUTE"
- C. "CLEARED AS FILED"

26

KNOWLEDGE CHECK

❖ **QUESTION:** A delay is anticipated and holding is necessary. The holding clearance should always specify the _____.

- A. leg length
- B. EFC
- C. direction of turns

27

EXERCISE: PRACTICING WITH HOLDING STRIPS

Exercise 1

PRACTICING WITH HOLDING STRIPS EXERCISE



Purpose: to practice marking flight progress strips

Directions: complete the strips based on information provided by instructor

28

Directions

In this exercise, you will practice marking strips and issuing holding instructions.

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

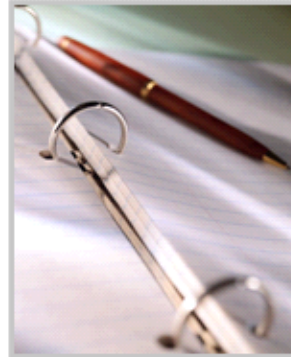
IN CONCLUSION

Lesson Review

LESSON REVIEW

The following topics were covered in this lesson:

- Holding
- Holding patterns
- Clearance to holding fix
- Delays
- Clearance beyond a fix



29

End-of-Lesson Test

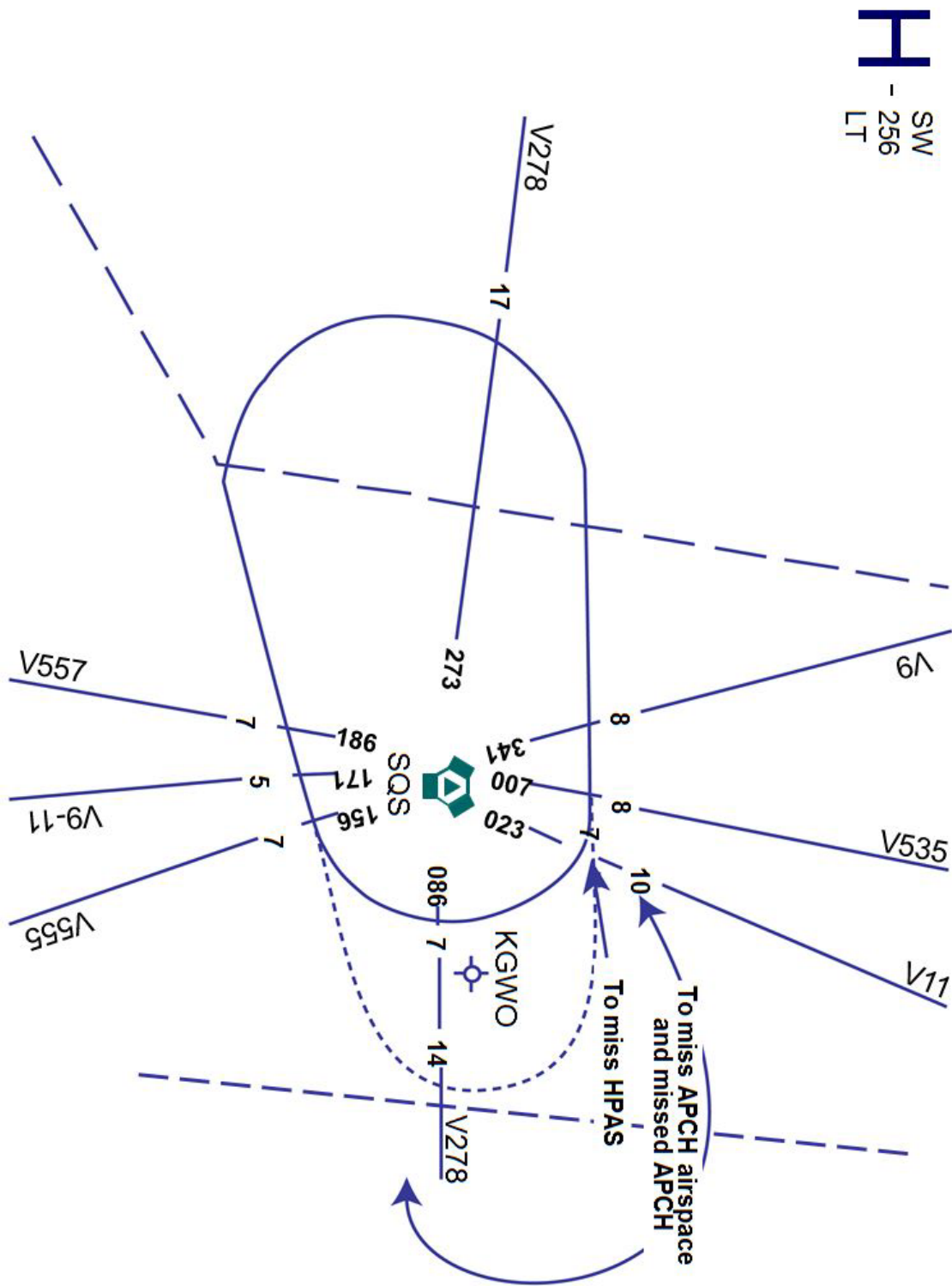
END-OF-LESSON TEST

Holding Procedures



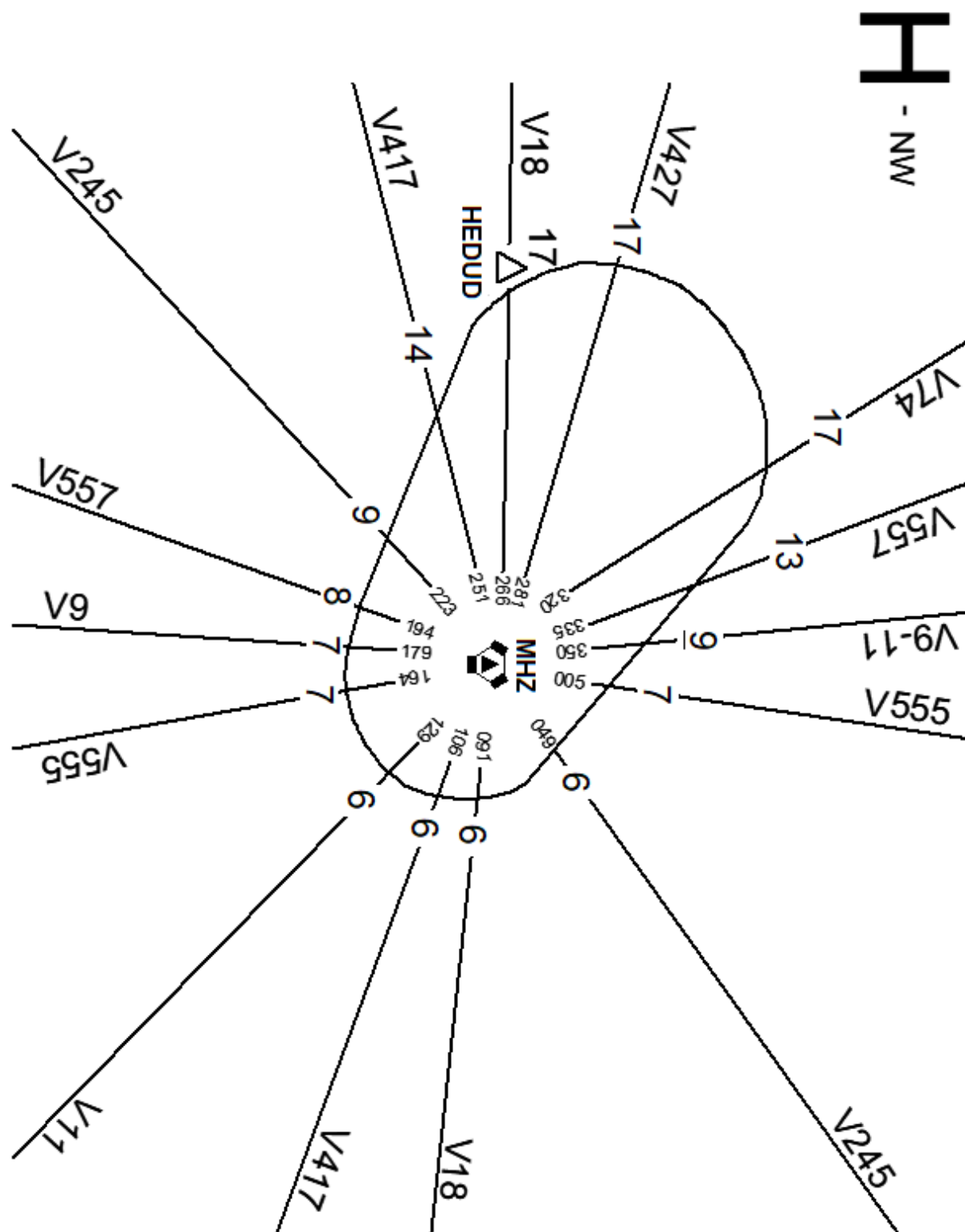
30

APPENDIX A: ZAE HOLDING PATTERNS

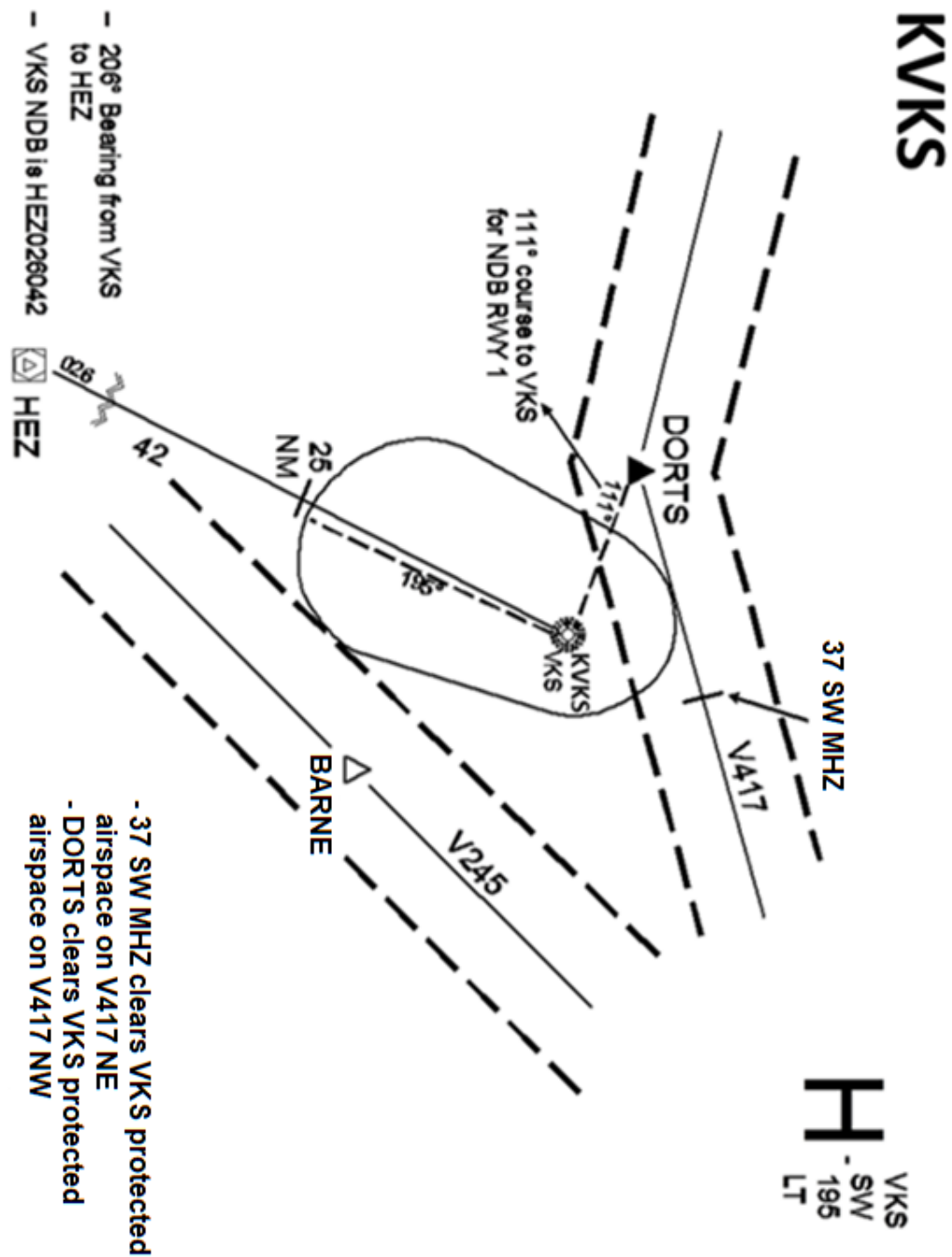


Continued on next page

APPENDIX A: ZAE HOLDING PATTERNS *(Continued)*



APPENDIX A: ZAE HOLDING PATTERNS *(Continued)*



Continued on next page

APPENDIX A: ZAE HOLDING PATTERNS *(Continued)*

