

NAVAL AIR TRAINING COMMAND

NAS CORPUS CHRISTI, TEXAS

CNATRA P-804 (Rev. 05-04)



FLIGHT INFORMATION PUBLICATION



STUDENT GUIDE

2004



DEPARTMENT OF THE NAVY

CHIEF OF NAVAL AIR TRAINING
CNATRA
250 LEXINGTON BLVD SUITE 102
CORPUS CHRISTI TX 78419-5041

CNATRA P-804
N311

24 MAY 2004

CNATRA P-804 (Rev. 05-04)

Subj: FLIGHT INFORMATION PUBLICATIONS (FLIP) STUDENT GUIDE

1. CNATRA P-804 (Rev. 05-04) PAT, "FLIGHT INFORMATION PUBLICATIONS (FLIP), STUDENT GUIDE" is issued for information, standardization of instruction, and guidance to all flight instructors and student NFOs/WSOs within the Naval Air Training Command.
2. This publication will be used as an explanatory aid to the Primary and Intermediate Multi-Service NFO/AF WSO Training System Flight Curriculum. It will be the authority for the execution of all flight procedures and maneuvers herein contained.
3. Recommendations for changes shall be submitted via CNATRA TCR form 1550/19 in accordance with CNATRAINST 1550.6E.
4. CNATRA P-804 (Rev. 1-97) is hereby cancelled and superseded.

A handwritten signature in black ink, appearing to read "E. R. Hinger".

E. R. HINGER,
Assistant Chief of Staff for
Training and Operations

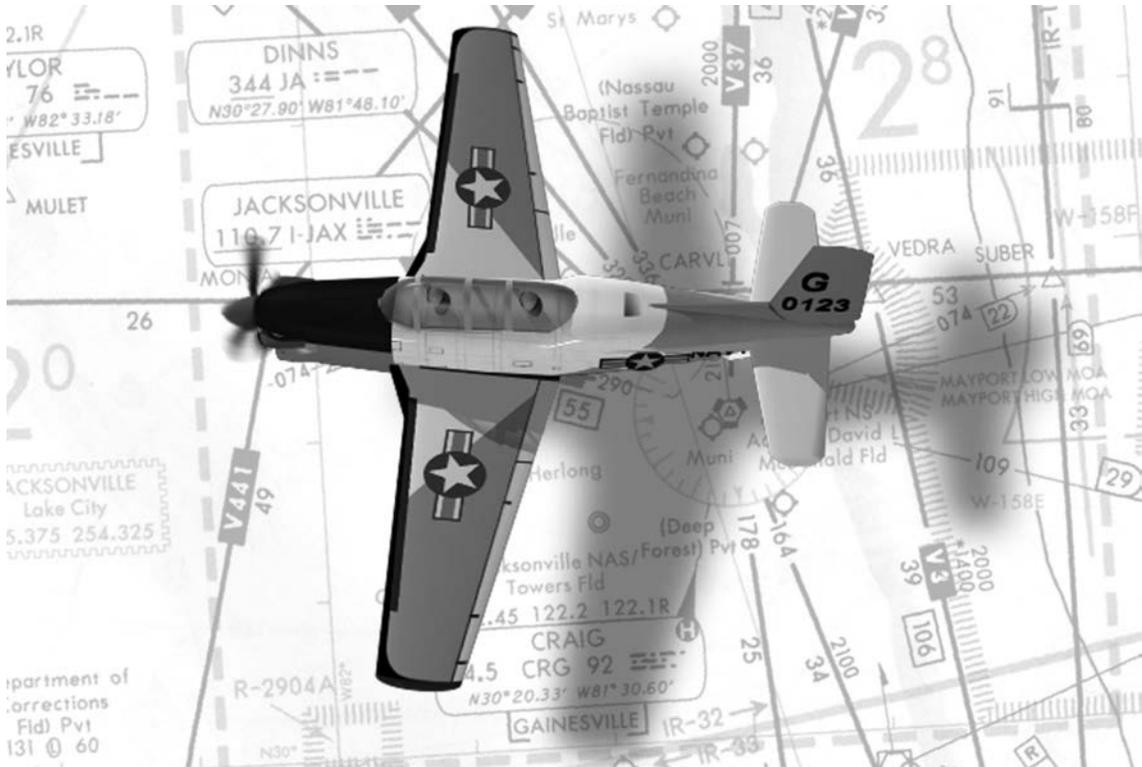
Distribution:

CNATRAINST 5215.1R
List I (E, M, S, Z, DD, KK)
CNATRA (N311) 3
CNATRA (N62) 1

FLIGHT INFORMATION PUBLICATIONS

STUDENT GUIDE

Q-2D-0012



THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF EFFECTIVE PAGES

Dates of issue for original and changed pages are:

Original ...0...30 May 04

TOTAL NUMBER OF PAGES IN THIS PUBLICATION IS 164 CONSISTING OF THE FOLLOWING:

Page No.	Change No.	Page No.	Change No.
COVER		6-1 – 6-18	
LETTER		7-1 – 7-40	
iii		8-1 – 8-13	
iv (blank)		8-14 (blank)	
v – xiii		9-1	
xiv (blank)		9-2 (blank)	
1-1 – 1-8		10-1	
2-1 – 2-15		10-2 (blank)	
2-16 (blank)		A-1	
2-17 – 2-21		A-2 (blank)	
2-22 (blank)		B-1 – B-8	
3-1 – 3-11			
3-12 (blank)			
3-13 – 3-14			
4-1 – 4-6			
5-1 – 5-14			

INTERIM CHANGE SUMMARY

The following Changes have been previously incorporated in this manual:

CHANGE NUMBER	REMARKS/PURPOSE

The following interim Changes have been incorporated in this Change/Revision:

INTERIM CHANGE NUMBER	REMARKS/PURPOSE	ENTERED BY	DATE

SECURITY AWARENESS NOTICE

This course does not contain any classified material.

SAFETY

There are no special safety precautions to be observed during this lesson.

TERMINAL OBJECTIVE

Use Flight Information Publications (FLIP), Notices to Airmen (NOTAMs) and other applicable flight information to plan and fly in the Federal Aviation Administration's Air Traffic Control (ATC) system.

HOW TO USE THIS STUDENT GUIDE

Overview

This coursebook is broken down into nine chapters of instruction with ten Enabling Objectives. Each Enabling Objective is stated in behavioral terms and identifies exactly what you are expected to accomplish in this course. It further states the standard that must be met. Test questions are based on these objectives.

The FLIP publications you will focus on in this course are the following: Flip Planning sections -GP, AP/1, AP/1A, and AP/1B, US IFR Enroute Supplement, High and Low altitude charts, and Approach Plates.

You are required to carry all of the above except the Flip Planning sections on every flight. You are also required to ensure you only work with current, unexpired, publications. Always obtain the latest FLIP program information by referring to all the applicable PCNs, SPECIAL NOTICES, TERMINAL CHANGE NOTICES (TCNs) and NOTICES TO AIRMEN (NOTAMs).

For purposes of standardization, you will be allowed to work with outdated pubs ONLY while completing this course.

Scope

Prior to your first flight, you received several courses of instruction. Of these, Safety, NATOPs, and Flight Rules and Regulations courses remain of utmost importance as they define guidelines by which you operate. These guidelines (and the operating environment) must be thoroughly understood for you to become a professional aviator.

Mode of Instruction

This coursebook contains text and chapter reviews. The text is required to be read prior to the classroom period. The unit reviews are required to be completed after the unit lecture.

TABLE OF CONTENTS

LIST OF EFFECTIVE PAGES.....	v
INTERIM CHANGE SUMMARY.....	vi
TABLE OF CONTENTS	ix
TABLE OF FIGURES.....	xi
CHAPTER ONE GENERAL PLANNING	1-1
100. INTRODUCTION	1-1
101. LESSON TOPIC LEARNING OBJECTIVES	1-1
102. GENERAL PLANNING	1-2
103. INDEX FOR AERONAUTICAL INFORMATION	1-2
104. SUMMARY	1-5
105. CHAPTER REVIEW	1-5
CHAPTER ONE REVIEW QUESTIONS	1-7
CHAPTER TWO AREA PLANNING 1, 1A, AND 1B	2-1
200. INTRODUCTION	2-1
201. LESSON TOPIC LEARNING OBJECTIVES	2-1
202. AREA PLANNING - AP/1.....	2-2
203. AREA PLANNING 1A	2-6
204. AREA PLANNING 1B.....	2-11
205. SUMMARY	2-14
206. CHAPTER REVIEW	2-15
CHAPTER TWO REVIEW QUESTIONS	2-17
CHAPTER THREE FLIGHT INFORMATION HANDBOOK.....	3-1
300. INTRODUCTION	3-1
301. LESSON TOPIC LEARNING OBJECTIVES	3-1
302. NATIONAL AND INTERNATIONAL FLIGHT DATA AND PROCEDURES.....	3-4
303. SUMMARY	3-10
304. CHAPTER REVIEW	3-11
CHAPTER THREE REVIEW QUESTIONS.....	3-13
CHAPTER FOUR IFR ENROUTE SUPPLEMENT.....	4-1
400. INTRODUCTION	4-1
401. LESSON TOPIC LEARNING OBJECTIVES	4-1
402. IFR ENROUTE SUPPLEMENT	4-1
403. SUMMARY	4-3
404. CHAPTER REVIEW	4-4
CHAPTER FOUR REVIEW QUESTIONS.....	4-5
CHAPTER FIVE ENROUTE HIGH ALTITUDE CHART	5-1
500. INTRODUCTION	5-1
501. LESSON TOPIC LEARNING OBJECTIVES	5-1
502. IFR ENROUTE HIGH ALTITUDE CHART	5-2

503. CHAPTER REVIEW	5-12
CHAPTER FIVE REVIEW QUESTIONS	5-13
CHAPTER SIX ENROUTE LOW ALTITUDE AND AREA CHARTS	6-1
600. INTRODUCTION	6-1
601. LESSON TOPIC LEARNING OBJECTIVES	6-1
602. ENROUTE LOW ALTITUDE CHART	6-1
603. SUMMARY	6-15
604. CHAPTER REVIEW	6-16
CHAPTER SIX REVIEW QUESTIONS	6-17
CHAPTER SEVEN TERMINAL PUBLICATIONS	7-1
700. INTRODUCTION	7-1
701. LESSON TOPIC LEARNING OBJECTIVES	7-1
702. INSTRUMENT APPROACH PROCEDURES	7-2
703. PLANVIEW	7-22
704. SUMMARY	7-38
705. CHAPTER REVIEW	7-38
CHAPTER SEVEN REVIEW QUESTIONS.....	7-39
CHAPTER EIGHT DEPARTURE PROCEDURES	8-1
800. INTRODUCTION	8-1
801. LESSON TOPIC LEARNING OBJECTIVES	8-1
802. DEPARTURE PROCEDURES	8-1
803. SUMMARY	8-12
804. CHAPTER REVIEW	8-12
CHAPTER EIGHT REVIEW QUESTIONS.....	8-13
CHAPTER NINE LESSON REVIEW.....	9-1
900. INTRODUCTION	9-1
CHAPTER TEN EXAMINATION/EXAM REVIEW.....	10-1
1000. INTRODUCTION	10-1
APPENDIX A GLOSSARY.....	A-1
A100. NOT APPLICABLE	A-1
APPENDIX B CHAPTER REVIEW ANSWERS	B-1
CHAPTER ONE	B-1
CHAPTER TWO	B-2
CHAPTER THREE	B-3
CHAPTER FOUR.....	B-4
CHPATER FIVE	B-5
CHAPTER SIX.....	B-6
CHAPTER SEVEN	B-7
CHAPTER EIGHT	B-8

TABLE OF FIGURES

Figure 1-1	New FLIP Features	1-2
Figure 1-2	Military Operations Area.....	1-2
Figure 2-1	Flight Hazard Listed in AP/1	2-3
Figure 2-2	Route or Area Restrictions.....	2-4
Figure 2-3	AP/1 Supplementary Remarks	2-5
Figure 2-4	Preferred Routes - High Altitude	2-6
Figure 2-5	Warning and Alert Areas Listed in AP 1/A.....	2-9
Figure 2-6	Parachute Jumping Area	2-10
Figure 2-7	MOA Listing.....	2-10
Figure 2-8	Low Altitude Training Route from AP/IB.....	2-13
Figure 3-1	Day Visual Signals.....	3-3
Figure 3-2	Day Visual Signals.....	3-3
Figure 3-3	Runway Lighting Systems.....	3-5
Figure 3-4	Approach Lighting Systems	3-6
Figure 3-5	Pilot to Metro and Weather Radar Facilities	3-7
Figure 3-6	Standard Time Signals	3-8
Figure 3-7	F-2 FLIP and NOTAM Abbreviations.....	3-9
Figure 3-8	F-30 FLIP And NOTAM Abbreviations.....	3-9
Figure 3-9	Action By Intercepted Aircraft.....	3-10
Figure 4-1	Position Reports	4-3
Figure 5-1	IFR Enroute High Altitude Chart.....	5-3
Figure 5-2	IFR Enroute High Altitude Chart Rear Panel.....	5-5
Figure 5-3	Airports.....	5-6
Figure 5-4	NAVAIDs and Communication Boxes.....	5-7
Figure 5-5	Air Traffic Services and Airspace Information	5-8
Figure 5-6	Special Use Airspace.....	5-9
Figure 5-7	Cruising Altitudes	5-9
Figure 6-1	Graphic Index of Series on the Front Panels.....	6-2
Figure 6-2	Front Panel of Low Altitude Chart	6-2
Figure 6-3	Military Training Routes	6-3
Figure 6-4	Military Training Routes	6-3
Figure 6-5	Airports.....	6-4
Figure 6-6	Localizer Identifiers.....	6-5
Figure 6-7	Gainesville Identification Box.....	6-5
Figure 6-8	FSS not Associated with a NAVAID	6-5
Figure 6-9	Air Traffic Services and Airspace Information Legend.....	6-6
Figure 6-10	Special Use Airspace.....	6-8
Figure 6-11	Cruising Altitudes – U.S.....	6-8
Figure 6-12	Scale in Nautical Miles.....	6-9

Figure 6-13	Airway Designators.....	6-9
Figure 6-14	Smaller NAVAIDs.....	6-10
Figure 6-15	Symbol for DME from the NAVAID	6-10
Figure 6-16	Intersection between Dothan and Crestview	6-11
Figure 6-17	JUZI	6-12
Figure 6-18	Symbol for COP	6-12
Figure 6-19	V574.....	6-13
Figure 6-20	Atlanta Area on the Low Chart.....	6-14
Figure 6-21	IFR Area Charts – U.S.	6-15
Figure 7-1	Straight-In-Penetration	7-4
Figure 7-2	Off-Set Penetration	7-5
Figure 7-3	Arcing Penetration.....	7-6
Figure 7-4	Teardrop Penetration	7-6
Figure 7-5	Mean Sea Level Decision Height	7-8
Figure 7-6	Airport Elevation	7-8
Figure 7-7	RVR for Straight in Approach	7-9
Figure 7-8	United States Divided Geographically into Volumes.....	7-10
Figure 7-9	FLIP Volume 8	7-11
Figure 7-10	General Information.....	7-12
Figure 7-11	Table of Contents	7-13
Figure 7-12	Planview Legend	7-14
Figure 7-13	Profile Legend	7-15
Figure 7-14	IFR Landing Minima.....	7-16
Figure 7-15	Metar Conversion Chart	7-17
Figure 7-16	Airport Diagram/Sketch Legend.....	7-18
Figure 7-17	Radar Instrument Approach Minimums.....	7-19
Figure 7-18	Rate of Climb/Descent Table	7-20
Figure 7-19	TACAN Runway 36L	7-22
Figure 7-20	Missed Approach	7-25
Figure 7-21	HI-TACAN RWY 13.....	7-26
Figure 7-22	Minima Section.....	7-27
Figure 7-23	Planview Depiction.....	7-28
Figure 7-24	Circling Approaches	7-30
Figure 7-25	Planview Depiction of the Altitudes	7-31
Figure 7-26	Straight-In Surveillance Approach	7-32
Figure 7-27	Airport Sketch.....	7-33
Figure 7-28	HI-VOR RWY 19.....	7-34
Figure 7-29	Airport Diagram	7-35
Figure 7-30	Terminal Change Notice.....	7-36
Figure 7-31	ILS RWY 15	7-37
Figure 8-1	MENTR9 Departure.....	8-2
Figure 8-2	DP for Oceana NAS	8-4
Figure 8-3	SOUCEK7 Transition.....	8-5
Figure 8-4	SOUCEK7 Departure.....	8-6

Figure 8-5 MENTR-NINE Departure.....	8
Figure 8-6 Standard Terminal Arrivals.....	10
Figure 8-7 Terminal Area	11

THIS PAGE INTENTIONALLY LEFT BLANK

CHAPTER ONE

GENERAL PLANNING

100. INTRODUCTION

General Planning (GP). Published every 32 weeks, contains general information on all FLIPs, explanations of the division of airspace, flight plans and codes; common pilot procedures; aviation weather abbreviations, and aircraft approach categories. All of these will be discussed in this unit of instruction. It contains information that is applicable worldwide. Use your General Planning publications while you study this unit.

References

FLIP General Planning (GP)

Airman's Information Manual

101. LESSON TOPIC LEARNING OBJECTIVES

Enabling Objectives

F.1. Locate, interpret and apply information in FLIP General Planning.

Enabling Steps

F.1.1 Extract information concerning the FLIP program.

F.1.2 Interpret the Index for Aeronautical Information.

F.1.3 Extract information from the Explanation of Terms.

F.1.4 Extract information on divisions of airspace.

F.1.5 Extract information concerning TD codes.

F.1.6 Extract information concerning VIP codes.

F.1.7 Extract preflight, departure, enroute, arrival and supplemental in-flight pilot procedures.

Instructional Aids

FLIP General Planning (GP)

102. GENERAL PLANNING

Special Notices

Special notices of a permanent nature will be carried for one issue and then incorporated into the appropriate section of the FLIP products. Notices of a temporary nature will be carried in this section for the life of the notice. Also included is a New FLIP Features Section which contains notices of new FLIP products of significant changes to existing FLIP products (Figure 1-1).

NEW FLIP FEATURES

Coordinates depicted on DoD FLIP products are being changed where necessary, to provide compatibility with the World Geodetic System (WGS). Consequently, DoD published coordinates for some geographic positions may differ from host nation published coordinates. These changes will begin to appear in the 30 Jul 87 issues of some products and will be completed with 22 Oct 87 issue.

Figure 1-1 New FLIP Features

New or Changed Information

To alert users of new information or changes to information from the previous issue, a vertical line will be portrayed to the left of and extending the full length of the new and/or revised data (Figure 1-2). This method is used throughout the DOD FLIP program.

(3). MILITARY OPERATIONS AREA (MOA) - A MOA is airspace established outside of Class A airspace area to separate or segregate certain non-hazardous military activities from IFR traffic and to identify for VFR traffic where these activities are conducted.

Figure 1-2 Military Operations Area

103. INDEX FOR AERONAUTICAL INFORMATION

Chapter 1 in General Planning is an index which lists sections and chapters of FLIP, or other primary publications, in which specific information may be found. This index provides the location, by publication and chapter, of each subject in the FLIP Program. More than one reference may be given.

Explanation of Terms

Chapter 2 of General Planning provides a complete list of aeronautical terms and definitions published in the FAA Pilot/Controller Glossary, plus some selected ICAO and Military terms. These terms are commonly used and are intended for the pilot, NFO/WSO, and controller communications.

Flight Plan

Chapter 4 of General Planning contains detailed instructions for completing all types of military and civil flight plans, including international flight plans. The purpose of a flight plan is to relay to the air traffic controllers the desired route of flight of the aircrew. A military flight plan is written on a DD 175 form and is used for flights within the conterminous United States, Honolulu, Alaska, and San Juan Domestic Control areas. A more detailed discussion on the DD 175 will be conducted in the Flight Planning course. Two important items of interest are Aircraft Designation and Transponder Codes "TD code", and "VIP codes".

TD Codes - The TD code is written next to your aircraft type on your flight plan. It denotes the transponder and navigation capability of your aircraft. Use the diagram in the following way.

1. Determine what type of transponder and Mode C capability your aircraft has. This will be used to determine which row on the left side of the diagram you start with. (Military aircraft always use transponders with Mode C, bottom row).
2. Next, determine what type of navigation equipment your aircraft has. The maximum navigation capability of an aircraft is area NAV equipment (FAA-certified computers, inertial navigation system, GPS, etc.) If your aircraft is so equipped, then the TD code will be either "W", "C", or "R" under the area NAV equipment column. If the aircraft has a TACAN only, with no VOR or certified Area NAV equipment (like many fleet aircraft), then the TD code would be "M", "N", or "P" from the TACAN ONLY column. If the aircraft has a VOR only, with no DME capability, then it will always be "T" or "V" under the transponder only column. If the aircraft has a VOR and a DME computer or both a VOR and a TACAN onboard, then the TD codes will be "D," "B," or "A" under the DME column.

VIP codes - The VIP code is a 3-digit (letter, number, letter) combination to be used in item 13 of the flight plan. Use the chart in the following manner:

1. The first letter will be a designator letter denoting the service category. (e.g., A=Air Force, V=Navy.)
2. The number will indicate the VIP ranking status. (e.g., 4=vice admiral, 3 star)
3. The second letter will indicate the honor code requested. (e.g., 0=request nothing)
4. Example: V5H=Navy VIP, rear admiral, accord honors.

Pilot Procedures

To military aircrews, Chapter 5 in General Planning is the primary source for Pilot Procedures, therefore reducing the need to refer to the Airman's Information Manual (AIM). It contains standard pilot procedures for operating under both FAA and ICAO control (those items requiring a ready reference while in-flight will be found in the IFR Enroute Supplement or the Flight Information handbook). The GP is divided into five sections. Some of the more important items are listed below.

- 1 Preflight
 - a. Filing of a flight plan and the time restrictions
 - b. NOTAM coverage
2. Departure
 - a. IFR clearance items
 - b. Abbreviated IFR departure clearance
 - c. Clearance limit
 - d. Use of a DP
3. Enroute
 - a. Enroute clearance
 - b. ATC clearance readback/altitude verification procedures
 - c. Changeover points
 - d. Transponder procedures
 - e. Holding procedures
4. Arrival
 - a. Single frequency approach (SFA)
 - b. Procedures in Class D airspace
 - c. Closing of a flight plan (FAA)
 - d. Meaconing, Intrusion, Jamming, and Interference (MIJI)
5. Supplementary Information
 - a. Aircraft speed below 10,000 feet
 - b. Visual approach slope indicator

NOTE

INTERNATIONAL CIVIL AVIATION ORGANIZATION - (ICAO) Chapter 6 and OPERATIONS AND FIRINGS OVER THE HIGH SEAS Chapter 7, will NOT be covered in this course.

Aviation Weather Codes

Chapter 8 in the General Planning describes a sample Aviation Weather Report with an explanatory key provided. This chapter also includes the International Aviation Weather Codes and the keys to their interpretation. Weather observations are made each hour, or more often, at over 600 locations in the United States. These observations, along with forecasts, may be used to determine the weather conditions for flight planning purposes.

Aircraft Codes

Chapter 9, paragraph 9-1, of General Planning demonstrates the method for building military aircraft codes for each of the respective military services. Typically, these are used for aircraft "callsigns" when filing a DD 175 military flight plan.

104. SUMMARY

This unit focused on the General Planning publication. It is a publication printed every 32 weeks. For the purpose of this course focus on the following chapters:

- Chapter 1. Index for Aeronautical Information
- Chapter 2. Explanation of Terms
- Chapter 4. Flight Plans (TD Codes and VIP Codes)
- Chapter 5. Pilot Procedures
- Chapter 8. Weather Codes
- Chapter 9. Aircraft Codes

105. CHAPTER REVIEW

1. Read Chapter 1 of the FTI.
2. Do Lesson 1 on the Computer Based Training for FLIP.
3. Complete the Unit Review Questions.

THIS PAGE INTENTIONALLY LEFT BLANK

CHAPTER ONE REVIEW QUESTIONS

Refer to your copy of General Planning when answering the following questions.

1. ES indicates that the required information can be found in _____
2. Information concerning ICAO Class D Airspace procedures can be located in _____
3. Information concerning Preferred Routes can be located in _____
4. The term "Airport Surveillance Radar" is defined as _____
5. The term "Circling Approach" signifies _____
6. The TD Code for an aircraft with a TACAN and a 4096 Code Transponder without Mode C capability is _____
7. The last fix entered in the Route of Flight section of an IFR DD 175 is either _____ or _____
8. What VIP code would you use if VADM James H. Masterson was onboard and he wanted full honors accorded him? _____
9. Flight plans should be submitted to Base Operations at least ____ minutes prior to your Estimated Time of Departure.
10. ATC IFR clearances are normally relayed to pilots by the Control Tower's " _____ " position, or at busy airports, by the Control Tower's " _____ " position, if one has been established.
11. An abbreviated IFR departure clearance will not include _____ information.
12. When cleared to a fix short of a filed destination, further clearance or holding instructions will be issued at least _____ minutes before the aircraft reaches the fix.
13. The use of Departure Procedures (DPs)/Standard Instrument Departures (SIDs) by Navy pilots is mandatory if they are available. (True/False)
14. After receiving a revised altitude clearance, you must report vacating the previously assigned altitude/flight level and _____
15. Your transponder should be in the " _____ " position while taxiing for takeoff, and in the " _____ " position after final landing.
16. The maximum holding airspeed for a USAF F-15E at an Air Force base is _____ KIAS

17. The procedure to apply when lost communications are experienced in a holding pattern will be found in FLIP _____ publication.
18. Once initiated by the controller, a Marine pilot cannot refuse an enroute descent. (True/False)
19. Unless within a class B Airspace, or restricted by operating limitations, no person shall operate a jet aircraft within a Class D Airspace in excess of _____ KIAS.
20. Radar sequencing and separation service for VFR aircraft is identified as:
- a. Basic Radar Service
 - b. Stage II Service
 - c. Stage III Service
 - d. Preventive Control Service
21. At U.S. Military bases, the pilot should verbally confirm his flight plan closed with Tower or Base OPS personnel. (True/False)
22. Unless safety or mission dictates otherwise, jet aircraft will not be operated in excess of _____ KIAS below 10,000 feet MSL.
23. For purposes of determining instrument approach minima, an aircraft with a maximum certificated approach speed of 121 knots is a category _____ aircraft and one of 145 knots is a category _____ aircraft.

CHAPTER TWO

AREA PLANNING 1, 1A, AND 1B

200. INTRODUCTION

Area Planning consists of three sections:

1. **AP/1** - Published every 24 weeks. This section contains planning and procedure information for a specific geographic area.
2. **AP/1A** - Published every 24 weeks. This section contains a tabulation of all Prohibited, Restricted, Warning, Alert, Military Operations, and known Parachute Jumping Areas.
3. **AP/1B** - Published every 8 weeks. This section contains information relative to Military Training Routes; IFR, VFR and slow speed low-altitude Refueling tracks and avoidance locations are also included.

Planning Change Notices (PCNs) are published for AP/1 every 8 and 16 weeks. PCNs are published for AP/1A every 16 and 32 weeks. Urgent Change Notices (UCNs) are issued as required. There are no intermediate changes for the AP/1B other than NOTAMS. All of these will be touched on briefly in this unit. Refer to your classroom copies for more detailed discussions on the following topics: AP/1 chapters 1, 2, 4, 5, and 7 will not be covered in this course.

References

Flip Area Planning 1, 1A, 1B

201. LESSON TOPIC LEARNING OBJECTIVES

Enabling Objectives

F.2 Locate, interpret and apply information in FLIP Area Planning 1, 1A, and 1B.

Enabling Steps

- F.2.1 Extract information concerning Class B Airspace.
- F.2.2 Extract information concerning Flight Hazards.
- F.2.3 Extract information concerning Route and Area Restrictions.
- F.2.4 Extract information on Supplementary Airport Remarks.
- F.2.5 Extract information on Preferred IFR routes.

F.2.6 Extract information concerning designated mountainous areas.

F.2.7 Extract information on Special Use airspace.

F.2.8 Extract information on Parachute Jumping Areas.

F.2.9 Extract information on Military Training Routes.

F.2.10 Extract information on Aerial Refueling Tracks/Anchors.

Instructional Aids

FLIP Area Planning 1, 1A, 1B

202. AREA PLANNING - AP/1

(Chapter 3-United States section)

Class B airspace is defined by dimensions which have been established by the FAA around selected airports, and within which all aircraft are subject to the operating rules and equipment requirements specified in Part 91 of the FARs. Class B airspaces are charted on the Enroute Low Altitude and Area charts, although these do not depict the "upside-down wedding cake" structure.

This section contains a general discussion of Class B airspace requirements, operating rules and flight procedures within Class B airspaces. Included is a listing of the Class B Airspace within the United States.

Operating Rules and Equipment Requirements:

1. No person may operate an aircraft within Class B airspace unless that person has received an appropriate authorization from ATC prior to operation of that aircraft in that area.
2. Unless otherwise authorized by ATC, each person operating a large turbine engine-powered airplane to or from a primary airport shall operate at or above the designated floors while within the lateral limits of the Class B airspace.
3. Any person conducting pilot training operations at an airport within a Class B airspace shall comply with any procedures established by ATC for such operations in the Class B airspace.
4. A two-way radio capable of communicating with ATC on appropriate frequencies.
5. A VOR or TACAN receiver, except for helicopters.

6. A 4096 code transponder with Mode C automatic altitude reporting equipment, except for helicopters operating at or below 1000 feet AGL under a Letter of Agreement. (ATC may authorize a deviation from the altitude reporting equipment requirement immediately upon request. However, a request for a deviation from the 4096 transponder equipment requirement must be submitted to the controlling ATC facility at least one hour before the proposed operation).

Airspeed

No person may operate an aircraft:

1. Within a Class B airspace at an airspeed greater than 250 KIAS unless a greater safe airspeed is required for the particular operation.
2. In the airspace beneath the lateral limits of a Class B at an airspeed greater than 200 KIAS unless a greater minimum safe airspeed is required for the particular operation.

Class C airspace consists of two circles, both centered on the primary airport. The inner circle has a radius of five miles and extends from the surface of the primary airport up to 4000 feet AGL. The outer circle has a radius of 10 miles and extends from 1200 to 4000 feet AGL. All aircraft are subject to the operating rules and equipment requirements specified in the FAR-91. The primary equipment requirements are an operable two-way radio and a 4096 code transponder with Mode C (altitude encoding). Within the Class C airspaces, ATC will provide services specified in AP/1 Chapter 3. Class C airspaces are depicted on Enroute Low Altitude charts and VFR Sectional charts. Chapter 3 contains a complete list of Class C airspaces.

Flight Hazards

A list of states and the most notable flight hazards within these states is contained in this section of AP/1. Prior to filing a flight plan, AP/1 should be consulted to preclude encountering a dangerous situation within any of these areas. An example of a flight hazard listed in AP/1 is shown in Figure 2-1.

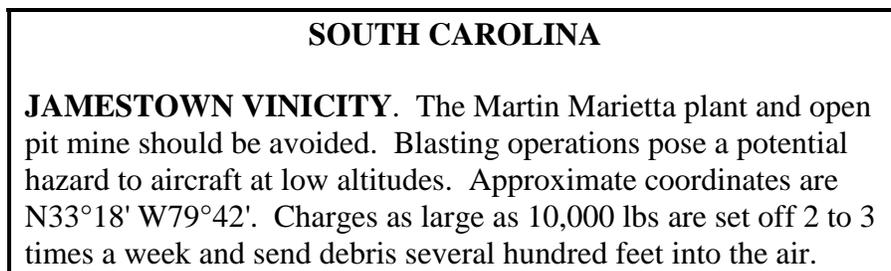


Figure 2-1 Flight Hazard Listed in AP/1

Route and Area Restrictions

A list of states in which there are route and area restrictions to flight are found in AP/1. Prior to flying into any of these areas, AP/1 should be consulted to preclude occurrence of a dangerous situation of a flight violation. An example of a route or area restriction is shown in Figure 2-2.

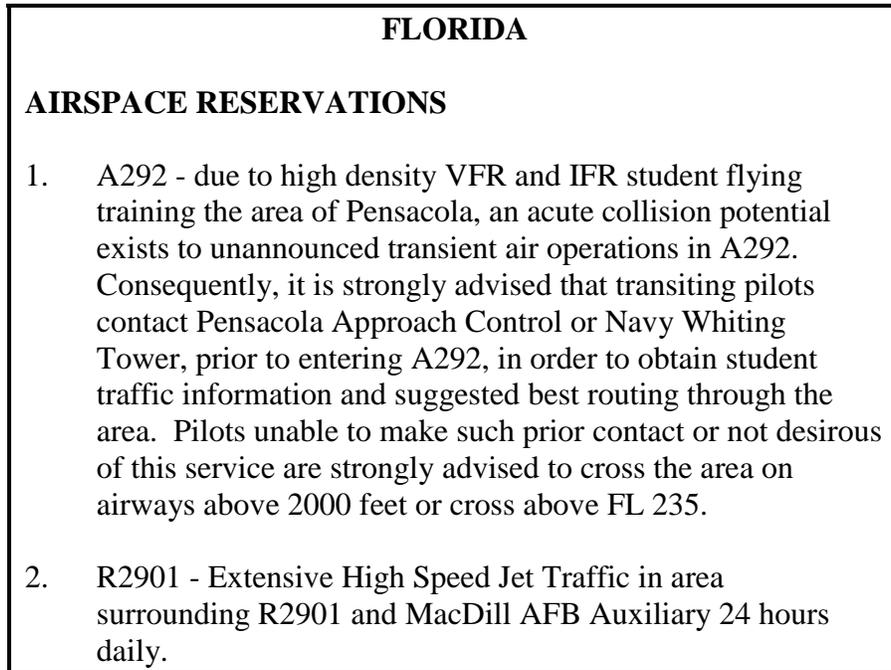


Figure 2-2 Route or Area Restrictions

Supplementary Airport Remarks

The Supplementary Airport Remarks section was designed to contain information that would have been published in the Remarks section of the IFR Enroute Supplement, but is listed here due to space limitations. It is an alphabetical listing of those airports affected and should be consulted prior to flight to any one of them. A remark in the IFR Enroute Supplement will direct you to consult AP/1 for the supplementary remarks (Figure 2-3).

PATRICK AFB	
CAUTION	
<p>Numerous birds on and in vicinity of airfield throughout the year. Expect increased activity during Phase II (1 October - 31 March) and at dawn/dusk \pm 1 hr. Gulls, cattle egrets, pigeons, doves, and raptors account for over 85% of bird strikes. Pelicans, cormorants, shorebirds, herons, egrets, storks, and owls are also on and around the airfield. Bird Watch Conditions Codes:</p>	
1.	LOW - Normal bird activity on and above the airfield with a low probability of hazards.
2.	MODERATE - Increased bird population in locations which represent an increased potential for strike. This condition requires increased vigilance by all agencies and supervisors and caution by aircrews.
3.	SEVERE - High bird population on or immediately above the active runway or other specific location that represents a high potential for strike. Airfield flying operations will be suspended until airfield management personnel disperses the birds and downgrades the condition.

Figure 2-3 AP/1 Supplementary Remarks

Preferred IFR Routes

A system of preferred routes has been established to guide pilots in planning their route of flight to minimize route changes during the operational phase of flight, and to aid in the efficient, orderly management of air traffic using the federal airways. The preferred routings are designed to serve the needs of airspace users and to provide for a systematic flow of air traffic in the major terminal and enroute environments. Cooperation by all pilots in filing preferred routes will result in fewer traffic delays and will better provide for efficient departure, enroute, and arrival air traffic service.

Preferred routes that begin or end with an airway number indicate that the airway essentially overflies the airport and flights are normally cleared directly on the airway. All preferred routes are listed alphabetically under the name of the **departure** airport. Major airports in close proximity are listed under the principal airport and characterized as a metropolitan area; e.g., Chicago Metro Area. NAVAID radials may be used to describe a route to intercept a specified airway (MIV MIV101 V39); another NAVAID radial (VIM VIM255 GSW081); or an intersection (GSW081 FITCH). The route is direct where two NAVAIDs, an intersection and a NAVAID, a NAVAID and a NAVAID radial and distance point or any navigable combination of these route descriptions follow in succession. The number of Enroute Charts required for a flight by a preferred route are listed in parentheses at the end of the routing for your convenience.

Some preferred routes may terminate with a "STAR" description. This "STAR" description is an abbreviation for STANDARD TERMINAL ARRIVALS. At selected airfields the pilot is to refer to the STAR publication that corresponds with the destination airfield.

NOTE

There are Preferred IFR Routes established for both the Low and High Altitude Route Structures. Do not mistake one for the other. An example of a high altitude preferred route originating in the Albany area is shown in Figure 2-4.

3-118 UNITED STATES					
PREFERRED ROUTES - HIGH ALTITUDE					
Terminals	Route and Charts	Effective Times (UTC)	Terminals	Route and Charts	Effective Times (UTC)
ALBANY			Gainesville	Soone J89 OTK (H-4, H-5) .	1100-0300
Chicago O'Hare Intl	SYR J63 Ehman YXU J547 PMM PMM-STAR (H-3). . . .	1100-0300	Kennedy	Eatwo GRD J209 ORF J121 SIE Camrn-STAR (H-6, L-24)	1100-0300

Figure 2-4 Preferred Routes - High Altitude

VOR Receiver Checkpoints

A list of VOR facilities is available for operation checks of VOR equipment airborne.

Designated Mountainous Areas

These charts depict the designated mountainous areas in a theater of operations. The significance of these areas will be discussed in FLIP 6.

203. AREA PLANNING 1A

(North and South America)

This section of FLIP planning contains a tabulation, by country and then numerically, of all **Prohibited, Restricted, Danger, Warning and Alert Areas**. Additionally, **Parachute Jumping Areas and Military Operations Areas (MOAs)** are listed. This section is published for preflight planning purposes. Much of the same information on MOAs and Special Use Airspace can be found on your FLIP Enroute Charts.

Legend

The student should be familiar with the legend and the definitions listed below.

General

1. All bearings are true and all radials are magnetic unless otherwise indicated.
2. All altitudes are MSL unless otherwise indicated.
3. All times are UTC unless otherwise indicated. A ++ symbol following time indicates that during periods of daylight savings time, hours will be one hour earlier than shown. Consult the applicable Enroute Supplement for areas and dates daylight savings time is observed.
4. Zulu clock example - Zulu is the military term for Greenwich Mean Time (GMT) or Coordinated Universal Time (UTC). This is the mean solar time at the Meridian of Greenwich, England, used as a basis for standard time throughout the world.

Pensacola is +6 from Zulu time during Standard Time (ST) and +5 from Zulu during Daylight Savings Time (DT). What is the Zulu time if it is 1000 local?

$$1000L + (+6) = 1600 \text{ Zulu time or } 1600Z$$

For Daylight Savings Time it would be:

$$1000L + (+5) = 1500Z$$

To calculate local time from Zulu time is also easy.

$$1600Z - (+6) = 1000L \text{ (Standard Time)}$$

$$1600Z - (+5) = 1100L \text{ (Daylight Savings Time)}$$

During Daylight Savings Time, the calculation will change slightly if a "++" symbol follows the Zulu time. An example of the operating times for a Warning Area follows:

Local Warning Area hours are 1700Z - 2400Z++

To convert this to local Pensacola time or Standard Time, just subtract 6:

$$1700Z - (+6) = 1100L \quad 2400Z - (+6) = 1800L$$

Thus the local operating hours are 1100L - 1800L

For the DT calculation you first subtract one hour from the Zulu times, so that the local operating times will remain the same.

$$(1700Z-1) - (+5 \text{ DT}) = 1100L \quad (2400Z-1) - (+5 \text{ DT}) = 1800L$$

With a "++" symbol the local operating hours remain the same, 1100L - 1800L, regardless of whether it is Standard or Daylight Savings Time.

Number Column

- 1 Includes the designation of the area. Refer to the paragraph below, "ICAO Location Identifiers for Countries, " for a more detailed explanation.
2. **P-Prohibited Areas** - Flights are prohibited except by special permission.
3. **R-Restricted Areas** - Flights are prohibited during published periods of use unless permission is obtained from controlling authority.
4. **W-Warning Areas** - Flights are not restricted but avoidance is advised during time of use.
5. **D-Danger Areas** - Flights are not restricted but avoidance is advised during time of use.
6. **A-Alert Areas** - Flights are not restricted. An area where there is concentrated student training or other unusual area activity of operational significance. The suffixes in parentheses added to the Canadian Alert Area designators are: (A) for Acrobatic; (H) for Hang Gliding; (P) for Parachute Dropping; (S) for Soaring; and (T) for Training.

Effective Altitude Column

1. When the lower limit of the area is the surface it is not published, e.g., "To 5000" means the lower limit is the surface.
2. The word "To" preceding a flight level or altitude means "to and including" that flight level or altitude, e.g., "To 5,000" includes 5000 feet.
3. When altitudes are not published, it means that the nation or controlling agency has not provided the information. Aircrews should assume maximum restriction, e.g., altitude is surface to unlimited.

Time Used Column

1. Days-Sunrise to sunset except Canada where it means ½ hour before sunrise to ½ hour after sunset.
2. Nights-Sunset to sunrise except Canada where it means ½ hour after sunset to ½ hour before sunrise.
3. Cont-24 hours a day and/or 7 days a week.
4. Mon - Fri-indicates area is active every day from Monday through Friday inclusive.
5. Intmt - Not continuous. Check with controlling agency for status of area.

6. When times are not published, it indicates that nation or controlling agency has not provided the information. Aircrews should assume area is being used continuously.

Shown in Figure 2-5 is an example of "Warning" and "Alert" areas listed in AP 1/A.

70 UNITED STATES					
NUMBER	AREA NAME	EFFECTIVE ALTITUDE	EFFECTIVE TIMES	WEATHER	CONTROLLING AGENCY
					USING AGENCY
A260	COLORADO SPRINGS, CO	To 17500'①	1 Jun-5 Aug 1230-0200Z++;	VFR	USAF Academy
	clsd Sun and② N39°02'00.00" W104°47'02.00" to N38°57'00.00" W104°47'02.00" to N38°57'00.00" W104°55'02.00" to N39°02'00.00" W104°55'02.00" to beginning. ①Excl'd blw 8800' AMSL wi Colorado Springs USAF Academy Class D Airspace area. Excl'd btn 8500'-10,200' AMSL wi Colorado Springs Class C Airspace area. ②hol. 6 Aug-31 May 1330Z++ or SR (if later)-0100Z++ or SS (if earlier); clsd Sun and hol. (21 FEB 2002)				
W283	SAN FRANCISCO, CA	To FL 600	Mon-Fri 1300-0500Z++ OT	VFR-IFR	FAA, Oakland ARTCC②
	by NOTAM① N36°52'00.00" W123°10'04.00" to N35°20'55.00" W122°06'59.00" to N35°04'00.00" W122°43'04.00" to N35°29'00.00" W123°00'04.00" to N35°13'00.00" W123°34'04.00" to N36°20'00.00" W124°19'04.00" to beginning. ①Ctc Beaver CON 120.825/328.45. ②Using Agcy-USN, CO, FACSFC, San Diego NAS, DSN 735-1758, C619-545-1758. (12 JUL 2001)				
W285A	SAN FRANCISCO, CA	To FL 450①	Mon-Fri 1300-0500Z++ OT	VFR-IFR	FAA, Oakland ARTCC③
	by NOTAM② N37°05'00.00" W122°43'04.00" to N35°58'00.00" W121°57'04.00" to N35°37'00.00" W121°32'04.00" to N35°20'55.00" W122°06'59.00" to N36°52'00.00" W123°10'04.00" to beginning. ①To FL 450 except sfc to 7999' blw W285B. ②Ctc Beaver CON 120.825/328.45. ③Using Agcy-USN, CO, FACSFC, San Diego NAS, DSN 735-1758, C619-545-1758. (12 JUL 2001)				

Figure 2-5 Warning and Alert Areas Listed in AP 1/A

A brief explanation of Alert Area 292 follows:

Number - A 292

Name - Pensacola, FL

Effective altitude - See Note (1), to 3000 feet MSL within federal airway, otherwise from the surface up to and including 17,500 feet MSL.

Days of the week - Monday through Saturday.

Hours of the day - See Note (2). Sunrise to 0700Z++ Monday-Friday, sunrise to sunset on Saturday.

Weather - must be VFR, 3000 feet ceilings and 5 miles visibility.

Controlling Agency - See Note (3). COMDRAWINGSIX, NAS Pensacola with various phone numbers listed. C=commercial number and V=AUTOVON number.

Dimensions of the area - From N31-30 W086-45, through all of the points listed, to N31-30 W086-56 to beginning.

Parachute Jumping Areas

Parachute Jumping Areas exist throughout the United States and are listed in AP/IA by state. An example of a Parachute Jumping Area is located in Figure 2-6.

UNITED STATES	
NOTE: Any military agency requiring the latest information regarding parachute jumping areas should contact their local Flight Service Station (FSS). For area information outside the jurisdiction of the local FSS, requests will be relayed to the respective FSS.	
ALABAMA	
ALBERTVILLE MUNI-THOMAS J BRUMLIK FLD To 10000'; 1500Z+-SS; 17.0 NM fr GADSDEN VOR-DME on 331 rad.	
ALLEN ARMY HELIPORT To 12500'; Wkend and hol, SR-SS; 11.0 NM fr WIREGRASS VORTAC on 253 rad wi 1 NM rad.	
BAYOU LA BATRE, ROY E RAY ARPT To 12500'; Dly, SR-SS; 12.0 NM fr BROOKLEY VORTAC on 217 rad.	
BESSEMER, OLD BESSEMER ARPT To 10000'; Wkend, 1630Z+-SS; 16.0 NM fr BROOKWOOD VORTAC on 057 rad.	
BUZZ DROP ZONE To 2000'; Dly, 1400-0300Z+-; 17 NM fr MONTGOMERY VORTAC on 300 rad or 12 NM fr MAXWELL TACAN on 267 rad.	
CULLMAN, FOLSOM FLD ARPT To 14500'; Sat-Sun, SR-SS, OT by NOTAM; 36.0 NM fr VULCAN VORTAC on 001 rad wi 3 NM rad.	
DOTHAN, HATCH ARMY HELIPORT To 12500' AGL; Wkend and hol, SR-SS; 10.3 NM fr WIREGRASS VORTAC on 290 rad wi 1 NM rad.	
ELBERTA, HORAK ARPT To 14000'; Dly, 1300Z+-SS+30; 11.0 NM fr SAUFLEY VOR on 268 rad.	

Figure 2-6 Parachute Jumping Area

Military Operations Areas (MOAs)

The FAA establishes MOAs in which certain military flight training may be conducted on a scheduled basis. MOAs are charted so that nonparticipating aircraft may be aware of these operations. A sample MOA listing is shown in Figure 2-7.

III. MOA SCHEDULING INFORMATION			
MOA NAME	SCHEDULING POINT	LOCATION	DSN
ABEL BRAVO, EAST, NORTH & SOUTH MOA, CA	CO	Yuma MCAS, AZ	951-2214/2215
ADA EAST/WEST MOA, KS	32 FTS	Vance AFB, OK	448-6251/6252/6253
AIRBURST A, B & C MOA, CO	140 TFW	Buckley ANGB, CO	877-9472
ANNE HIGH/LOW MOA, AR	917 TFW	Barksdale AFB, LA	781-9154

Figure 2-7 MOA Listing

204. AREA PLANNING 1B

Military Training Routes (MTRs)

This publication is unique to the North and South American region. It contains information relative to military routes, including IFR Military Training Routes (IR), VFR Military Training Routes (VR), Slow Speed Low Altitude Training Routes (SR), and Air Refueling Tracks/Anchors (AR). Charts containing graphic depictions of the IR \TR and SR route systems throughout the United States are also published. In this course we will only look at the VR routes section of AP/1B.

IRs and VRs are developed by the DOD to provide for military operational and training requirements that cannot be met under the terms of FAR 91.117 (Aircraft Speed). Accordingly, the FAA has issued a waiver to DOD to permit operation of an aircraft below 10,000 feet MSL in excess of 250 knots indicated airspeed along DOD developed and published IFR and VFR routes. VRs with no altitude segments above 1500 feet AGL are assigned a 4-digit, vice a 3-digit identifier (e.g., VR-1 021).

VT- 10/4 uses VRs for low-level visual navigation training. NAV/NFOs assigned to the Strike pipeline will fly IRs at VT-86 for radar navigation training. A summary of operating parameters for VRs follows.

Scheduling and Coordination

1. Routes shall not be flown unless scheduled through the designated originating/scheduling activity listed in the route description. The VT -10/4 Operations Department will coordinate the scheduling for all VR routes.
2. The scheduling activity shall advise the user of any special operating procedures or constraints not included in the route description. Examples of briefing items include noise sensitive areas, unpublished obstructions or airports, bird activity, route suspension due to air search, forest fires, etc.
3. The scheduling activity shall confirm all planned route usage (generated by both local and transient users) with the tie in FSS on a daily basis. This shall include route designator, time period, and altitudes (if other than published altitudes).

Flight Plans

Operations to and from VRs should be conducted on an IFR flight plan. Pilots operating on an IFR flight to a VR shall file to the fix/radial/distance (FRD) of their chosen entry point. Pilots transitioning to IFR upon exiting a VR shall file the FRD of the chosen exit point. These will be explained in more detail in your VNAV class.

Inflight

Route adherence/speed:

1. Pilots shall be responsible for remaining within the confines of the route. When exiting vertically or laterally below 10,000 feet MSL comply with FAR 91.117 (aircraft speed).
2. When practicable, avoid flight within 1500 feet AGL or 3 NM of airports.
3. Flights shall be conducted at the minimum speed compatible with mission requirements (e.g., 300 knots for the T -1 A).

CAUTION

Pilots flying on MTR in visual meteorological conditions (VMC) are responsible for maintaining obstacle clearance and compliance with OPNAVINST 3710.7, regardless of the route's published altitude(s).

Weather

Operations on VRs shall be conducted only when the weather is at or above VFR minima, except that:

1. Flight visibility shall be five miles or more.
2. Flights shall not be conducted below a ceiling of less than 3,000 feet AGL.

Communications

Pilots should monitor 255.4 (Flight Service Station) while on VRs when it is not detrimental to the mission accomplishment. The FSSs within a 100 NM radius of your **VR** route will be listed in the last section of the route description.

Transponder

1. Pilots operating on a VR route will adjust their transponders to Code 4000 unless otherwise assigned by ATC. This code lets ATC know that you are a military aircraft operating on a VR route at speeds greater than 250 knots below 10,000 ft.
2. An example of a Low Altitude Training Route from AP/IB is seen in Figure 2-8.

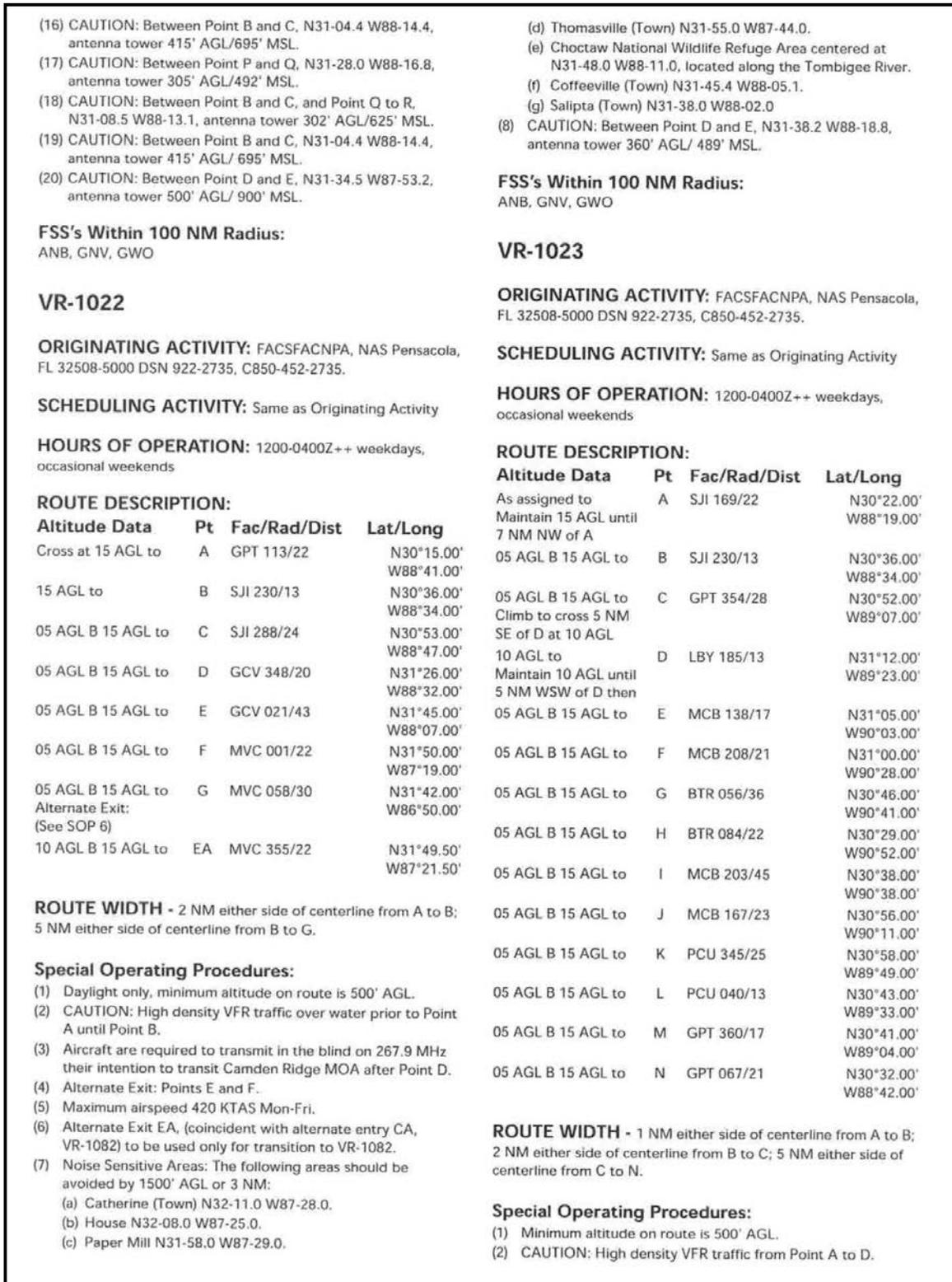


Figure 2-8 Low Altitude Training Route from AP/IB

3. A brief explanation of the VR-1023 route follows:

Number - 1023

Type - VR

Weather minima - 3,000/5

Scheduling Activity - FACS FACNPA, NAS Pensacola, V 922-2735

Hours of Operation - 1200-04002++ weekdays, occasional weekends

Altitude data - Prior to point "A", as assigned by ATC if IFR or any applicable VFR altitude if VFR down to 1000 feet AGL.

From point "A" to "C" you have a block altitude (B) of 500 feet AGL and 1500 feet AGL. Five miles SE of point D must cross at 1000 feet AGL. Point locations -Point "A" is on the Semmes (SJI) VORTAC 169° radial at 22 NM. (This FAC/RAD/DIST description is useful when airborne, but for preflight planning purposes you should use the Lat./Long position, as given in the route description, to plot the points on your VNA V chart).

Special Operating Procedures - You should read and adhere to all restrictions that apply to your route.

Aerial Refueling Tracks/Anchors (AR)

The conduct of aerial refueling is based on the strict requirement that participating aircraft remain within specifically designated airspace. Aerial refueling operations are normally conducted on tracks or in anchor areas published in this document, and will be conducted under Instrument Flight Rules. These routes are of primary concern to US Air Force aircraft. Naval aircraft will conduct in-flight refueling where dictated by operational requirements.

205. SUMMARY

This unit has concentrated on the location and importance of information in FLIP Area Planning, including Class B airspace, flight hazards, route and area restrictions, supplementary airport remarks, preferred IFR routes, designated mountainous areas, special use airspace, and military training routes.

206. CHAPTER REVIEW

1. Read Chapter 2 of the FTI
2. Do Lesson 2 on the Computer Based Training for FLIP.
3. Complete the Unit Review Questions

THIS PAGE INTENTIONALLY LEFT BLANK

CHAPTER TWO REVIEW QUESTIONS

Refer to your classroom copies of AP/I, IA and IB to answer the following questions.

1. What is the flight hazard that is located in South Carolina? _____
2. Pilots landing at McGuire AFB should be alert for what on the runway? _____
3. What Preferred High Altitude Routing should you use if you were flying from Miami to Minneapolis? _____
4. What type of special use airspace is P-40? ____What are its dimensions? _____
5. What is the Effective Altitude restriction for Warning Area -602? _____
6. Who is the controlling agency for W-237? _____
7. Who schedules the OKANOGAN MOA ? _____
8. When flying in the vicinity of Texarkana, Arkansas, where should you be alert for parachute jumping? _____
9. Whom would you contact to use IR-I24? _____
10. What DSN number would you call to use VR-151? _____
11. What is the widest width for VR-1022? _____
12. Air Refueling (anchor) 630 Entry Point is located at what LAT/LONG? _____
13. What are the authorized altitudes on VR-1113 from point E to point F? _____

Choose the single best answer. If more than one answer is required, it will be indicated.

14. The Low Altitude Preferred Route from Philadelphia to Boston is?
 - a. V312 DRIFT V308 ORW V16 WOONS.
 - b. VCN VCN101 J121 PVD V139 DENNY.
 - c. ARCER SEY V268 HTO V308 BRIGS V577 VCN.
 - d. V139 VCN VCN110 HTM WILKI.

15. The altitude restriction for prohibited area 56 is from _____ to _____?
- a. 1200 feet AGL/18,000 feet MSL
 - b. Surface/18,000 feet MSL
 - c. 500 feet AGL/17,500 feet MSL
 - d. Surface/17,500 feet MSL
16. Alert Area 291B is used the following days of the week
- a. Monday - Saturday
 - b. Continuous
 - c. Monday - Friday
 - d. By NOTAM
17. Parachute Jumping Areas are found in which FLIP publication?
- a. AP/1
 - b. AP/1A
 - c. GP
 - d. AP/1B
18. On VR619 the maximum altitude you can fly between PT A and B is?
- a. 300 feet MSL
 - b. 500 feet AGL
 - c. 3000 feet MSL
 - d. 6000 feet MSL

19. On VR619 what is the route width between PT A and B?
- a. 3 NM either side at centerline.
 - b. 4 NM either side of centerline.
 - c. 3 NM left and 4 NM right of centerline.
 - d. 3 NM right and 4 NM left of centerline.
20. Whom would you contact to use the Palatka MOA?
- a. F ACSF AC JAX
 - b. COMMATVAQWINGPAC
 - c. COMTRAWING THREE
 - d. 174 TFW
21. Aircraft operating on VR-202 must?
- a. be alert for aircraft crossing between B and C on VR 198
 - b. avoid overflight of the town of Doyle between F and G
 - c. exit at point I
 - d. use caution to avoid uncharted tower 2 miles east of point F
22. Weather minimums for operating on a "VR" route (ceiling/Visibility) are?
- a. 1500/3
 - b. 3000/3
 - c. 3000/5
 - d. 5000/5

23. The days of the week in which W-460B are active are:
- a. Monday - Friday
 - b. Continuous
 - c. By NOTAM
 - d. Monday - Saturday
24. On AR-636, what is the assigned ARTCC?
- a. Salt Lake City
 - b. Oceana
 - c. Washington
 - d. Giant Killer
25. What type of hazard exists near NAS Meridian, Mississippi?
- a. Hazardous parachute training
 - b. Numerous civilian aircraft
 - c. High density student flying
 - d. Naval gunfire support
26. The Preferred high-altitude routing from St. Louis to Chicago Midway is?
- a. VP PNT V69 JOT
 - b. J101 CAP PNT V227 PLANO
 - c. STL 1134 GBEES CVG VS JOGER CMH
 - d. CARDS -SID CAP MOTIF -ST AR

27. While approaching Greater Buffalo Intl., NY, you are 6 NM from the field at 3000 feet AGL. Which of the following is required to fly in that airspace?

- a. Two-way radio
- b. Private pilot license
- c. IFR flight plan
- d. Clearance through the Niagara Falls Class B airspace.

28. Aircraft must transmit on frequency ___ when transiting Camden Ridge MOA on VR-1021?

- a. 339.1
- b. 267.9
- c. 243.0
- d. 282.8

THIS PAGE INTENTIONALLY LEFT BLANK

CHAPTER THREE

FLIGHT INFORMATION HANDBOOK

300. INTRODUCTION

The Flight Information Handbook is a DOD Flight Information Publication (FLIP) issued every 32 weeks. The Flight Information Handbook contains aeronautical information which is required by DOD aircrews in flight, but is not subject to frequent change. Sections include:

- A. Emergency Procedures;
- B. National and International Flight Data and Procedures;
- C. Meteorological Information;
- D. Conversion Tables;
- E. Standard Time Signals;
- F. FLIP and NOTAM abbreviations/codes. This publication is intended for U.S. Military use, and procedures may not be applicable to other users.

NOTE

The Flight Information Handbook, along with remaining pubs covered in this coursebook shall be carried in-flight. (Does not include GP, AP/1A, AP/1B.)

References

Flight Information Handbook

301. LESSON TOPIC LEARNING OBJECTIVES

Enabling Objectives

F.3. Locate, interpret, and apply information in FLIP Flight Information Handbook.

Enabling Steps

F.3.1 Locate information on special notices.

F.3.2 Recall information from emergency procedures.

F.3.3 Recall information from national and international flight data and procedures.

F.3.4 Locate meteorological information.

F.3.5 Solve mathematical problems using conversion tables.

F.3.6 Locate information on NOTAM abbreviations and decode NOTAMs

F.3.7 Locate information on interception signals.

Instructional Aids

Flight Information Handbook

Emergency Procedures

Many of the procedures in this section apply to international flight and may be of importance to you at some time in the future; however, some procedures could apply to you while at VT - 10/4. Every flight brief will discuss emergency procedures, but should a situation arise in flight, you can refer to the handbook to comply with applicable FAA procedures. Some of these procedures, such as lost COMM, will be addressed in your other courses. Four items related to emergency procedures which deserve brief mention are presented below.

1. **EMERGENCY FREQUENCIES** - UHF/voice **243.0** MHZ; VHF/voice **121.5** MHZ
2. **MAYDAY** - The international distress signal. When repeated three times, it indicates imminent and grave danger (**ditching, crash landing, or abandoning aircraft**) and immediate assistance is requested.
3. **PAN PAN** - The international urgency signal. When repeated three times indicates uncertainty or alert, followed by the nature of urgency (**e.g., lost, fuel shortage, or partial engine failure**).
- 4 **LOST COMM TRANSPONDER CODES** - Transponder squawk 7600.

The Day Visual Signals (Figures 3-1 and 3-2) will be amplified later in your Flight Planning course. At that time you will be required to memorize several signals.

NOTE

These are not listed under day visual signals, or radio failure, but under the heading of "Two-way Radio Failure", sub-heading "Visual Signals When Radio Inoperative." The lesson here is to know where to look for the information.

(1) DAY VISUAL SIGNALS
<p>(a) DESCEND TO LOWER ALTITUDE - Hold hand at top of canopy, palm down, fingers extended and joined, move hand forward and down.</p> <p>(b) SYSTEM FAILURES: HEFOE System - Clench fist and hold it at top of canopy, then hold up the required number of fingers to denote which system is involved (see 1. through 5. below). If the clenched fist signal is seen but no finger signal is received or the intercepting pilot is unable to understand the signal given, the pilot will assume that the aircraft in distress has one or more systems inoperable and should proceed with extreme caution. The receiving pilot acknowledges the signal by repeating it. (*)</p> <ol style="list-style-type: none"> 1. Hydraulic - one finger. 2. Electrical - two fingers. 3. Fuel - three fingers. 4. Oxygen - four fingers. 5. Engine - five fingers.

Figure 3-1 Day Visual Signals

COLOR & TYPE OF SIGNAL	ON THE GROUND	IN FLIGHT
STEADY GREEN	Cleared for takeoff	Cleared to land
FLASHING GREEN	Cleared to taxi	Return for landing (to be followed by steady green at proper time).
STEADY RED	Stop	Give way to other aircraft and continue circling.
FLASHING RED	Taxi clear of landing area (runway) in use	Airport unsafe – do not land
FLASHING WHITE	Return to starting point on airport	¹ Land at this airport and proceed to apron. Clearance to land and to taxi will be given in due course.
ALTERNATING RED & GREEN	General Warning Signal – Exercise Extreme Caution	
RED PYROTECHIC (RED FLARE)		Notwithstanding any previous instructions, do not land for the time being.
¹ ICAO- Procedure. FAA not applicable.		

Figure 3-2 Day Visual Signals

302. NATIONAL AND INTERNATIONAL FLIGHT DATA AND PROCEDURES

Section B. The majority of this section will be covered extensively in your COMM course. Specific areas of interest in this section are:

1. Entering and departing Class A airspace.
2. Position reporting procedures - (FAA only).
3. Use of Runway Condition Reading (RCR).
4. Lighting systems - Runway (Figure 3-3) and Approach (Figure 3-4). Visual glideslope indicators, pilot control of airport lighting, and waveoff lighting at USN/USMC airports.
5. CIRVIS reports
6. Meaconing-Intrusion-Jamming and Interference (MIJI) procedures.

B-28 NATL/INTL FLIGHT DATA/PROCEDURES

**LEGEND
INSTRUMENT APPROACH PROCEDURES (CHARTS)
LIGHTING SYSTEMS**

Lighting systems are presented in three sections; runway lighting, approach lighting and visual glide slope indicators. Availability of runway lighting will be shown by note in the airport sketch, e.g. TDZL/CL Rwy 15. Approach lighting and visual glide slope indicators are indicated on the airport sketch by a system identification, e.g. ^(A2) Lighting system depictions show typical configurations. Variations can exist. For more information see GP, Chap 2, Airport Lighting.

RUNWAY LIGHTING SYSTEMS

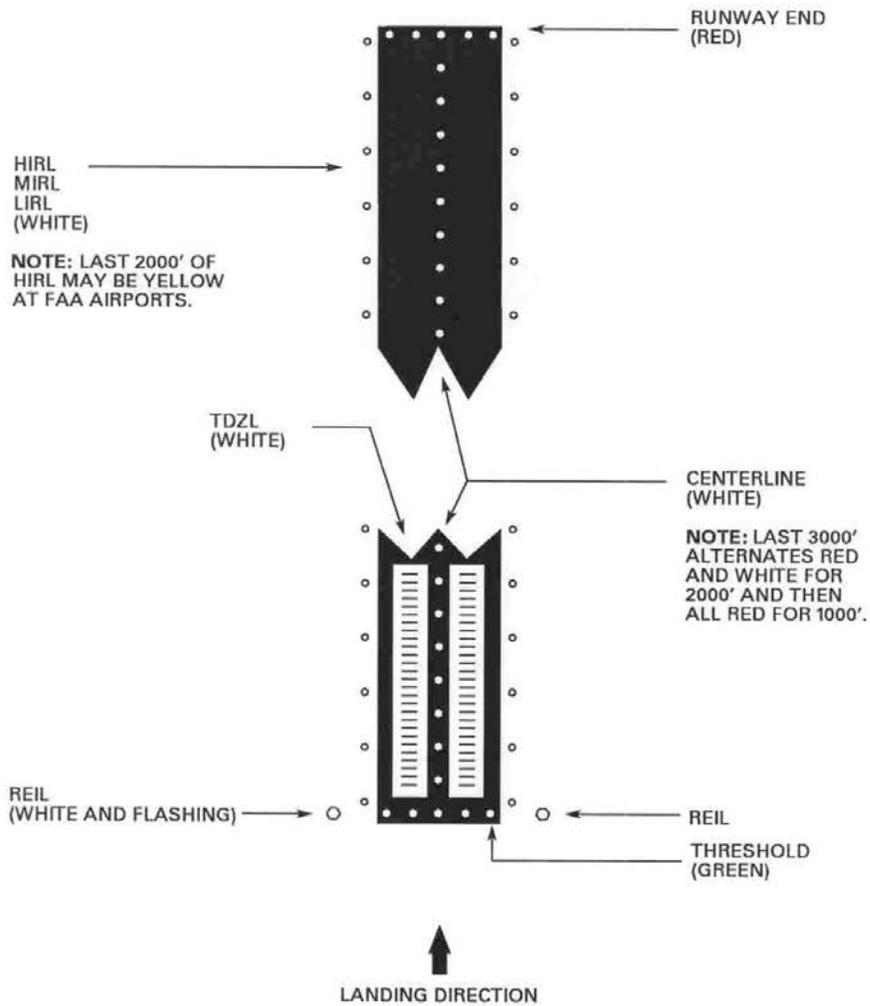


Figure 3-3 Runway Lighting Systems

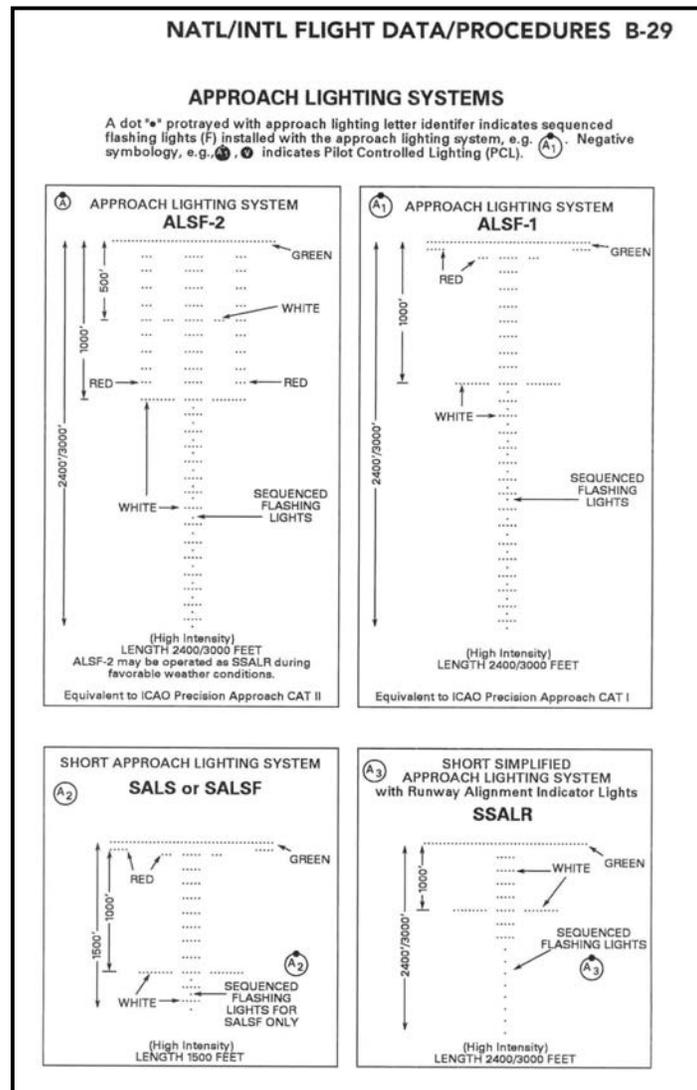


Figure 3-4 Approach Lighting Systems

Meteorological Information

Section C provides a ready reference to many of the weather related topics you will learn in both your METRO and COMM courses. Specific areas of interest in this section are:

1. USAF, USN, and USMC Pilot to Metro Services (PMSV).
2. Pilot to Metro and weather radar facilities (Figure 3-5).
3. SIGMETs and AIRMETs and when are they issued.
4. Automatic Terminal Information Service (ATIS).

5. Pilot weather reports (PIREPs) format.
6. Turbulence and icing definitions.

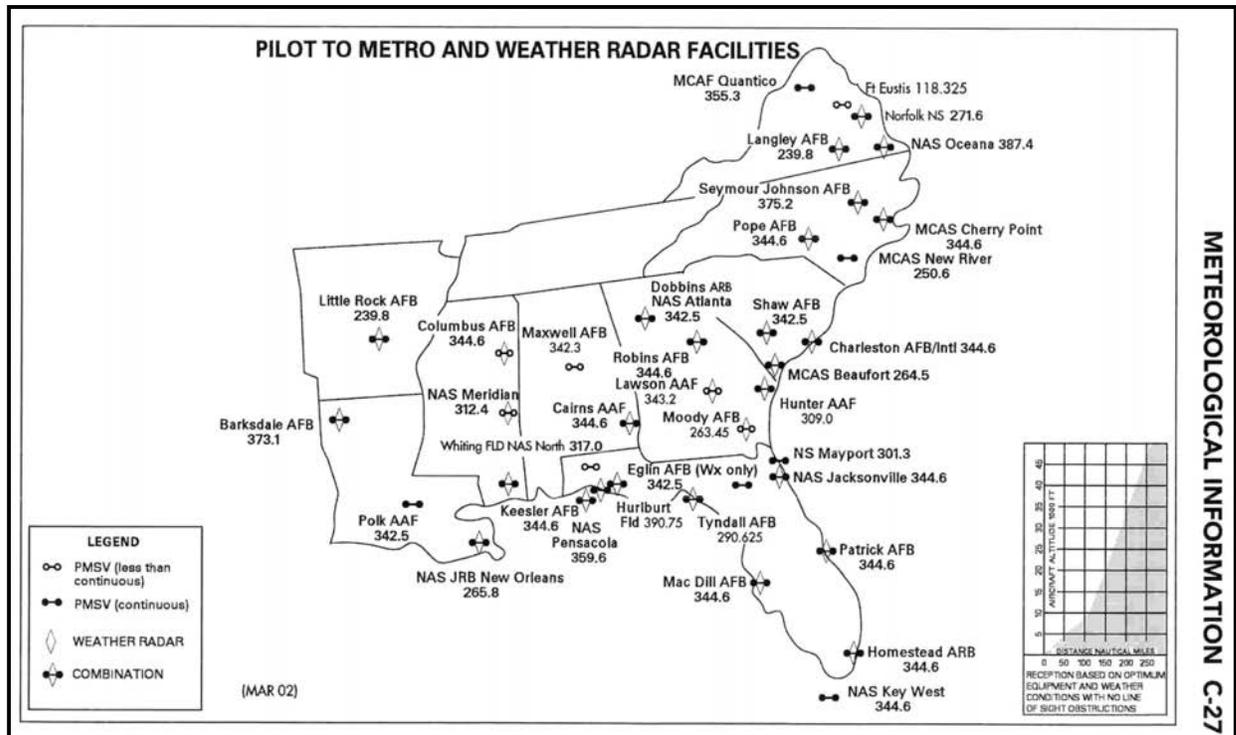


Figure 3-5 Pilot to Metro and Weather Radar Facilities

Conversion Tables

Section D contains conversion charts for: Flight Level, Altimeter Setting, Centigrade/Fahrenheit, Inches/Millibars, Meters/Feet, Kilometers/Statute Miles/Nautical Miles, and Liquid and Weight measures. The frequency pairing plan at the end of this section can be very helpful when trying to determine the VOR frequency associated with each TACAN channel.

Standard Time Signals

Section E contains data related to time signals and zones, (Figure 3-6) and is useful in preflight planning.

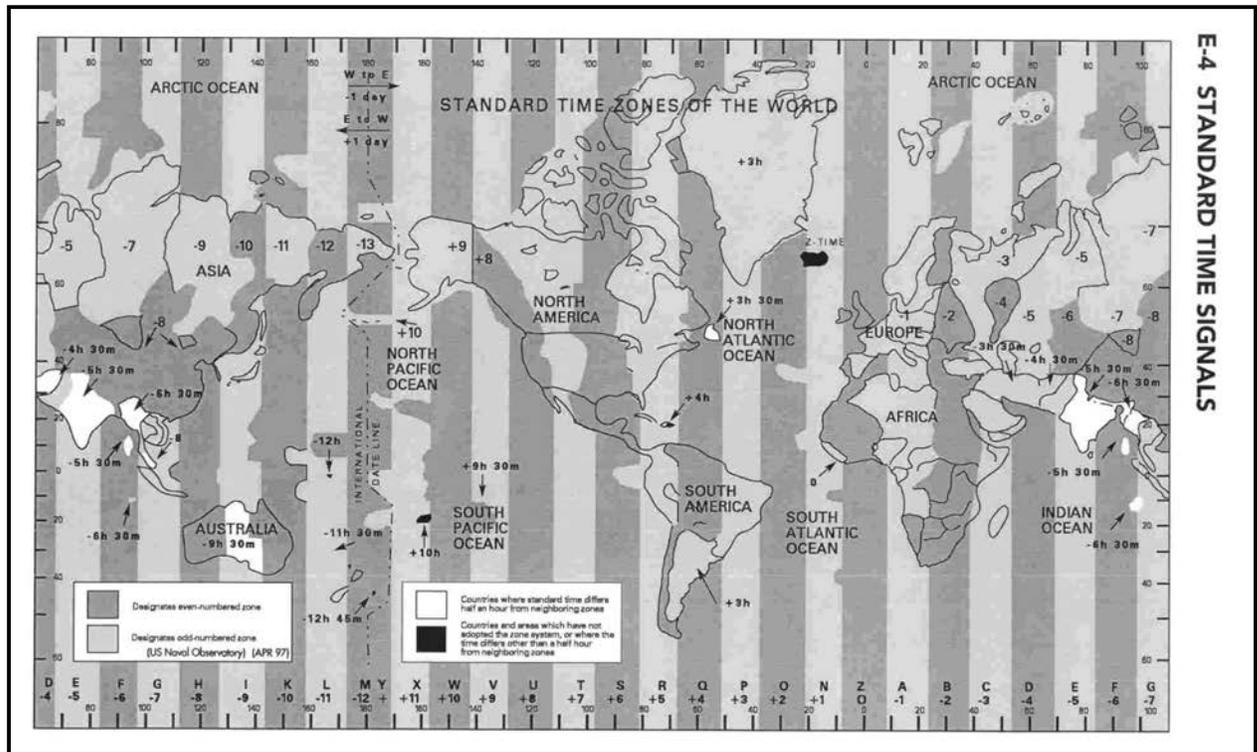


Figure 3-6 Standard Time Signals

NOTAMs Abbreviations and Codes

Section F contains a ready reference of abbreviations used throughout the entire FLIP program and the USAF/USN NOTAM System (Figure 3-7). The international NOTAM code (Figure 3-8) is published to enable decoding of the five letter NOTAM groups. Encoding facilitates the rapid dissemination of NOTAMs by reducing the transmission time over telecommunications channels. U.S. military NOTAMs originate from Carswell AFB and Randolph AFB and contain information regarding the status of radio aids to navigation, aerodromes and lighting facilities, dangers to aircraft in-flight, and other information requiring timely dissemination.

NOTE

NOTAMs are usually located at Base Operations in the Mission Planning room on the wall or available through a computer terminal. It is very important that flight crews check all NOTAMs including the **Special Notices**. Special Notices are NOTAMs for each Center airspace that contain information about NAVAID availability, laser light shows, special use airspace, route status, etc.

F-2 FLIP AND NOTAM ABBREVIATIONS			
1. FLIP and NOTAM ABBREVIATIONS - This listing provides a ready reference of abbreviations used in Flight Information Publications (FLIPs) and the DoD NOTAM System. Codes, e.g., POL, Lighting, JASU etc., are listed elsewhere in the Supplement Legends. The abbreviations presented are intended to represent grammatical variations of the basic form. (Example - "trans" may mean "transmit", "transmitting," "transmitted," or "transmits.")			
	A	act	activity
A	Alert Area (followed by identification)	ACW	Aircraft Control and Warning
		A/D	Aerodrome
A	Area Chart (followed by identification)	ADA	Advisory Area
AA	Aruba	ADC	Aerospace Defense Command
A/A	air to air	ADCC	Air Defense Control Center

Figure 3-7 F-2 FLIP and NOTAM Abbreviations

F-30 FLIP AND NOTAM ABBREVIATIONS
2. NOTAM CODE -
(ICA DOC 8400)
<p>a. The ICAO NOTAM Code is published to enable the coding of information regarding the establishment, condition or change of radio aids, aerodromes and lighting facilities, dangers to aircraft in flight, or search and rescue facilities. Encoding facilitates the dissemination of NOTAMs by reducing the transmission time over telecommunication channels and eliminating translation. The transmission of NOTAM over the international aeronautical telecommunication service is governed by the appropriate sections of the current "Communication Procedures" and Aeronautical Information Services Procedures. The former contains information on the acceptability of and priority to be accorded to NOTAM for transmission over the international aeronautical telecommunication service, the latter has full instructions on the textual format and contents of NOTAM.</p> <p>b. All NOTAM Code groups contain a total of five letters:</p> <p>(1) The first letter of the Code group is always the letter Q to indicate that it is a Code abbreviation for use in the composition of NOTAM. The letter Q has been chosen to avoid conflict with any assigned radio call sign.</p> <p>(2) The second and third letters identify the subject reported upon and</p> <p>(3) The fourth and fifth letters denote its status of operation. The code identifying the subject or denoting its status of operation is, whenever possible, self-evident. Where more than one subject could be identified by the same self-evident code the most important subject is chosen.</p>

Figure 3-8 F-30 FLIP And NOTAM Abbreviations

Interception Signals

These procedures can be found on the back cover. They need not be committed to memory, but their location should be known. Figure 3-9 shows only a part of the Interception Procedures. Consult your FIH for a complete listing.

- | ACTION BY INTERCEPTED AIRCRAFT | |
|---------------------------------------|--|
| 1. | The word "interception" in this context does not include intercept and escort service provided, on request, to an aircraft in distress, in accordance with the Search and Rescue Manual (DOC 7333). |
| 2. | An aircraft which is intercepted by another aircraft shall immediately: <ul style="list-style-type: none">a. follow the instructions given by the intercepting aircraft, interpreting and responding to visual signals; andb. notify, if possible, the appropriate air traffic services unit. |

Figure 3-9 Action By Intercepted Aircraft
303. SUMMARY

The Flight Information Handbook is as important to a NAV/NFO as his IFR Supplement. It is a quick reference for information that could be required by aircrews at any time. Carry one and use it!

304. CHAPTER REVIEW

1. Read Chapter 3 of the FTI
2. Do Lesson 3 on the Computer Based Training for FLIP.
3. Complete the Unit Review

THIS PAGE INTENTIONALLY LEFT BLANK

CHAPTER THREE REVIEW QUESTIONS

Use your Flight Information Handbook to find the answers to the following questions. This unit review will be debriefed in class.

1. At FL 300, your interference free reception distance for contacting a METRO facility would be approximately _____ nautical miles.
2. Barksdale AFB, LA has less than continuous pilot-to-METRO service and weather radar.(TRUE/FALSE)
3. MCAS Miramar, CA has continuous pilot-to-METRO service and weather radar(TRUE/FALSE). Miramar METRO can be contacted on UHF Frequency _____.
4. How can a military pilot leaving from a nonmilitary airfield in the vicinity of Andrews Air Force Base, Maryland, obtain weather and NOTAM information?
_____.
5. PIREPS of hazardous weather conditions should be transmitted to _____ with a follow-up report to _____ when possible.
6. How would you notify a controller that you have received an ATIS broadcast?
_____.
7. If the time zone in Pensacola is 1500Z (GMT), what is the time in Texas?
_____Z(GMT)_____L(local)
8. If a controller gives you an altimeter setting of 1015 MB, what is the equivalent in inches of mercury? _____
9. Are you required to give a PIREP when you encounter weather that is not forecast? (YES/NO)
10. When giving a PIREP, should you give local time or GMT?
11. The absence of a ceiling/visibility on an ATIS broadcast indicates a ceiling of _____ feet or more and a visibility of _____ miles or more exists.
12. A reported runway condition reading (RCR) of 08 would indicate that you can expect your landing roll to increase from _____% to _____%.
13. On a VASI, what is the indication for being on glideslope? _____.
14. Reports of information of vital importance to the security of the United States and Canada, which, in the opinion of the observer require urgent defensive or investigative action are termed _____ reports.

CHAPTER THREE FLIGHT TRAINING PUBLICATION (FLIP) STUDENT GUIDE

15. Mode 3/Code __ has been assigned to aircraft operating above FL 600.
16. With an RCR of 15, your landing roll would be increased by _____% to _____%.
17. With radio failure in IFR conditions, select Mode 3/Code _____.
18. With radio failure, you should begin your approach at your _____ time or your _____ as derived from your flight plan, or as amended with ATC.
19. The HEFOE system is a system for giving position reports to ATC (True/False).
20. The abbreviation "IFF" signifies _____.
21. The NOTAM code "QCGAU" means _____.
22. The NOTAM code "RWY 7R QMHAO" signifies _____.

CHAPTER FOUR

IFR ENROUTE SUPPLEMENT

400. INTRODUCTION

The IFR Enroute Supplement, issued every 8 weeks, is designed for use in flight and contains notices, airport/facility information, and position report/flight plan format. The Enroute Supplement is also extremely valuable for preflight of out-and-in or cross-country flights.

References

FLIP IFR Enroute Supplement

401. LESSON TOPIC LEARNING OBJECTIVES

Enabling Objective

F.4. Locate, interpret, and apply information found in the FLIP IFR Enroute Supplement.

Enabling Steps

F.4.1 Recall information on special notices.

F.4.2 Recall general information.

F.4.3 Extract information concerning airport/facility directory.

F.4.4 Recall information from Theater Flight Data and Procedures.

Instructional Aids

FLIP IFR Enroute Supplement

402. IFR ENROUTE SUPPLEMENT

Special Notices

Along with the Special Notices in FLIP General Planning (GP) and NOTAMS posted in Base Operations, you should read the Special Notices section of the IFR Supplement prior to planning each flight. This is located inside the front cover. Special Notices of a permanent nature are normally carried for two issues of the supplement and then incorporated into the appropriate FLIP Publication. Notices of a temporary nature will be carried for the life of the notice. New or modified notices are emphasized by an outline and the date of the first issuance at the top of the notice. One part of the Special Notices section contains "New FLIP Features," which are notices of new requirements or major modifications to existing flight publications.

General Information

The Supplement provides reference data and flight procedures for military flight crews. It is designed for use with corresponding enroute charts. Related information can be found in the Flight Information Handbook, AP/1 and the High/Low Altitude Terminal Approach booklets. A vertical line in the left margin indicates new or revised data. General Information includes the ICAO phonetic alphabet and Morse code.

Airport/Facility Directory

The Airport/Facility Directory contains listings for airports which have a published DOD (high/low altitude) Instrument Approach Procedure and/or Radar Approach minima. Canadian and Mexican airports portrayed on charts for emergency use, or those requested by military service are also listed. The legend has sample listings for an airport (HOG HOLLER INTL), an FSS (NGHAM Radio) and an ARTCC (MARIE CENTER). Items in the sample listing can be interpreted using the legend and the abbreviations. At a glance, an NFO should be able to interpret the following:

1. Field - DOD NOT AM coverage, three letter identifier, military tenants, lat/long, elevation, time zone, chart coverage.
2. Runways - dimensions, surface, displaced threshold, arresting gear.
3. Service - JASU, fuel, oxygen availability, restrictions, single point refueling (SP) capability.
4. Remarks - hours of operations, restrictions (PPR, OFFL BUS ONLY), cautions, traffic pattern, supplementary airport coverage.
5. Communications - SFA, ATC frequencies, ATIS and METRO availability, Class C airspace.
6. NAVAIDs - type, frequency, channel, location.
7. ILS/RADAR - type approach available, restrictions.

Theater Flight Data and Procedures

You should be familiar with information in this section and its location. Items of significance are:

1. ADIZ Procedures
2. FACSFAC information

Back Cover

The back cover of the Supplement contains a convenient reference to the formats for position reports, for procedures necessary to request changes in flight plans and for filing flight plans in flight. (Figure 4-1.)

I. POSITION REPORTS: (ICAO)	
A. IFR/VFR POSITION REPORTS	
1. Aircraft identification	4. Flight level or altitude
2. Position	5. Next position and time over
3. Time	6. Ensuing significant point
If entering ADIZ, give appropriate ADIZ position reports listed under ADIZ procedures.	
B. IF REQUESTED (or when deemed necessary by pilot)	
1. Operating information	
a. Estimated time of arrival	b. Endurance
2. Meteorological information	
a. Air Temperature	d. Aircraft icing
b. Wind	e. Supplementary information
c. Turbulence	
II. CHANGE OF FLIGHT PLAN:	
A. CHANGE OF ROUTE OR DESTINATION	
1. Aircraft identification and type of aircraft.	5. Alternate, if required.
2. Position and time.	6. "Departed IFR (or VFR) to"
3. New route and/or destination.	7. Rank and honors code of VIP if aboard (only if destination is being changed).
4. ETE and hours of fuel remaining.	
B. CHANGE FROM VFR TO IFR ONLY	
1. Aircraft identification and type.	5. ETE from point of change to destination and hours of fuel remaining.
2. Position and time.	6. Alternate airport.
3. Route, altitude, and destination.	7. Rank and honor code of VIP if aboard (only if destination is being changed).
4. True air speed in knots.	
C. CHANGE OF ETA BY MORE THAN 30 MINUTES	
1. Aircraft identification.	3. "IFR (or VFR) to (destination)".
2. Position and time.	4. "New ETA and fuel remaining".
NOTE: Request available NOTAM and weather information for new routes and destination.	

Figure 4-1 Position Reports

403. SUMMARY

The IFR Enroute Supplement is one of the most important publications which an aviator carries in flight. It gives him reference to airports, ARTCCs, procedures for IFR flight, and more. Never leave home without one!

404. CHAPTER REVIEW

1. Read Chapter 4 of the FTI
2. Do Lesson 4 on the Computer Based Training for FLIP.
3. Complete the Unit Review Questions

CHAPTER FOUR REVIEW QUESTIONS

Use your IFR Supplement to answer the following questions.

General Mitchell Intl

1. What is the field elevation?
2. Landing on runway 13, how much runway is available? What restriction exists for turbojet aircraft on this runway?
3. Your expected takeoff time for MKE is 1830 local standard time. What time is that in GMT?
4. Is General Mitchell Intl on an Area Chart?
5. How many MD-3M JASU's are there?
6. What is the ATIS frequency? If your aircraft has only a UHF radio, how can you obtain "the numbers" before departing?
7. What is the frequency for the CAPPY LOM?
8. Does this airfield have a military tenant? What arrangements must be made before you launch on a cross-country to MKE?
9. Does this have government fuel available? If so, what types?
10. What frequency can you use to call the 440th Air Wing Command Post?
11. Is MKE under a Class C airspace?
12. What are the choices for a UHF Departure Control Frequency when leaving MKE?

Whidbey Island

1. What is the three letter identifier?
2. What arresting gear is available for landing on runway 07? Is any prior notice required to get the gear rigged?
3. What is the UHF Clearance Delivery frequency?
4. What is the TACAN identifier and channel? Where is it located relative to the field?

5. Does Whidbey have Radar approaches available?
6. How do you obtain a PPR number for your cross-country (X-CNTRY) flight?
7. What is the UHF frequency for Ault Tower? What frequency would you use if you needed to update a weather brief?
8. Does Whidbey Island have ILS approaches?

Corpus Christi NAS

1. Is NGP covered by DOD NOTAMS?
2. What kind of fuel is available at NGP?
3. Can transient aircraft expect immediate servicing?
4. How many NC-8's are there? How many MD-3's?
5. Does Corpus Christi have single point refueling?
6. While in Class D airspace, pilots must illuminate _____.
7. Can a VT-10 SNFO expect to get permission for a super hot "Lt Masterson" break to impress his brother "Tex"?
8. On short final approach you experience a hydraulic failure, thinking quickly you drop the hook. What arresting gear will be available for you on short notice?
9. Does NGP have single frequency approach capability?
10. What frequency can you use to call Base Ops if there is a problem with your flight plan?
11. What is the maximum range of the CRP VORTAC? Where is it located? What is the channel for the TACAN located at the field?
12. Is LOX available at NGP?
13. What direction is the traffic pattern for Rwy22?
14. Does Approach have radar capabilities?

CHAPTER FIVE

ENROUTE HIGH ALTITUDE CHART

500. INTRODUCTION

This unit of instruction introduces information concerning Enroute High Altitude Charts which cover the airspace at and above 18,000 feet MSL. This information is provided on six separate charts with the scale of each printed along the upper and lower borders of the individual chart. The charts are published every eight weeks to coincide with the Instrument Approach Procedures. The legend tells everything about the chart which is broken into four sections:

1. Airports;
2. Radio Aids to Navigation;
3. Air Traffic Services and Airspace Information; and
4. Special Use Airspace.

By using the legend along with the charts, aircrews have a road map of the sky to guide them accurately and safely to their destination.

This unit interfaces with all flights at VT-10/4. The final performance check will be the end-of-course examination.

References

FLIP Enroute High Altitude Charts

501. LESSON TOPIC LEARNING OBJECTIVES

Enabling Objective

F.5. Locate, interpret, and apply information in FLIP IFR Enroute High Altitude Chart.

Enabling Steps

F.5.1 Recall information found on the legend.

F.5.2 Extract information found on the High Altitude Enroute Chart.

Instructional Aids

FLIP Enroute High Altitude Charts (H-5/H-6)

502. IFR ENROUTE HIGH ALTITUDE CHART

Front Panel

Figure 5-1 is a view of the front panel of your Enroute High Altitude Charts. Notice the arrows in each corner give you a convenient reference as to which side of the sheet your desired chart is printed. The most important information on the panel is the date the chart becomes effective and when it expires. Never conduct IFR operations with an invalid chart. Major changes to the airway structure and procedures are scheduled by the FAA to coincide with the 56-day chart revision cycle. NOTAMS should be consulted for minor changes, which occur during the period.

A listing of *Prohibited, Restricted, and Warning Areas* depicted on the charts begins on the front panel. The information for each area repeats the most important parts of the AP/1A entry: effective altitude, times used, and controlling agency. On the charts, Special Use Airspace is shown only by an outline of the area and its identification; further information, if required in flight, can be obtained from the front/rear panels. Only Special Use Airspace in the High Altitude Structure (i.e., 18,000 feet MSL and above) is depicted on the High Charts (Figure 5-1).

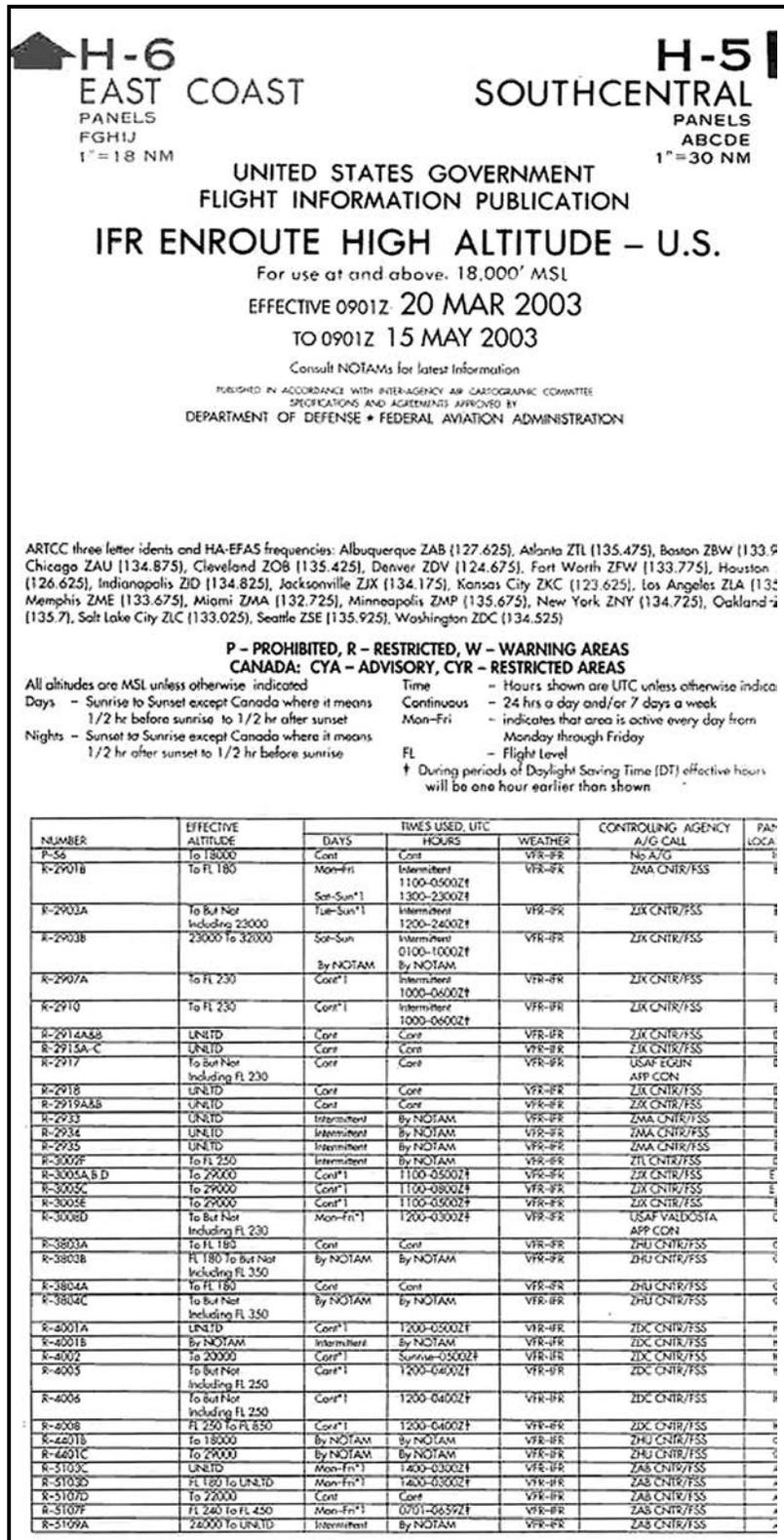


Figure 5-1 IFR Enroute High Altitude Chart

Rear Panel

Now turn your chart over and look at the rear panel shown in Figure 5-2. In this section, you will find a diagram showing both high and low altitude enroute chart coverage. Refer to this to determine the proper chart to be used on a particular flight. High altitude information is in black, low altitude in green. *Detailed information on all Special Use Airspace can be found in FLIP Area Planning AP/1A, Special Use Airspace, North and South America.*

Legend

On the reverse side of the front/rear panels you will find a chart legend. This legend is provided as a reference for interpreting all the symbols and information depicted on the charts. The legend is divided into four major parts:

1. Airports
2. NAVAIDs and Communication Boxes
3. Air Traffic Services and Airspace Information
4. Special Use Airspace.

You will need to be familiar with many of the symbols in the legend (Figures 5-3 to 5-6). In the dynamic flight environment, there will be instances when the NAV/NFO must interpret the chart without reference to the legend. The FLIP 5 lecture will introduce you to the commonly used symbols.

L E G E N D														
AIRPORTS														
Airports shown have a minimum of 5000' hard surfaced runway. Airports in BLUE and GREEN have an approved Instrument Approach Procedure published. The DOD FLIP Terminal High Altitude contains only those shown in BLUE														
<table style="border: none;"> <tr> <td style="text-align: center;">◊</td> <td style="text-align: center;">◈</td> <td style="text-align: center;">◉</td> <td style="padding-left: 10px;">Civil</td> </tr> <tr> <td style="text-align: center;">◊</td> <td style="text-align: center;">◈</td> <td style="text-align: center;">◉</td> <td style="padding-left: 10px;">Civil-Military</td> </tr> <tr> <td style="text-align: center;">○</td> <td style="text-align: center;">●</td> <td style="text-align: center;">●</td> <td style="padding-left: 10px;">Military</td> </tr> </table>	◊	◈	◉	Civil	◊	◈	◉	Civil-Military	○	●	●	Military	Parentheses around airport name indicate military landing rights not available (U.S. only)	Airport symbol may be displaced for enroute navigational aids
◊	◈	◉	Civil											
◊	◈	◉	Civil-Military											
○	●	●	Military											

Figure 5-3 Airports

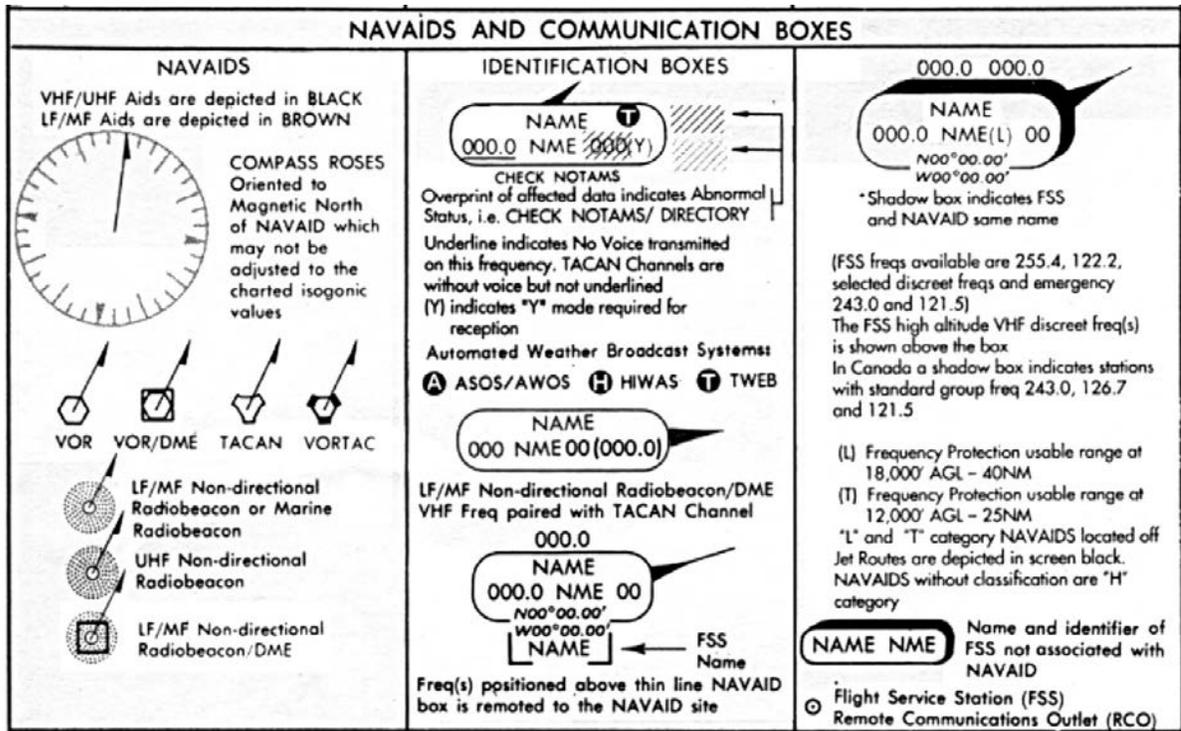


Figure 5-4 NAVAIDS and Communication Boxes

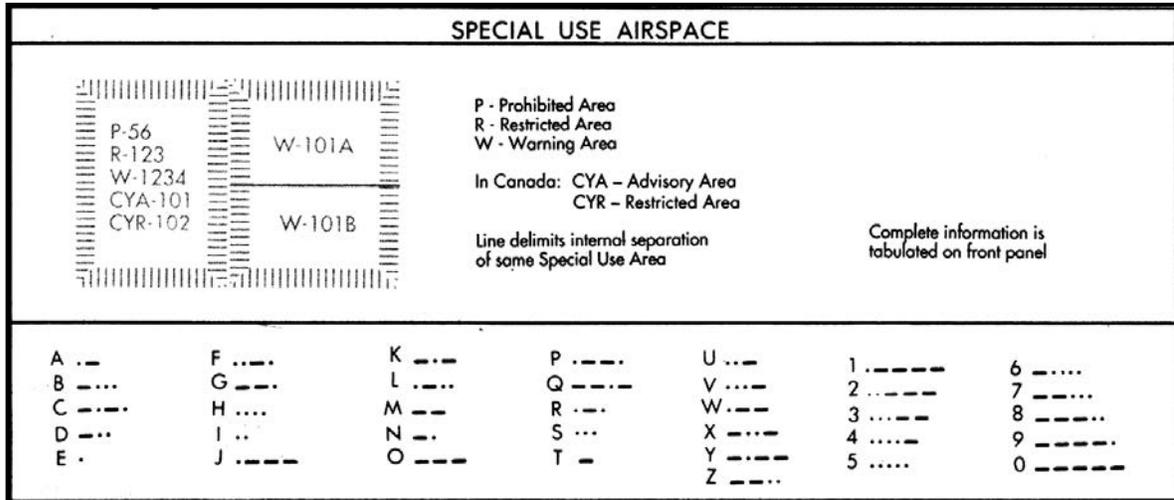


Figure 5-6 Special Use Airspace

At the bottom of the legend, you will see a guide to the Semicircular Cruising Altitudes (Figure 5-7).

NOTE

VFR operations are not allowed at or above 18,000 feet MSL (Class A Airspace) over the conterminous United States. VFR cruising altitudes are printed for altitudes above 18,000 feet MSL because of small areas of uncontrolled airspace, but for the purposes of this course, we need not consider these areas.

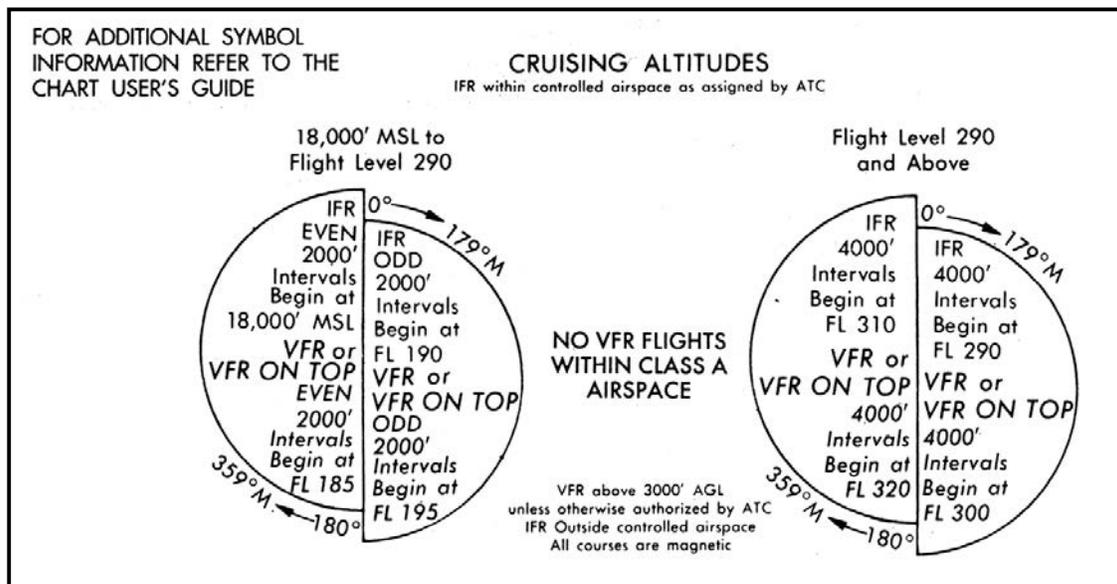


Figure 5-7 Cruising Altitudes

The High Altitude Charts portray the Jet Route Structure (18,000 feet MSL to FL 450), which is included in the Class A airspace; therefore, all **MINIMUM ENROUTE ALTITUDES (MEA)** are 18,000 feet, unless otherwise indicated. The MEA assures obstruction clearance and adequate NAVAID reception over the entire route segment - A **MAXIMUM AUTHORIZED ALTITUDE (MAA)** is indicated when other than FL450. MAA assures adequate NAVAID reception for the entire route segment.

Jet Routes, unlike Low Altitude Airways (**Victor Airways**), have no defined width. Their centerlines generally terminate at the outer edges of the NAVAID compass roses. If the centerline continues unbroken through the compass rose, then that NAVAID is not a part of the Jet Route; therefore, it is not indicated on the route of flight section of your Flight Plan (DD 175).

Occasionally, in a congested or high-density region, a Jet Route may be plotted inside a compass rose or the compass rose may be deleted entirely. In both cases, the defining NAVAID radial will be clearly shown between the NAVAID symbol and the end of the Jet Route line. Sometimes a semicircle indicates a Jet Route bypasses a facility which is not part of that specific route.

Many times the path of two or more jet routes will coincide on the chart with the "J" being printed only once. You should use the route which extends the longest distance along your planned route of flight.

Jet Route Segments should be flown using navigation signals from the closest NAVAID along that segment; that is, you should change TACAN channels halfway between NAVAIDs. There are two exceptions to this rule when flying on a published Jet Route.

1. You should change TACAN channels at a named fix or mileage breakdown symbol, which denotes a turn in the jet route or;
2. You should change TACAN channels at a specified NAVAID changeover point indicated by a (Symbol for changeover) on the chart. The latter will only be used when the intended changeover point is 5 NM or more in either direction from the mid-point of the NAVAIDs. This usually results when the maximum anticipated reception range of a station is lower than normal due to high terrain or obstructions.

All TACAN stations on this chart are Class **High (H)**, unless otherwise indicated (i.e., L), and have an anticipated interference free reception range of at least 130 NM between 18,000 feet MSL and FL 450. (The reception range of other stations can be found by referring to the Radio Class Code Table in the legend of the IFR Enroute Supplement). The normal maximum distance for direct filing is 260 NM.

NOTE

Low (L) and **Terminal (T)** radio NAVAIDs minimum guaranteed range is 40 NM and 25 NM, respectively.

Distances between fixes on " direct" flights, or distances along only a portion of a jet route segment, can be measured by using a straight edge, marking off the distance, and applying the marked off distance to the convenient scale at the bottom or the top edge of the charts. This scale is divided into 50-mile increments with a 50-mile scale divided into 5-mile increments.

Compulsory reporting points are those points indicated by solid triangles on the chart. When not in radar contact, position reports are required at these points, or any points listed on your Flight Plan (DD-17S) which define your route of flight. The format for these reports is found on the back cover of the IFR Supplement. Rules for position reporting will be covered in the Voice Communications classes.

Those NAVAID identification boxes on your chart that are shaded to appear three-dimensional indicate a FSS is present with the same name as the NAVAID. Standard FSS frequencies are listed in the legend with additional VHF frequencies printed above the identification box. FSSs serving other areas can be found by looking under the name of a particular airport or NAVAID in the IFR Enroute Supplement.

It is not possible to include all military and civil navigation and radio frequency information on the panels of each chart in addition to the route data shown. All data pertinent to an airport is, therefore, contained in the IFR Enroute Supplement. NOTAMS should be examined for updated information prior to planning each flight.

In controlled airspace, including Special Use Airspace, ATC is responsible for clearing an aircraft and maintaining legal separation from other known IFR traffic. In uncontrolled airspace, ATC has neither the authority nor responsibility for the control of air traffic; it is the sole responsibility of the Pilot-In-Command to obtain clearance prior to filing his flight plan. "No A/G" will denote Special Use Airspace with no air-to-ground communication facility controlling it.

Summary

In this unit of instruction, we have discussed how the Jet Route system operates and how to properly and accurately use the High Altitude Charts. The legend is broken down into four different sections

1. Airports
2. Radio Aids to Navigation
3. Air Traffic Services and Airspace Information
4. Special Use Airspace

The charts provide the aircrews with a road map of the sky to accurately and safely guide them to their destination.

503. CHAPTER REVIEW

1. Read Chapter 5 of the FTI
2. Do Lesson 5 on the Computer Based Training for FLIP.
3. Complete the Unit Review Questions

CHAPTER FIVE REVIEW QUESTIONS

Use the bottom half of panel C on H-5 to answer the following:

1. What is the TACAN channel for Harvey VORTAC?
2. Does Harvey have voice capabilities?
3. 50 miles west of HRV is TBD VORTAC. What does the (L) mean?
4. 89 miles NW from HRV on the J58 is PEBBY. How is it defined?
5. Proceeding NW from HRV along J58
 - a. At what DME do you change NAVAIDs?
 - b. What is the next NAVAID?
 - c. What is the MEA?
 - d. What is the outbound course from HRV?
 - e. What is the inbound course to the next NAVAID?
 - f. Is BTR part of the airway?
6. What is the broadcast range of HRV?
7. In airport symbology, what do the following mean:
 - a. Green?
 - b. Blue?
 - c. Brown?
 - d. Circle with hash marks?
 - e. Two concentric circles?
 - f. Two concentric circles with hash marks?
8. How long must the longest runway at an airport be to be published on the High Charts?
9. Why does Macon VORTAC (Top half of panel D) have shadowboxing?

10. On the MCN VORTAC is 122.4. What does it indicate?
11. 100 miles West of HRV is BAGWL. Can you identify it off of BTR?
12. Traveling West from Leeville VORTAC (40 miles South of HRV) on the J86, when do you switch NAVAIDs?
13. Which center are you talking to in the vicinity of HRV?
14. About 100 miles North-East of HRV is R-4401B:
 - a. What altitudes does it cover?
 - b. Who is the controlling agency?
 - c. What does the "R" stand for in R-5601A?

CHAPTER SIX

ENROUTE LOW ALTITUDE AND AREA CHARTS

600. INTRODUCTION

This unit of instruction covers information concerning Enroute Low Altitude Charts which include airspace up to, but not including, 18,000 feet MSL. These charts are designed for preflight and in-flight use. The legend and proper use of the charts will be discussed in detail in this unit.

References

FLIP Low Altitude Charts
FLIP Area Charts

601. LESSON TOPIC LEARNING OBJECTIVES

Enabling Objectives

F .6. Locate, interpret, and apply information on FLIP Enroute Low Altitude and Area Charts.

Enabling Steps

F.6.1 Recall information found in the legend.

F.6.2 Extract information on the Enroute Low Altitude Chart.

F.6.3 Extract information on the Area Chart.

Instructional Aids

FLIP Enroute Low Altitude Charts (LI7/L18)
FLIP Area Charts (A1/A2)

602. ENROUTE LOW ALTITUDE CHART

Conterminous United States low altitude airways coverage is provided by 28 charts. The numbered tabs positioned along the fold of the charts serve a dual purpose. When the charts are arranged in numerical sequence with the fold up, those missing are readily apparent. If properly positioned, a desired chart can be quickly selected or refiled. L-27 and-L-28 cover areas of dense traffic along the east coast and are available by order.

Each chart contains a graphic index of the entire series on the front panel, with its own outline distinguished by a heavier line (Figure 6-1). Adjacent charts can be identified either by reference to this index or to the overlap notes positioned around the margin of the chart itself.

The scale is actually determined by the density of airways in a particular area; hence, the scale of a chart showing the Boston/New York area would not be the same as that showing Montana. Additionally, the graphic index shows in black those cities which are major traffic hubs and have Area Charts published. The front panel of a Low Altitude Chart is shown in Figure 6-2.

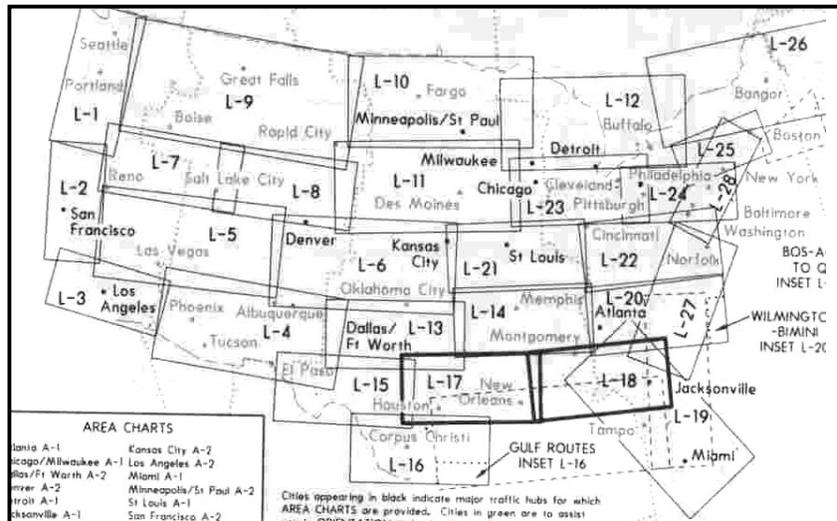


Figure 6-1 Graphic Index of Series on the Front Panels

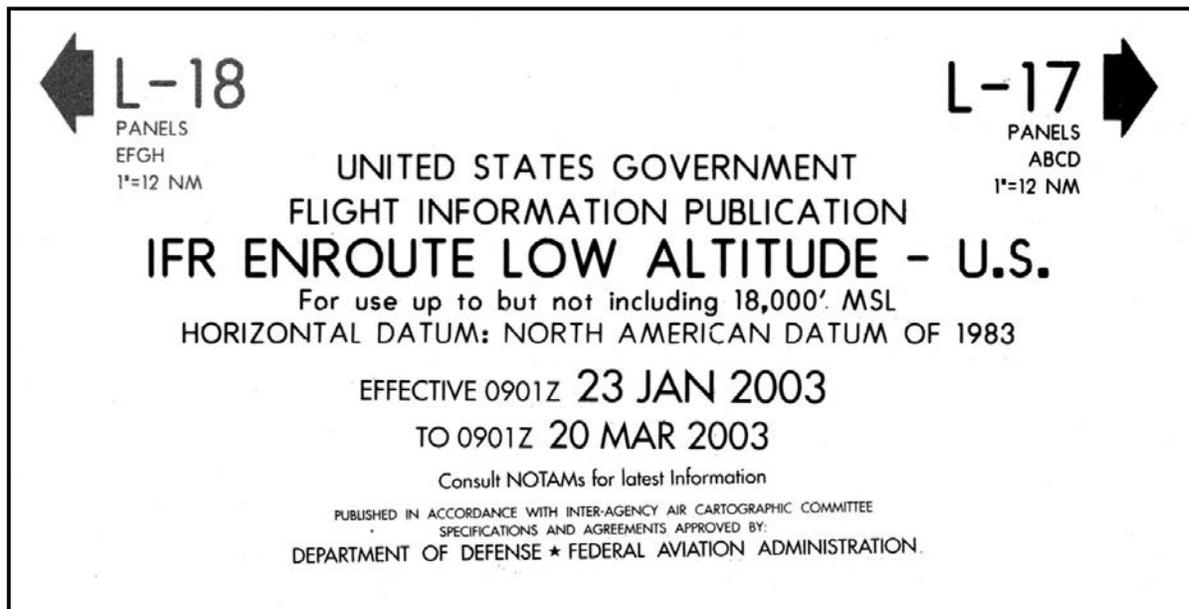


Figure 6-2 Front Panel of Low Altitude Chart

The heading in Figure 6-2 contains some very useful information. The letter "L" across the top should prevent you from mistaking the chart for a High Altitude Chart. The arrows on either Side indicate that if you open the chart to the left, you will be looking at L-18, to the right, at L-17. This heading shows the chart is for use up to but not including; 18,000 feet MSL. Perhaps the most important information shown is the effective dates between which the chart is to be used. Never fly with an out of date chart.

On the front panel is a table of Military Training Routes. Only those MTRs with altitudes above 1500 feet AGL will be listed. An example is shown below with an accompanying explanation from the legend (Figures 6-3 and 6-4).

MILITARY TRAINING ROUTES	
NUMBER	ALTITUDE RANGE
IR-15	500 AGL TO 7000
IR-16	300 AGL TO 6000
IR-17	500 AGL TO 3000
IR-18	5000 TO 7000
IR-19	4000 TO 7000
IR-20	6000 TO 8000

Figure 6-3 Military Training Routes

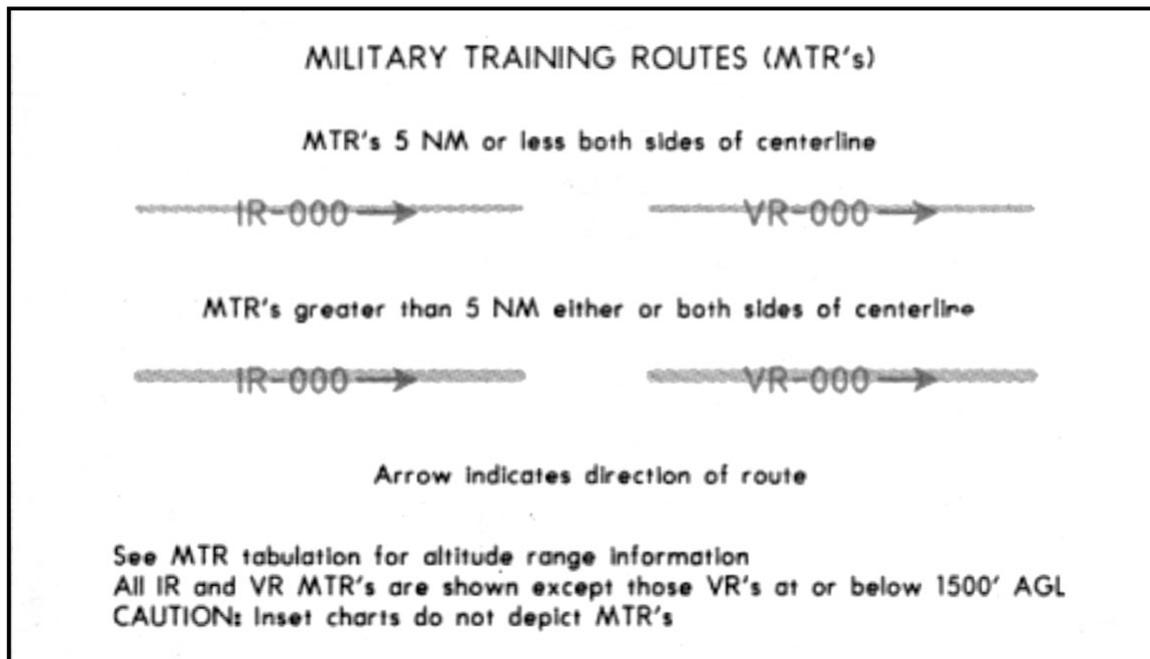


Figure 6-4 Military Training Routes

Legend

A complete chart legend is shown on the back panel. It has been subdivided into four categories of information:

1. Airports,
2. Radio Aids to Navigation and Communication Boxes,
3. Air Traffic Services and Airspace Information, and
4. Special Use Airspace.

The Airport Category is shown in Figure 6-5. Study it carefully.

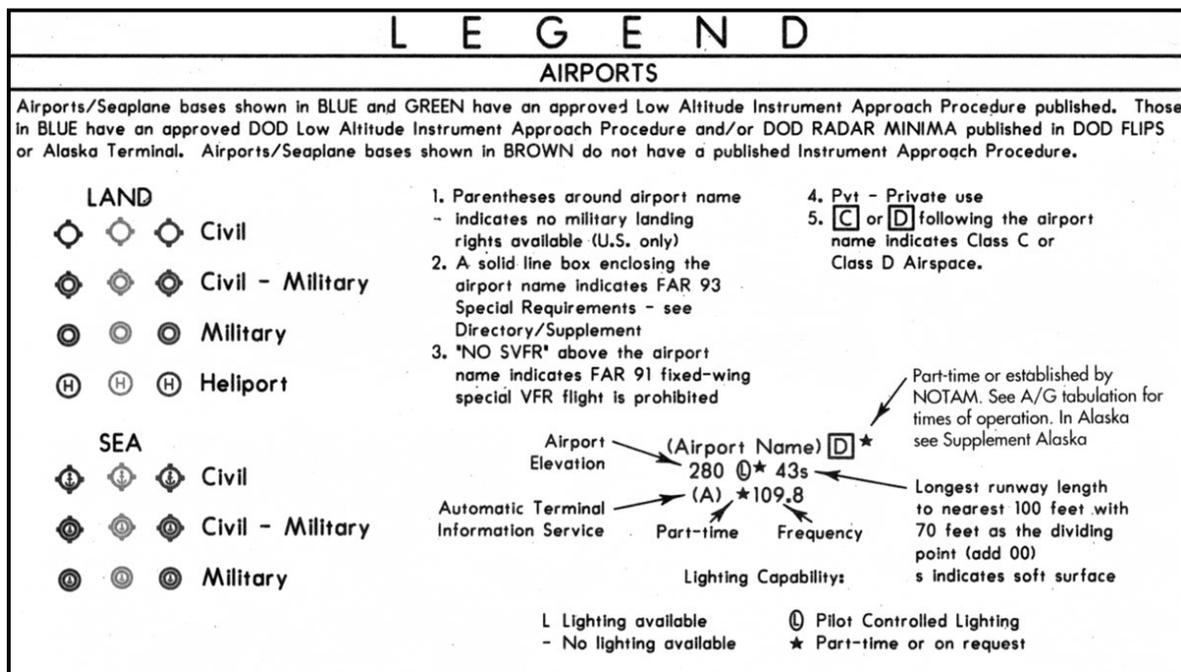


Figure 6-5 Airports

The RADIO AIDS TO NAVIGATION AND COMMUNICATION BOXES legend is similar to the High Altitude Chart legend, with some exceptions. NAVAID boxes are more rectangular. Without classification the NAVAIDs will be assumed "H" category. ILS localizer frequencies are depicted when the approach procedure defines a fix. Localizer identifiers consist of four letters starting with the letter "I" (Figure 6-6). Flight Service Stations are shown by a heavy lined NAVAID identification box, as shown by the Gainesville identification box (Figure 6-7). When the FSS is not associated with a NAVAID, a separate heavy lined box will be depicted (Figure 6-8).

6-4 ENROUTE LOW ALTITUDE AND AREA CHARTS

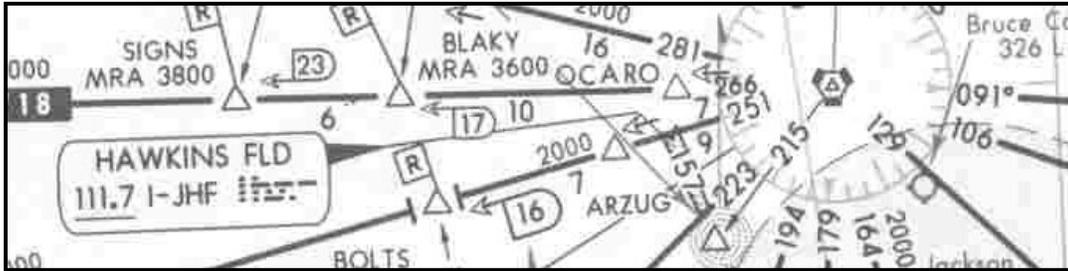


Figure 6-6 Localizer Identifiers

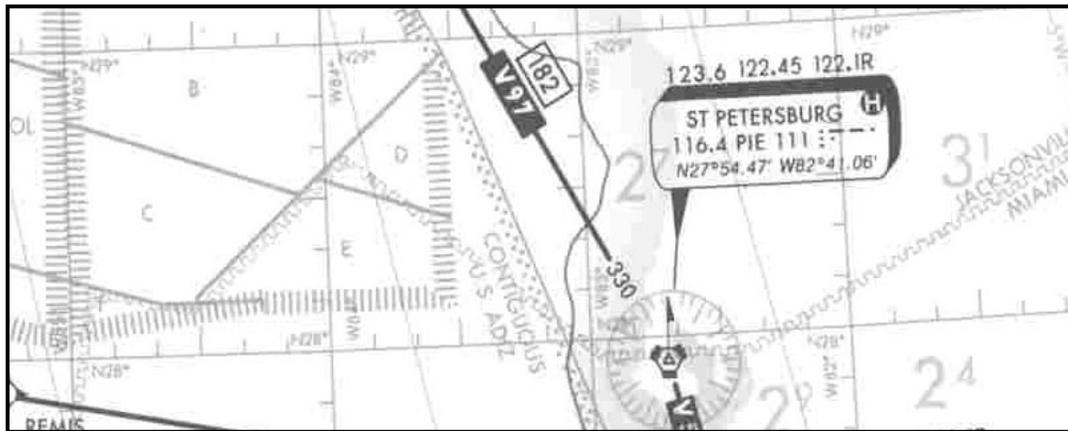


Figure 6-7 Gainesville Identification Box



Figure 6-8 FSS not Associated with a NAVAID

The next section is the legend of "Air Traffic Services And Airspace Information." Much of the pertinent information is similar to Enroute High Altitude Chart symbology. Some explanations are given after the legend for clarification (Figure 6-9).

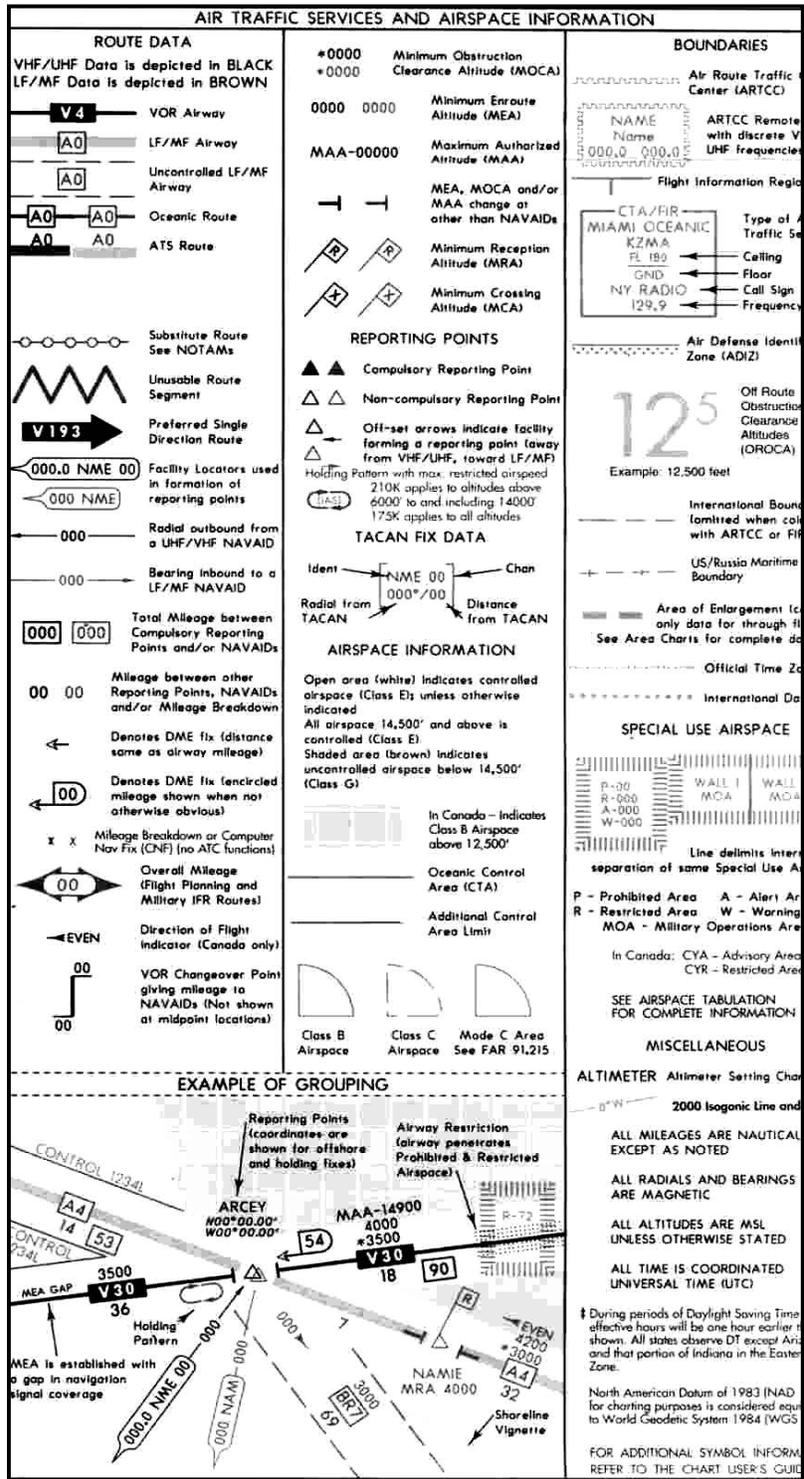


Figure 6-9 Air Traffic Services and Airspace Information Legend

Minimum Enroute Altitude (MEA) - The lowest published altitude between radio fixes on an airway which assures acceptable navigational signal coverage and meets obstacle clearance requirements between those fixes. The MEA prescribed for a Federal airway or segment thereof applies to the entire width of the airway segment between the defining radio fixes. In designated mountainous areas, the MEA has a 2000 feet obstacle clearance requirement and in other areas, a 1000 feet obstacle clearance requirement.

Minimum Obstruction Clearance Altitude (MOCA) - The lowest published altitude in effect between radio fixes on airways or route segments which meets obstacle clearance requirements for the entire route segment. MOCA assures acceptable navigational signal coverage only within 22 NM of a NAVAID (VOR/TACAN). In designated mountainous areas, the MOCA has a 2000 feet obstacle clearance requirement and in other areas, a 1000 feet obstacle clearance requirement.

Off Route Obstruction Clearance Altitudes (OROCA) - Provides obstruction clearance with a 1000 foot buffer in designated non-mountainous areas and a 2000 foot buffer in designated mountainous areas within the United States. This altitude is provided for obstruction clearance only. It does not provide for NAVAID signal or communications coverage.

Minimum Crossing Altitude (MCA) - The lowest altitude at certain radio fixes at which an aircraft must cross when proceeding in the direction of a higher MEA.

Minimum Reception Altitude (MRA) - The lowest altitude at which signals adequate to determine the specified VOR/TACAN fixes can be received. This applies to the operation of an aircraft over an intersection used in air navigation. The MRA is used to help define a fix off another NAVAID not on the Victor route.

Airspace

Class B Airspace - Light blue shaded areas on a Low Altitude Chart alert users to the presence of a Class B airspace. An identification box will specify the maximum altitude. Smaller Class B airspaces have additional areas around them in which Mode C is required, depicted on the chart by shaded blue stripes out to a 30 NM radius.

Class C Airspace - Depicted by a light blue shaded circle with a broken outline, out to a 10 NM radius.

Special Use Airspace

The legend includes a section on special use airspace which outlines the API/A information provided on the chart for each area. (Figure 6-10). Only Special Use Airspace that exists between surface and 18,000 are depicted on the Low Charts.

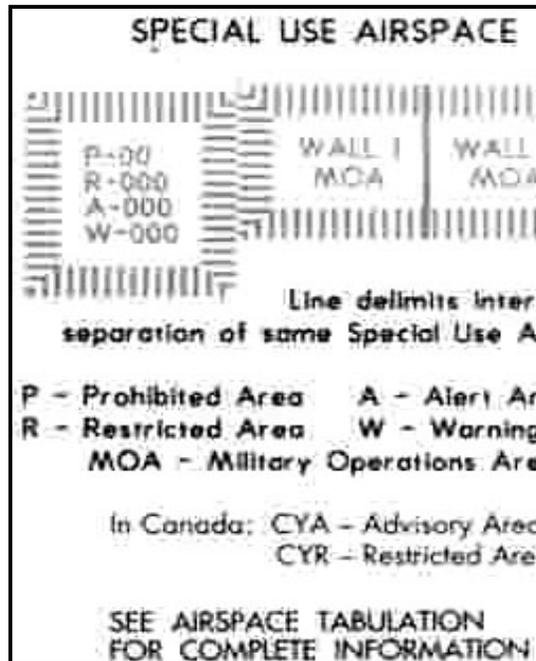


Figure 6-10 Special Use Airspace

Also provided on the legend is a cruising altitude diagram. Note, this diagram reflects magnetic course rather than heading (Figure 6-11).

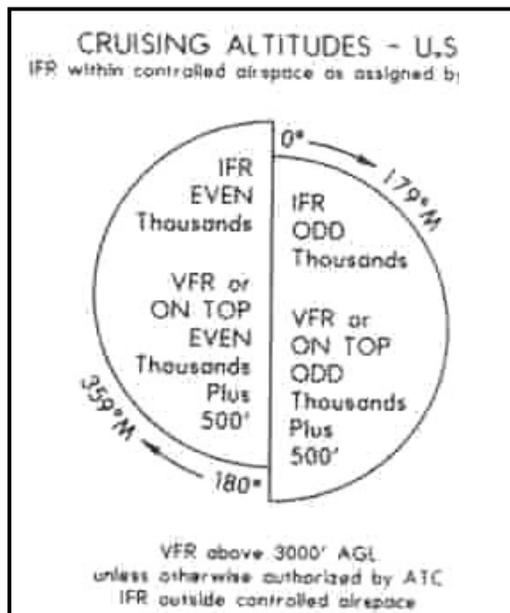


Figure 6-11 Cruising Altitudes – U.S.

Using the Chart

For orientation purposes, each panel of the Low Altitude Chart is identified on the top and bottom by a letter and the name of a primary city on that panel. Other information includes a scale in nautical miles and the number of the chart that the panel overlaps (Figure 6-12).

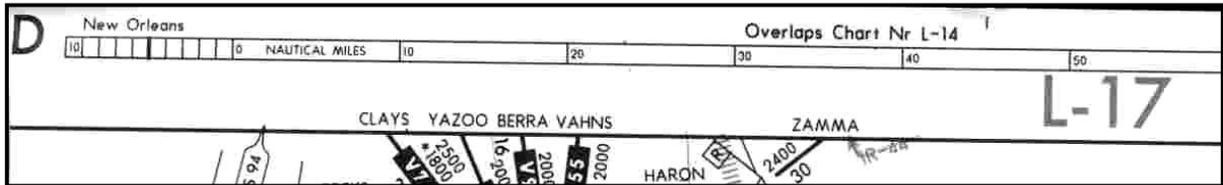


Figure 6-12 Scale in Nautical Miles

The primary feature shown on the Low Altitude Charts is the VOR Airway System, which extends from 1200 feet AGL up to, but not including 18,000 feet MSL. Commonly known as "Victor" airways, they are of a defined width based upon the distance from the NAVAID. Frequently the paths of two or more airways coincide, in which case, all airways designators are shown (Figure 6-13).

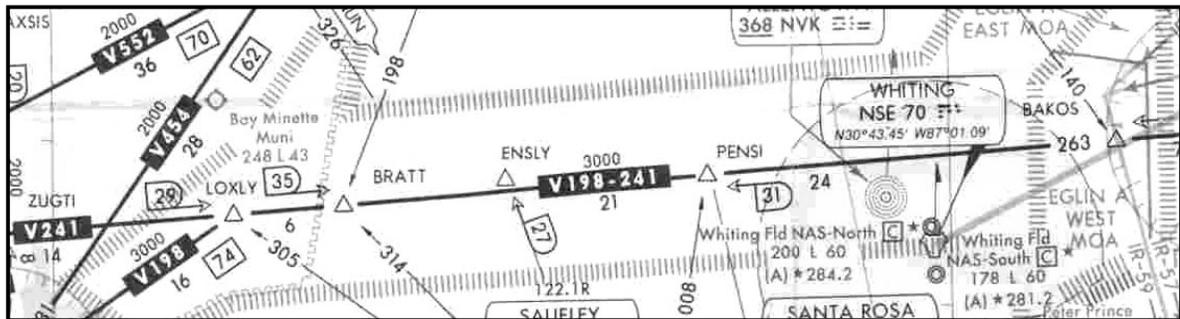


Figure 6-13 Airway Designators

Compass roses are used to define magnetic radials from VORs and TACANs. Each compass rose is aligned to magnetic north. There is no significance attached to the different sizes of compass roses on the Low Altitude Charts. A large size is normally used; however, if several NAVAIDs are in close proximity, smaller ones are used to prevent overlap (Figure 6-14).

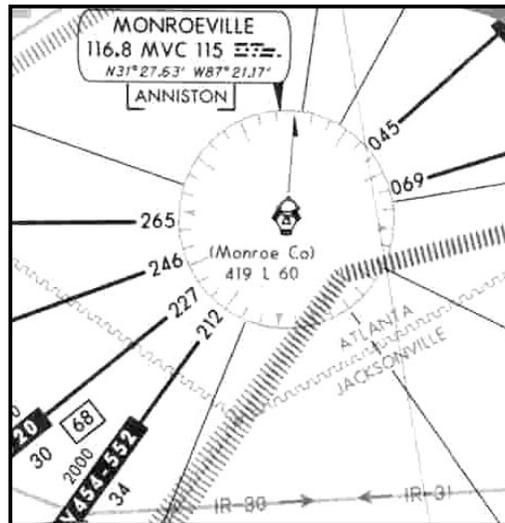


Figure 6-14 Smaller NAVAIDs

When flying on low altitude airways, you may be requested to fly to or report reaching an intersection. Intersections are assigned a 5 letter name and are defined by either a NAVAID radial and distance (DME), the intersection of two NAVAID radials, or the intersection of a NAVAID radial and an ILS Localizer. A solid arrow shows a radial serves to define an intersection, while an open arrow shows an intersection is defined by both radial and DME from a NAVAID. The DME is the same as the route mileage. If route mileage is not obvious, DME from the NAVAIDs to the fix is given in a symbol (Figure 6-15).



Figure 6-15 Symbol for DME from the NAVAID

When traveling between two NAVAIDs on an airway, you should switch your navigation equipment (VOR or TACAN) to the frequency of the next NAVAID at a specified Change Over Point (COP). The COP is located midway between the navigation facilities for straight route segments, or at the intersection of radials or courses forming a dogleg in the case of dogleg route

segments. The latter case is clearly seen on V241 at DARED intersection between Dothan and Crestview (Figure 6-16).

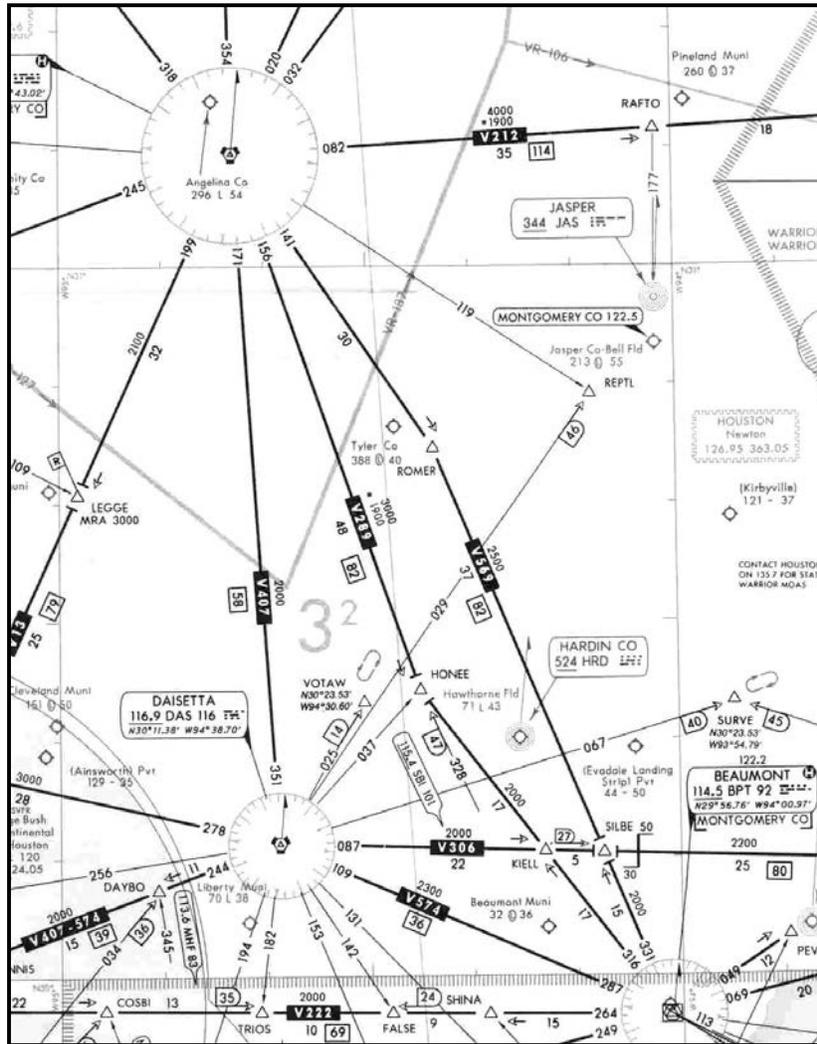


Figure 6-16 Intersection between Dothan and Crestview

You may find a situation where there is no named intersection at the Change Over Point (COP) although there is a change of course between NAVAIDs. A mileage breakdown symbol (x) is most often used to mark these course changes as illustrated at JUZI (Figure 6-17).



Figure 6-17 JUZI

When the COP is not located at the midway point on straight route segments, the following symbol will depict COP location and give mileage to the radio aids (Figure 6-18).

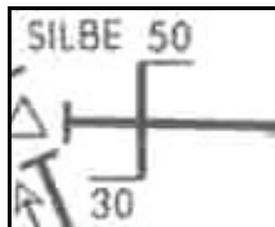


Figure 6-18 Symbol for COP

In most situations, there will be no course change, or published COP. In this case, switch your navigational equipment to the next station when you are midway between the stations, for example, at 18 DME from Daisetta or Beaumont V574 (Figure 6-19).

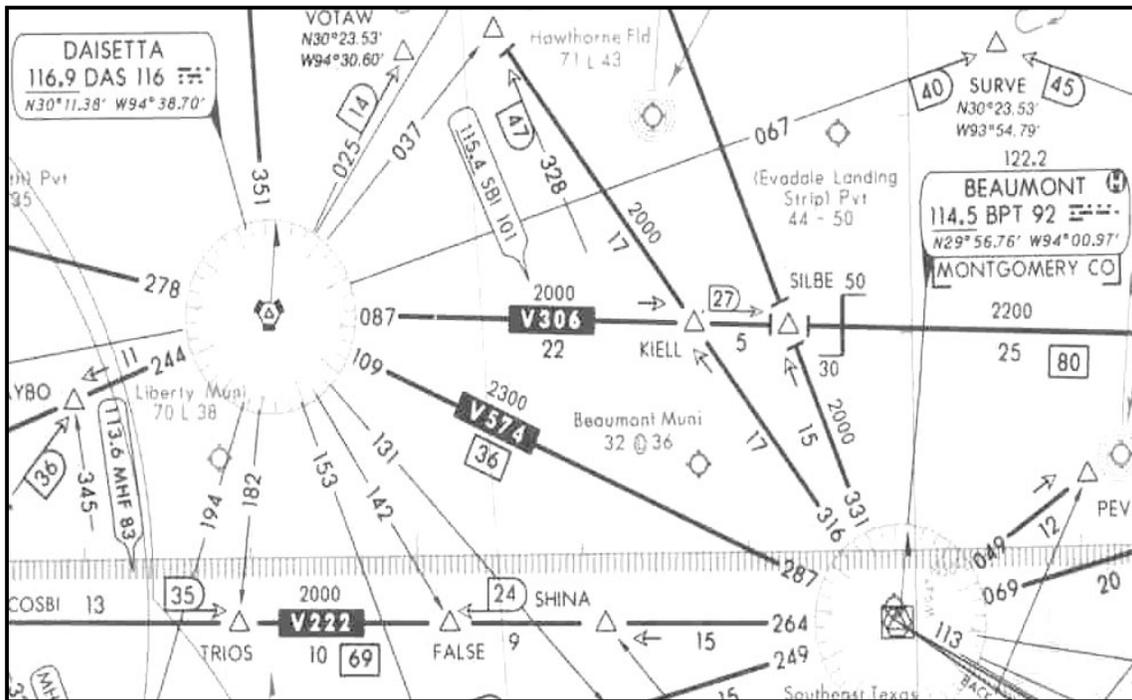


Figure 6-19 V574

Area Charts

Area Charts are published every eight weeks and are used in conjunction with the Enroute Low Altitude Charts. They are enlargements of selected terminal areas and can be very beneficial to an aircrew in flight. Proper understanding and use of Area Charts will greatly facilitate air navigation at these major traffic hubs throughout the U.S. The cities for which an Area Chart is published are shown on the map of the U.S. on the rear panel of the Low Altitude Chart. On the chart itself, Area Chart Coverage is indicated by a heavy dashed blue outline. An example of the Atlanta area on the Low Chart is shown on Figure 6-20.



Figure 6-20 Atlanta Area on the Low Chart

There are two Area Charts (A-1, A-2), printed on one sheet, which are issued every 56 days to coincide with the issue, in time and date, of the FLIP Enroute Charts (Figure 6-21). These charts contain detailed enlargements of 13 selected high activity terminal areas, including some NAVAIDs, intersections, etc., not shown on the enroute charts. These charts do not contain a legend since they use the same symbology as the Enroute Low Altitude Charts. On the chart outside cover is printed a limited Airport Directory with communications frequencies listed for airports depicted on the chart. This is a handy reference when operating in a high-density area.

The Area Charts are "blow-ups" of the areas and are usually drawn to a scale of five or six miles to an inch. An Area Chart depicts the same enroute information that is provided on the Low Altitude Chart. In addition, it provides more terminal information such as radar availability, location and frequency of ILS localizer courses, NAVAIDs, etc., that may not be shown on Low

or High Altitude Charts. Similar to a Low Altitude Chart, the presence of a Class B airspace is indicated by a shaded blue region.

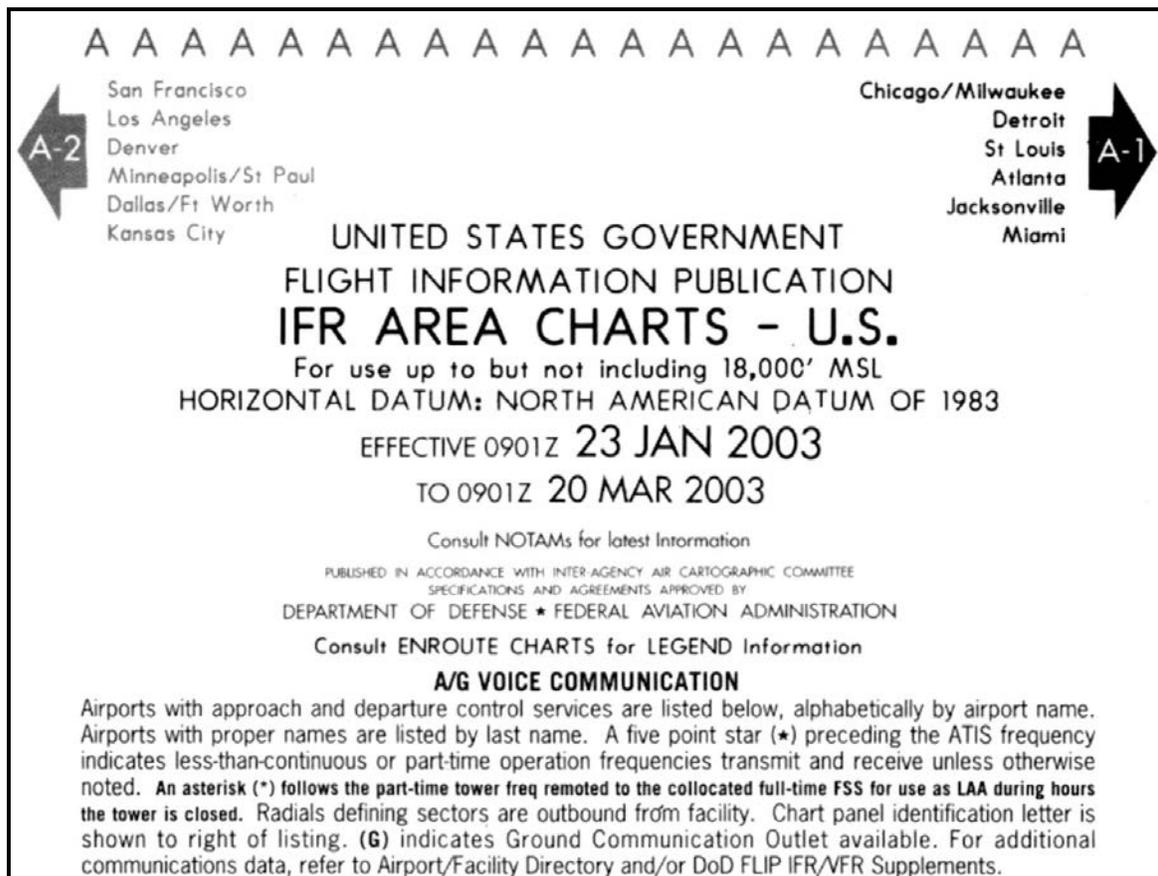


Figure 6-21 IFR Area Charts – U.S.

603. SUMMARY

This unit of instruction has discussed Low-Level and Area Charts. Low-Level Charts are for use from the surface to 17,999 feet. High Charts cover beyond FL180. Low Charts will depict Victor airways, Special Use Airspaces, NAVAID information, and general airport information. Ensure you are familiar with the symbology associated with the charts, and the full meaning of the various acronyms such as MEA, MOCA, OROCA, MRA, and MCA.

Area Charts are an enlargement of selected terminal areas and provide more detailed information on these areas. They are generally used in high traffic Bravo airspace regions. Proper use of Area Charts by aircrews will make arrival at their destination easier and safer.

604. CHAPTER REVIEW

1. Read Chapter 6 of the FTI.
2. Do Lesson 6 on the Computer Based Training for FLIP.
3. Complete the Unit Review Questions.

CHAPTER SIX REVIEW QUESTIONS

Use panel F on L-18 to answer the following questions:

1. Define the airport symbology for the following:
 - a. Green
 - b. Blue
 - c. Brown

2. 1/3 of the way up panel E is Mobile Regional Airport. Answer the following:
 - a. What is the field elevation?
 - b. What does the C with a box around it mean?
 - c. What do the stars mean?
 - d. What is the (A) for?
 - e. How long is the longest runway?
 - f. What center and frequency will you contact in the vicinity of Columbus AFB?
 - e. What FSS callsign and frequency would you use?

3. You are heading Northeast from SJI, near Mobile Rgnl, on the V20. Answer the following.
 - a. What is the max altitude you can file?
 - b. What is the min altitude you can file?
 - c. What DME will you change NAVAIDs?

Use panel E on the L-14 for the following questions

4. You are heading southwest from Brookley Vortac (20 miles SE of SJI) on V198. When do you change NAVAIDs?

Use panel D on the L-17 for the following questions

5. You are heading southwest from Meridian VORTAC (top right) on the V194
 - a. What altitude must you be at when you cross PAULD?
 - b. What altitude must you be at for navigation coverage at PAULD?
 - c. What is the MEA from Pauld to Baing?
 - d. What is the MOCA from Mizze to MCB?

CHAPTER SEVEN

TERMINAL PUBLICATIONS

700. INTRODUCTION

Perhaps the most critical part of your IFR flight is the penetration and approach in the terminal phase of flight. You must be able to descend from cruising altitude and execute a safe landing in instrument conditions. This process is accomplished by means of published Instrument Approach Procedures (*commonly called approach plates*) and/or maneuvers directed by radar controllers. You must be thoroughly familiar with the types of penetrations and approaches available for use.

References

1. FLIP Approach Plates
2. FLIP General Planning
3. FLIP IFR Enroute Supplement

701. LESSON TOPIC LEARNING OBJECTIVES

Enabling Objectives

F.7 Locate, interpret, and apply information in FLIP Terminal Publications.

Enabling Steps

- F.7.1 Recall information found in the legend.
- F.7.2 Extract information from the radar minimums section.
- F.7.3 Extract information from the planview section.
- F.7.4 Extract information from the profile section.
- F.7.5 Extract information from the minima section.
- F.7.6 Extract information from the airport sketch.
- F.7.7 Extract information from the airfield diagrams.
- F.7.8 Extract information from the rate of descent table.

Instructional Aids

FLIP Approach Plates

702. INSTRUMENT APPROACH PROCEDURES

High Altitude Approaches vs Low Altitude Approaches - High approaches have a penetration pattern depicted on the approach and have a hashed edge around the approach plate. They are used to bring the aircraft down from the High Charts. Low approaches do not have a penetration pattern depicted, and bring the aircraft down from the Low Charts.

Precision vs Non-Precision

Instrument approaches are separated into the general classes of precision and non-precision approaches. Due to the space available for equipment, weight limitations, and operational requirements, not all aircraft are equipped to execute every type of instrument approach.

Precision Approaches – A precision approach is a standard instrument approach procedure in which an electronic glidepath is provided, i.e., altitude information is available in addition to azimuth. Five types of precision approaches are:

1. ILS - Instrument Landing System
2. MLS- Microwave Landing System
3. PAR - Precision Approach Radar
4. ACLS - Automatic Carrier Landing System
5. CILS - Carrier Instrument Landing System

The PAR approach requires only an operational radio and is the only type of precision approach capable of being flown by the T-34C aircraft, the T-1A is equipped for ILS approaches. Range information is available from the PAR ground or carrier based controller, or by indications from flying over the prescribed outer and middle markers on an ILS/MLS.

Non-Precision Approaches - A non-precision approach is a standard instrument approach procedure in which an electronic glideslope is not provided, i.e., only azimuth, or azimuth and range information is available. There are several types of non-precision approaches:

1. TACAN - Tactical Air Navigation
2. NDB – Non-Directional Beacon (UHF and LF/MF)
3. ASR - Airport Surveillance Radar

7-2 TERMINAL PUBLICATIONS

4. VOR - Very High Frequency Omnidirectional Range
5. LOC - Localizer
6. SDF - Simplified Directional Facility
7. LDA - Localizer Type Directional Aid
8. ARA - Airborne Radar Approach

All Navy aircraft are capable of flying TACAN and ASR approaches. As in PAR approach, ASR requires only an operational radio. The T-34C and T-1A are also equipped with a VOR in addition to the TACAN. Localizer (LOC) and Airport Surveillance Radar (ASR) approaches are similar in that they use the azimuth portion of related precision approaches. An ILS approach provides both azimuth and glideslope information to the pilot; a LOC approach provides only the azimuth half of that system. An ASR approach provides the pilot with the azimuth half of a PAR. A localizer back course (LOC BC) approach utilizes a localizer signal to a reciprocal runway by flying steering commands in reverse down to the missed approach point. Neither LOC, LOC BC, nor ASR approaches provide an electronic glideslope.

IFR Arrival-Enroute Descent vs. Penetration

Aircrews that are flying in the high altitude structure have a choice of arriving via penetration or enroute descent. The enroute descent may be requested by the pilot or initiated by the controller, in which case he must advise the pilot of his intention to provide this service. The pilot may refuse an enroute descent in favor of a high altitude penetration. The enroute descent, which may begin more than a hundred miles from the destination airport, is designed to ease the aircraft from the cruising altitude down to a final approach altitude. The penetration allows an aircraft to remain at cruising altitude until making a rapid descent near the field on a high altitude instrument approach procedure.

Penetration and Approach

An approach control facility, after receiving control responsibility from the ARTCC, will issue the appropriate clearance to execute a specific instrument approach procedure. At first contact, or at the latest prior to issuing the approach clearance, approach control will transmit the altimeter setting, wind direction and velocity, runway information, current weather conditions, and other information as appropriate. If ATIS is available, you are expected to copy this routine information by tuning in the appropriate frequency and advising approach control on initial contact that you have received ATIS, thus eliminating the need for the controller to repeat this information.

Jet aircraft, normally operating in the high altitude structure, will often fly a High Altitude Instrument Approach Procedure, which consists of a penetration and procedural track. The penetration track takes an aircraft from the Initial Approach Fix (IAF) to the Final Approach Fix (FAF) while descending to the minimum penetration altitude at 4000 - 6000 FPM and 250 KIAS.

The procedure track takes the aircraft from the FAF to the Missed Approach Point (MAP), while descending from FAF altitude to the Minimum Descent Altitude (MDA). Normally this is flown with a 500 FPM rate of descent in the landing configuration.

Penetration Patterns

Prior to departing on an IFR flight, you should become thoroughly familiar with the instrument approach procedure you plan to use at your destination, and at an alternate airfield if required. The first part of your instrument approach procedure will be the penetration phase. This is the procedure which prescribes a descent path for your aircraft from the IAF to the FAF; that is, a path over the ground to follow while rapidly descending from a cruise altitude to an altitude from which to begin the procedural phase. Four basic types of penetration patterns associated with high altitude instrument approach procedures are listed below:

1. Straight-In-Penetration (Figure 7-1). This procedure pattern allows the use of a single course from the IAF to the FAF.

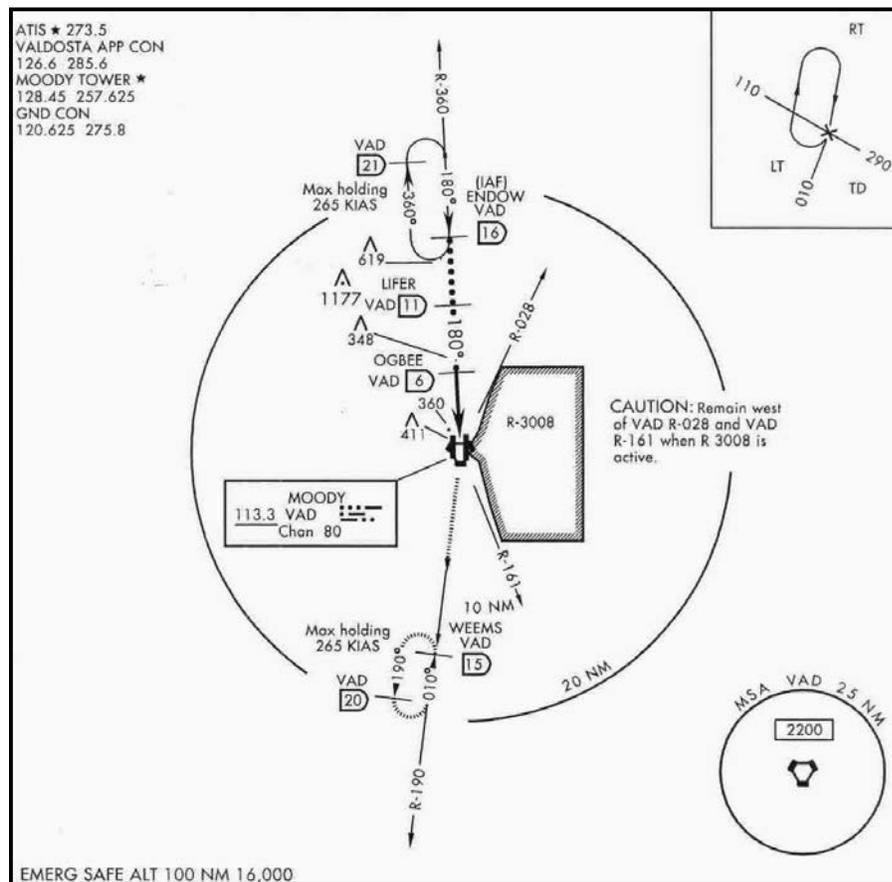


Figure 7-1 Straight-In-Penetration

2. Off-Set Penetration (Figure 7-2). This procedure pattern is similar to the straight-in type pattern, but consists of one or more heading changes to intercept separate courses (radials) between the IAF and FAF. These heading changes are usually the result of airspace restrictions.

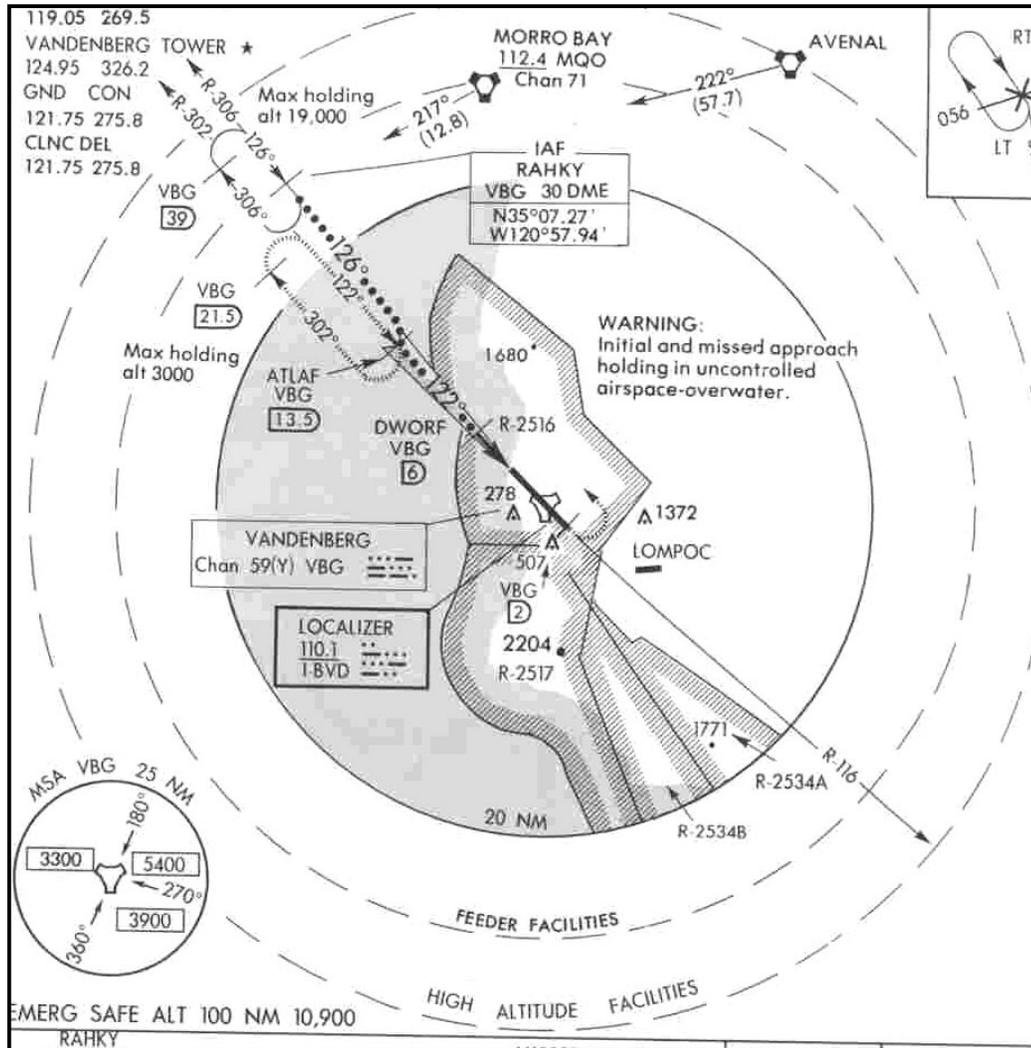


Figure 7-2 Off-Set Penetration

3. Arcing Penetration (Figure 7-3). This procedure requires maintaining a DME arc for a portion of the procedure after the IAF and then intercepting a course (radial) to the FAF.

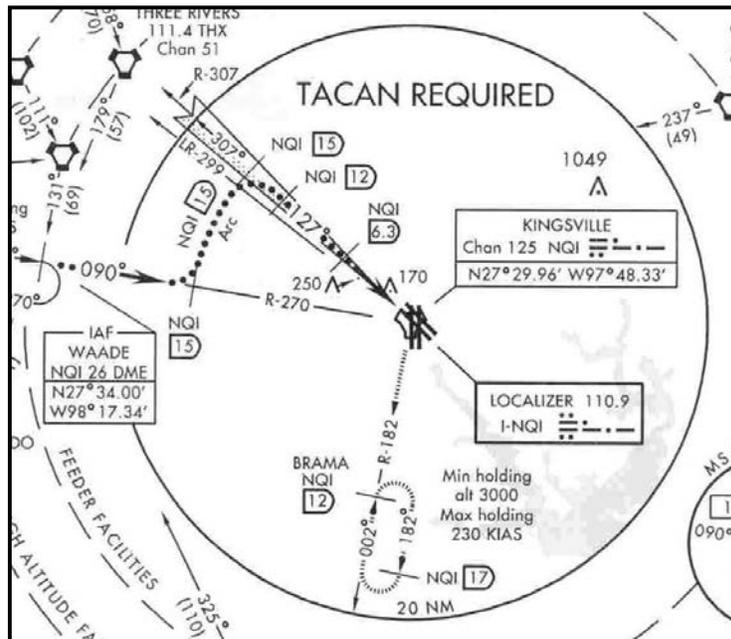


Figure 7-3 Arcing Penetration

4. Teardrop Penetration (Figure 7-4). This type of penetration is generally initiated away from the station (IAF) and requires a penetration turn and the interception of an inbound course. NDB procedures require this type of penetration out of necessity since they are based on a NAVAID without DME.

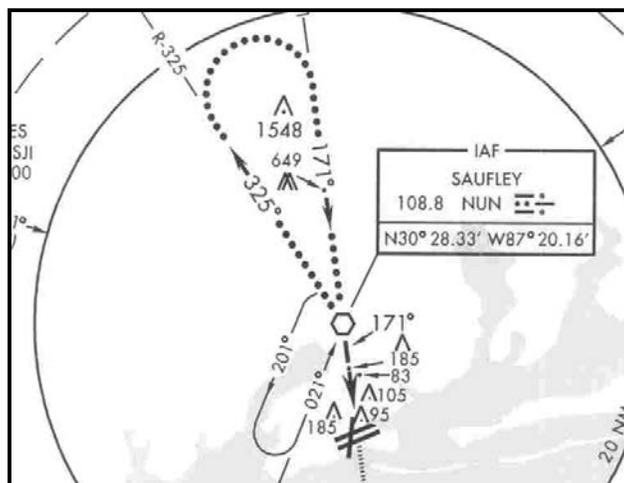


Figure 7-4 Teardrop Penetration

Throughout these different penetrations and approaches, the rate of descent and aircraft configuration should be adjusted as necessary to conform with the published altitude restrictions.

7-6 TERMINAL PUBLICATIONS

Final Approach Phase

The final approach phase of the instrument approach procedure begins at the FAF and ends at the MAP. The TACAN FAF is a DME fix which is normally located between five and nine miles from the approach end of the runway. The FAF for an NDB approach will, of necessity, be by the radio beacon itself (if the beacon is located away from the field) since the procedure does not require DME. The FAF is a transition point at which the penetration ends and the final approach or procedure track begins. The final approach phase terminates at the MAP at which time the pilot will visually acquire the runway environment and proceed to a landing or, if the field is not in sight, execute a missed approach. The means, by which a pilot proceeds to a landing, can be categorized as either straight-in or circling. A straight-in approach must have the Final Approach Course (FAC) within 30° of the landing runway heading. Any other relationship between FAC and the duty runway heading requires a circling maneuver. The advantages of a straight-in vs. circling approach are the lower weather minima required for the approach.

Missed Approach

To make a landing from an instrument approach, the pilot must have the runway environment in sight upon reaching a specified point. For precision approaches, that point is a minimum altitude on glidepath called Decision Height. Non-precision approaches may mark the MAP by a DME fix, station passage, or elapsed time. If the pilot does not acquire the field he shall execute a missed approach climb-out, following published instructions on the approach plate or those issued by the controller.

Explanation of Terms

In order to understand the published landing information, you must be familiar with the terms used in the Minima Section.

Minimum Descent Altitude (MDA) - This is the lowest altitude, expressed in feet above Mean Sea Level, to which descent is authorized on final approach or during a circle-to-land maneuver in execution of a standard instrument approach procedure where no electronic glideslope is provided (non-precision approach) (Figure 7-5).

Decision Height (DH) - This is the Mean Sea Level altitude, as read on your altimeter, at which you will initiate a missed approach on a precision approach if you don't have the runway environment in sight or if, in the pilot's judgment, you are not in a position to make a safe landing. DH also corresponds to the Missed Approach Point (MAP) distance.

Unlike a non-precision approach, you are in a constant rate of descent to the runway and will go below the DH when adding power, cleaning up your aircraft, and commencing a climb; however, you must initiate this missed approach when first reaching the Mean Sea Level Decision Height (Figure 7-5).

	STRAIGHT IN	DH		CIRCLING
CATEGORY	C		D	E
S-ILS 12*	464	40	200	(100- ³ / ₄)
S-LOC 12**	540	40	276	(200- ³ / ₄)
CIRCLING***	820-1½	453(500-1½)	920-2	553 (600-2)

Figure 7-5 Mean Sea Level Decision Height

Touchdown Zone Elevation (TDZE) - The highest elevation in the first 3000 feet of the landing surface of a particular runway.

Airport Elevation/Field Elevation - The highest point of an airport’s usable runways measured in feet from Mean Sea Level.

Height Above Touchdown (HAT) - This is an indication of your height above the ground (AGL) when you reach MDA or DH for all straight-in approaches, however, it is not measured from the ground below your aircraft. It is the height of the MDA or DH above the TOUCHDOWN ZONE. The TDZE will always be shown in the Airport Sketch adjacent to the approach end of the runway to which you are executing the straight-in approach procedure (Figure 7-6).

		HAT		HAA
CATEGORY	C		D	E
S-ILS 12*	464/40	200	(100- ³ / ₄)	
S-LOC 12**	540/40	276	(200- ³ / ₄)	
CIRCLING***	820-1½	453(500-1½)	920-2	553 (600-2)

Figure 7-6 Airport Elevation

Height Above Airport (HAA) - This is the height of the MDA of the published airport elevation expressed in feet AGL. This is published only in conjunction with circling minima. Again, this is not measure from the ground below your aircraft. The AIRPORT ELEVATION is shown in a separate box in the Airport Sketch (Figure 7-6).

NOTE

OPNAVINST 3710.7 sets absolute minima for single piloted aircraft at 200 feet ceiling/HAT and 1/2 mile visibility/2400 feet RVR, or published minima, whichever is higher. All Training Command aircraft are considered to be single-piloted.

7-8 TERMINAL PUBLICATIONS

Prevailing Visibility (PV) - This is the distance at which known objects can be seen by an observer, usually from the Tower, over an average of one-half the horizon, and it is reported in statute miles. PV is always used for circling approaches, and is used for straight-in approaches in the absence of a Runway Visual Range value (Figure 7-7).

	RVR		CEILING	PV
CATEGORY	C		D	E
S-ILS 12*	464/40		200 (100-¾)	
S-LOC 12**	540/40		276 (200-¾)	
CIRCLING***	820-1½	453(500-1½)	920-2	553 (600-2)

Figure 7-7 RVR for Straight in Approach

Runway Visual Range - This is an instrumentally derived value that represents the horizontal distance a pilot will see down the runway from the approach end. It is electronically measured in hundreds of feet and automatically transmitted to the Tower. If available, RVR will be used for all straight-in approaches (Figure 7-7).

Ceiling - A ceiling is the height above the earth’s surface of the lowest layer of clouds or obscuring phenomena reported as "broken," "overcast," or "obscured" and not classified as "thin" or "partial". Therefore, by definition, only one ceiling can exist at a time. The required ceiling for an approach is determined by rounding the HAT or HAA up to the next whole hundred feet.

Ceilings, Prevailing Visibility and/or Runway Visual Range constitute weather minima. These are used for flight planning purposes and are the requirements for commencing approaches. If RVR is available, it takes precedence over PV as a requirement for commencing an approach since it represents visibility down the runway. Single-piloted aircraft cannot commence an approach at a filed destination or alternate airport unless the ceiling and RVR/PV is at or above published minima.

Visual Descent Point (VDP) - A defined point on the final approach course (FAC) of a non-precision straight-in approach procedure from which normal descent from the MDA to the runway touchdown point may be commenced, provided the runway environment is clearly visible to the pilot. If a VDP is established (denoted by a "V" above the Procedure Track) the aircraft must remain at MDA until reaching the VDP, if the field is not yet in sight, the pilot will remain at MDA until acquiring the runway or reaching the MAP. The VDP is not applicable to a precision approach since you are always descending on glideslope, or to a circling approach, since you must stay at circling MDA until the landing environment for the runway of intended landing is in sight and the aircraft is in a position to make a safe landing on that runway.

Flip Terminal Approach Booklets

The FLIP Terminal Approach Procedures are guides which enable a pilot to maneuver his aircraft in instrument meteorological conditions from an enroute altitude to a position from which a safe landing can be effected. This procedure is made safe and orderly by following a specified path over the ground and decreasing altitude at designated points, or fixes.

Terminal Instrument Approach Procedures are published in geographically organized volumes. All Terminal Instrument Approach Procedures list a chart on the back cover with the United States divided geographically into volumes (Figure 7-8).



Figure 7-8 United States Divided Geographically into Volumes

The first few pages contain: **GENERAL INFORMATION AND ABBREVIATIONS**, a **TABLE OF CONTENTS** which lists the approach plates in alphabetical order, legends for the planview and profile sections of an approach plate, a discussion of **IFR LANDING MINIMA** and **RADAR MINIMA** legends, a **METAR CONVERSION CHART** for converting ceiling, runway visibility and prevailing visibility, a legend for the airport diagrams and sketches; a legend for the Departure Procedures (see Chapter 8) and **RADAR INSTRUMENT MINIMUMS** for those airports listed in the volume. (Figures 7-9.)

DOD VOL-8
FLIGHT INFORMATION PUBLICATION
(TERMINAL)
LOW ALTITUDE UNITED STATES
AIRPORT DIAGRAMS
INSTRUMENT APPROACH PROCEDURES
DEPARTURE PROCEDURES
RADAR INSTRUMENT APPROACH MINIMUMS

EFFECTIVE 20 MAR 2003
TO 15 MAY 2003
TCN EFFECTIVE 17 APR 2003

SPECIAL NOTICE
U.S. TERMINALS REALIGNMENT
10 JUL 2003. SEE IFR-S

Consult NOTAMS for latest information

LA MS AL TN
VOL 8

PUBLISHED IN ACCORDANCE WITH INTER-AGENCY AIR CARTOGRAPHIC
COMMITTEE SPECIFICATIONS AND AGREEMENTS APPROVED BY

DEPARTMENT OF DEFENSE
FEDERAL AVIATION ADMINISTRATION



Published by
NATIONAL IMAGERY AND MAPPING AGENCY
ST. LOUIS, MISSOURI

© Copyright 2003 by the United States Government
No copyright claimed under Title 17 U.S.C.


NSN 7641014109697
NIMA REF. NO.


EFF. DATE 03079

TERMXUSLIAPV08

Figure 7-9 FLIP Volume 8

General Information and Abbreviations - many of the abbreviations will become familiar through use, but you must know those underlined in Figure 7-10 to discuss approach plates.

GENERAL INFORMATION & ABBREVIATIONS

★	Indicates control tower or ATIS operates non-continuously, or non-standard Pilot Controlled Lighting.		
x	Indicates frequency is unmonitored and available on request through the controlling agency.		
	Distances in nautical miles (except visibility which may be statute miles or meters and Runway Visual Range which may be in hundreds of feet or meters).		
	Runway dimensions in feet. Elevations in feet Mean Sea Level (MSL). Ceilings in feet above airport elevation.		
	Radials/bearings/headings/courses are magnetic.		
	Coordinates are compatible with World Geodetic System (WGS)		
#	Indicates control tower temporarily closed UFN		
ADF	Automatic Direction Finder	MALSR	Medium Intensity Approach Light System with RAIL
<u>ALS</u>	Approach Light System	MAP	Missed Approach Point
<u>APP CON</u>	Approach Control	<u>MDA</u>	Minimum Descent Altitude
ARR	Arrival	MIRL	Medium Intensity Runway Lights
<u>ASR/PAR</u>	Published Radar Minimums at this Airport	MLS	Microwave Landing System
ATIS	Automatic Terminal Information Service	NA	Not Authorized
BC	Back Course	NDB	Non-directional Radio Beacon
C	Circling	NoPT	No Procedure Turn Required (Procedure Turn shall not be executed without ATC clearance)
CAT	Category	NVG	Night Vision Goggles
Chan	Channel	ODALS	Omnidirectional Approach Light System
<u>CLNC DEL</u>	clearance delivery	<u>PAPI</u>	Precision Approach Path Indicator
CNF	Computer Navigation Fix	RA	Radio Altimeter setting height
CTAF	Common Traffic Advisory Frequency	Radar Required	Radar vectoring required for this approach
<u>DEP CON</u>	Departure Control	RAIL	Runway Alignment Indicator Lights
<u>DH</u>	Decision Height	RBn	Radio Beacon
<u>DME</u>	Distance Measuring Equipment	RCLS	Runway Centerline Light System
DR	Dead Reckoning	REIL	Runway End Identifier Lights
<u>ELEV</u>	elevation	<u>RNAV</u>	Area Navigation
FAF	Final Approach Fix	RPI	Runway Point of Intercept(ion)
FL	Flight Level	RRL	Runway Remaining Lights
FM	Fan Marker	Runway Touchdown Zone	First 3000' of Runway
<u>GP</u>	Glide Path	<u>RVR</u>	Runway Visual Range
<u>GS</u>	Glide Slope	Rwy	Runway
<u>HAA</u>	Height Above Airport	S	Straight-in
<u>HAL</u>	Height Above Landing	SALS	Short Approach Light System
<u>HAT</u>	Height Above Touchdown	SDF	Simplified Directional Facility
<u>HIRL</u>	High Intensity Runway Lights	SSALR	Simplified Short Approach Light System with RAIL
<u>IAF</u>	Initial Approach Fix	TA	Transition Altitude
ICAO	International Civil Aviation Organization	<u>TAC</u>	TACAN
Intcp	Intercept	TCH	Threshold Crossing Height (height in feet Above Ground Level)
INT, INTXN	Intersection	<u>TDZ</u>	Touchdown Zone
<u>KIAS</u>	Knots Indicated Airspeed	<u>TDZE</u>	Touchdown Zone Elevation
LDA	Landing Distance Available, Localizer Type Directional Aid	<u>TDZL</u>	Touchdown Zone Lights
Ldg	Landing	THRE	Threshold Elevation
LDIN	Lead in Light System	Tlv	Transition Level
LIRL	Low Intensity Runway Lights	<u>VDP</u>	Visual Descent Point
LLZ/LOC	Localizer	WPT	Waypoint (RNAV)
LR	Lead Radial Provides at least 2 NM (Copter 1 NM) of lead to assist in turning onto the intermediate/final course		
M	Meters		
MALS	Medium Intensity Approach Light System		

PILOT CONTROLLED AIRPORT LIGHTING SYSTEMS

Available pilot controlled lighting (PCL) systems are indicated as follows:

1. Approach lighting systems that bear a system identification are symbolized using negative symbology, e.g.,   
2. Approach lighting systems that do not bear a system identification are indicated with a negative "  " beside the name.

A star (*) indicates non-standard PCL, consult Directory/Supplement, e.g., *
To activate lights use frequency indicated in the communication section of the chart with a 

KEY MIKE

- 7 times within 5 seconds
- 5 times within 5 seconds
- 3 times within 5 seconds

FUNCTION

- Highest intensity available
- Medium or lower intensity (Lower REIL or REIL-off)
- Lowest intensity available (Lower REIL or REIL-off)

Figure 7-10 General Information

Table of Contents - lists alphabetically the approaches available in the publication by official airport name. It is handy when attempting to locate a specific approach plate or airfield diagram (Figure 7-11).

II

TABLE OF CONTENTS

INDEX OF SUPPLEMENTARY ENCLOSURES

GENERAL INFORMATION	INSIDE FRONT COVER	INOP COMPONENTS TABLE	PAGE XVIII
GENERAL INFORMATION AND ABBREVIATIONS	PAGE I	IFR TAKE-OFF MINIMUMS AND DEPARTURE PROCEDURES	PAGE XIX-XXII
TABLE OF CONTENTS	PAGE II-IX	RADAR IAP MINIMUMS	PAGE XXIII-XXXVII
LEGENDS	PAGE X-XI	IFR ALTERNATE MINIMUMS	PAGE XXXVIII-XL
IFR LANDING MINIMA AND RADAR MINIMA	PAGE XII-XIII	LAND AND HOLD SHORT OPERATIONS(LAHSO)	PAGE XLI
METAR CONVERSION CHART	PAGE XIV	CLIMB/DESCENT TABLE	INSIDE BACK COVER
AIRPORT DIAGRAM/SKETCH LEGEND	PAGE XV	AREA OF COVERAGE	OUTSIDE BACK COVER
SID LEGENDS	PAGE XVI-XVII		

INDEX OF INSTRUMENT PROCEDURE CHARTS

NAME	PAGE	NAME	PAGE
ABERDEEN-AMORY, MS MONROE CO(M40)		ATHENS, TN MCMINN CO(MMI)	
VOR or GPS RWY 18.....	1	TAKE-OFF MINIMUMS.....	XIX
		NDB or GPS RWY 2.....	19
		NDB or GPS RWY 20.....	20
ACADIANA REGIONAL- SEE NEW IBERIA, LA		AUBURN-OPELIKA ROBERT G. PITTS(AUO), AL	
		TAKE-OFF MINIMUMS.....	XIX
		VOR RWY 28.....	21
ALABASTER, AL SHELBY COUNTY (EET)		BARKSDALE AFB(KBAD), BOSSIER CITY, LA	
TAKE-OFF MINIMUMS.....	XIX	RADAR MINIMUMS.....	XXIII
VOR or GPS-A.....	2	ILS Y RWY 15.....	22
RNAV (GPS) RWY 33.....	3	ILS Z RWY 15.....	23
		ILS or VOR RWY 33.....	24
		VOR/DME RWY 15.....	25
ALEXANDER CITY, AL THOMAS C. RUSSELL FIELD(ALX)		TACAN RWY 15.....	26
TAKE-OFF MINIMUMS.....	XIX	TACAN RWY 33.....	27
NDB or GPS-A.....	4	AIRPORT DIAGRAM.....	28
RNAV(GPS) RWY 36.....	5		
		BATON ROUGE METROPOLITAN, RYAN FIELD(KBTR), LA	
ALEXANDRIA, LA ESLER REGIONAL(KESF)		TAKE-OFF MINIMUMS.....	XIX
TAKE-OFF MINIMUMS.....	XIX	RADAR MINIMUMS.....	XXIII
NDB or GPS RWY 26.....	6	ALTERNATE MINIMUMS.....	XXXVIII
ILS RWY 26.....	7	LAHSO.....	XLI
		NDB or GPS RWY 13.....	29
		ILS RWY 13.....	30
ALEXANDRIA INTL (KAEX)		ILS RWY 22R.....	31
ILS RWY 14.....	8	LOC BC RWY 4L.....	32
VOR/DME RWY 14.....	9	VOR or GPS RWY 4L.....	33
VOR/DME RWY 32.....	10	AIRPORT DIAGRAM.....	34
RNAV (GPS) RWY 14.....	11		
RNAV (GPS) RWY 18.....	12	BAY ST. LOUIS, MS STENNIS INTL (HSA)	
RNAV (GPS) RWY 32.....	13	NDB RWY 18.....	35
AIRPORT DIAGRAM.....	14	VOR or GPS-A.....	36
		VOR/DME RNAV or GPS RWY 18.....	37
ALVIN CALLENDER FLD- SEE NEW ORLEANS NAS JRB (ALVIN CALLENDER FLD), LA		GPS RWY 36.....	38
		BEAUREGARD PARISH- SEE DE RIDDER, LA	
ANDALUSIA-OPP (79J), AL			
NDB or GPS-A.....	15	BILOXI- SEE KEESLER AFB, MS	
COPTER NDB 270°.....	16		
ANNISTON METROPOLITAN(KANB), AL			
TAKE-OFF MINIMUMS.....	XIX		
ALTERNATE MINIMUMS.....	XXXVIII		
NDB or GPS RWY 5.....	17		
ILS RWY 5.....	18		

Figure 7-11 Table of Contents

Planview and Profile Legends - The planview of an approach plate uses many of the same symbols as enroute charts or DP. There are distinct symbols for the penetration, procedure or missed approach tracks of the planview and profile section (Figure 7-12 and 7-13).

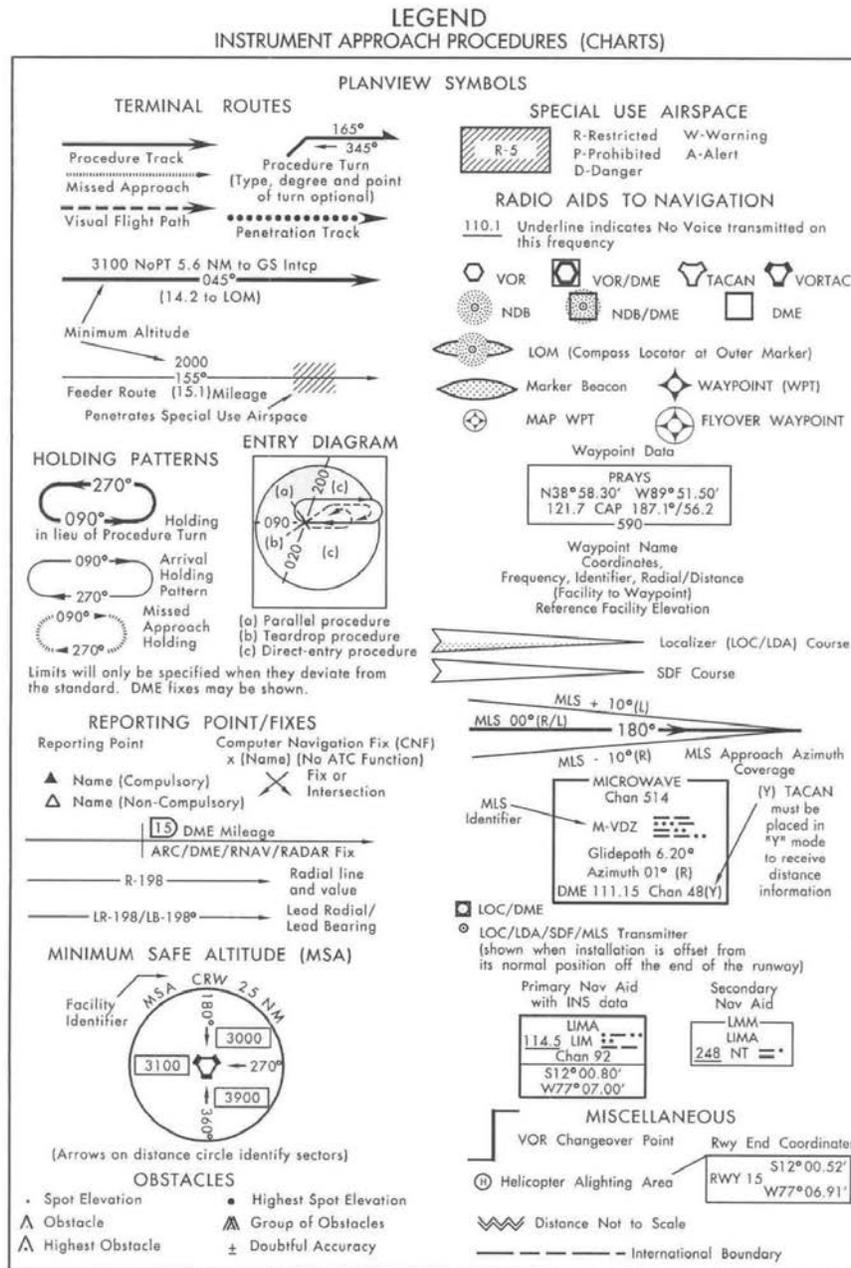


Figure 7-12 Planview Legend

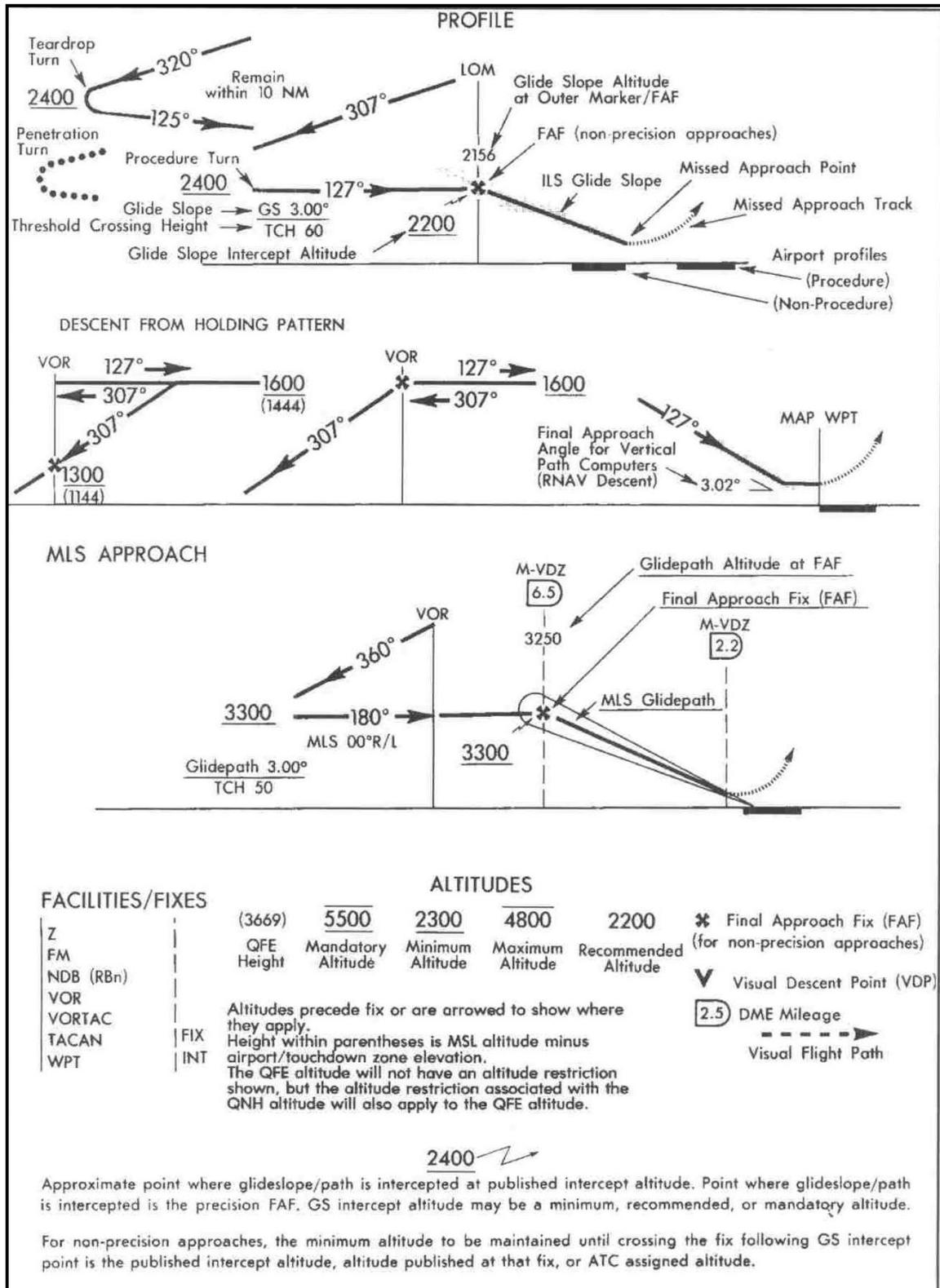


Figure 7-13 Profile Legend

IFR Landing Minima - explains the standard format for portrayal of both Approach Plate Minima and Radar Minima (Figure 7-14).

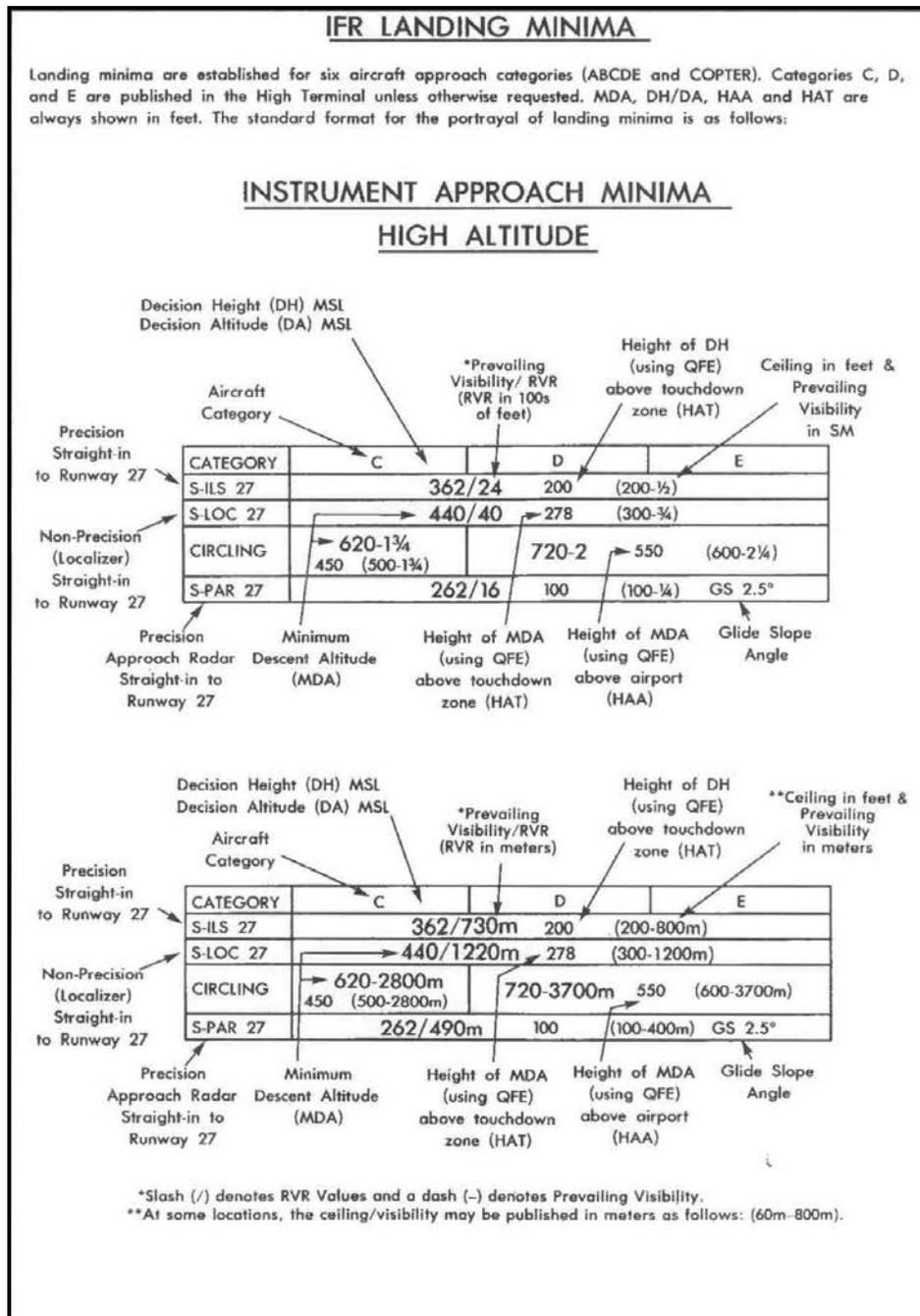


Figure 7-14 IFR Landing Minima

Metar Conversion Chart

Example: An RVR of 4000 is equal to 3/4 statute mile visibility (Figure 7-15).

METAR CONVERSION CHART							
CEILING		RUNWAY VISIBILITY					
PUBLISHED MINIMA FEET	REQUIRED EQUIVALENT METERS	RVR VALUES PUBLISHED IN HUNDREDS OF FEET	STATUTE MILE EQUIVALENT	NAUTICAL MILE EQUIVALENT	METERS EQUIVALENT	KILOMETERS EQUIVALENT	
100	30	12	1/4 (Helicopter Only)	2/10	370	.4	
200	60	16	1/4	2/10	490	.5	
300	90	20	3/8	3/10	610	.6	
400	120	24	1/2	4/10	730	.7	
500	150	32	5/8	6/10	970	1.0	
600	180	40	3/4	7/10	1220	1.2	
700	210	45	7/8	8/10	1370	1.4	
800	240	50	1	9/10	1520	1.5	
900	270	60	1-1/4	1-1/10	1830	1.8	
1000	300						
1100	330						
1200	360						
1300	390						
1400	420						
1500	450						

PREVAILING VISIBILITY							
STATUTE MILES	NAUTICAL MILES	METERS	KILOMETERS	STATUTE MILES	NAUTICAL MILES	METERS	KILOMETERS
1/8	1/10	200	.2	1-3/4	1-5/10	2800	2.8
1/4	2/10	400	.4	1-7/8	1-6/10	3000	3.0
3/8	3/10	600	.6	2	1-7/10	3200	3.2
	4/10	700	.7		1-8/10	3400	3.4
1/2		800	.8	2-1/4	1-9/10	3600	3.6
	5/10	900	.9		2	3700	3.7
5/8		1000	1.0		2-1/10	3900	3.9
	6/10	1100	1.1	2-1/2	2-2/10	4000	4.0
3/4		1200	1.2	2-5/8		4200	4.2
	7/10	1300	1.3		2-3/10	4300	4.3
7/8		1400	1.4	2-3/4		4400	4.4
	8/10	1500	1.5		2-4/10	4500	4.5
1		1600	1.6	2-7/8		4600	4.6
	9/10	1700	1.7		2-5/10	4700	4.7
1-1/8	1	1800	1.8	3	2-6/10	4800	4.8
1-1/4	1-1/10	2000	2.0		2-7/10	5000	5.0
1-3/8	1-2/10	2200	2.2		2-8/10	5200	5.2
1-1/2	1-3/10	2400	2.4		2-9/10	5400	5.4
1-5/8	1-4/10	2600	2.6		3	6000	6.0

Figure 7-15 Metar Conversion Chart

Airport Diagram/Sketch Legend - contains useful information on runways, obstructions, and lighting for briefing an unfamiliar field (Figure 7-16).

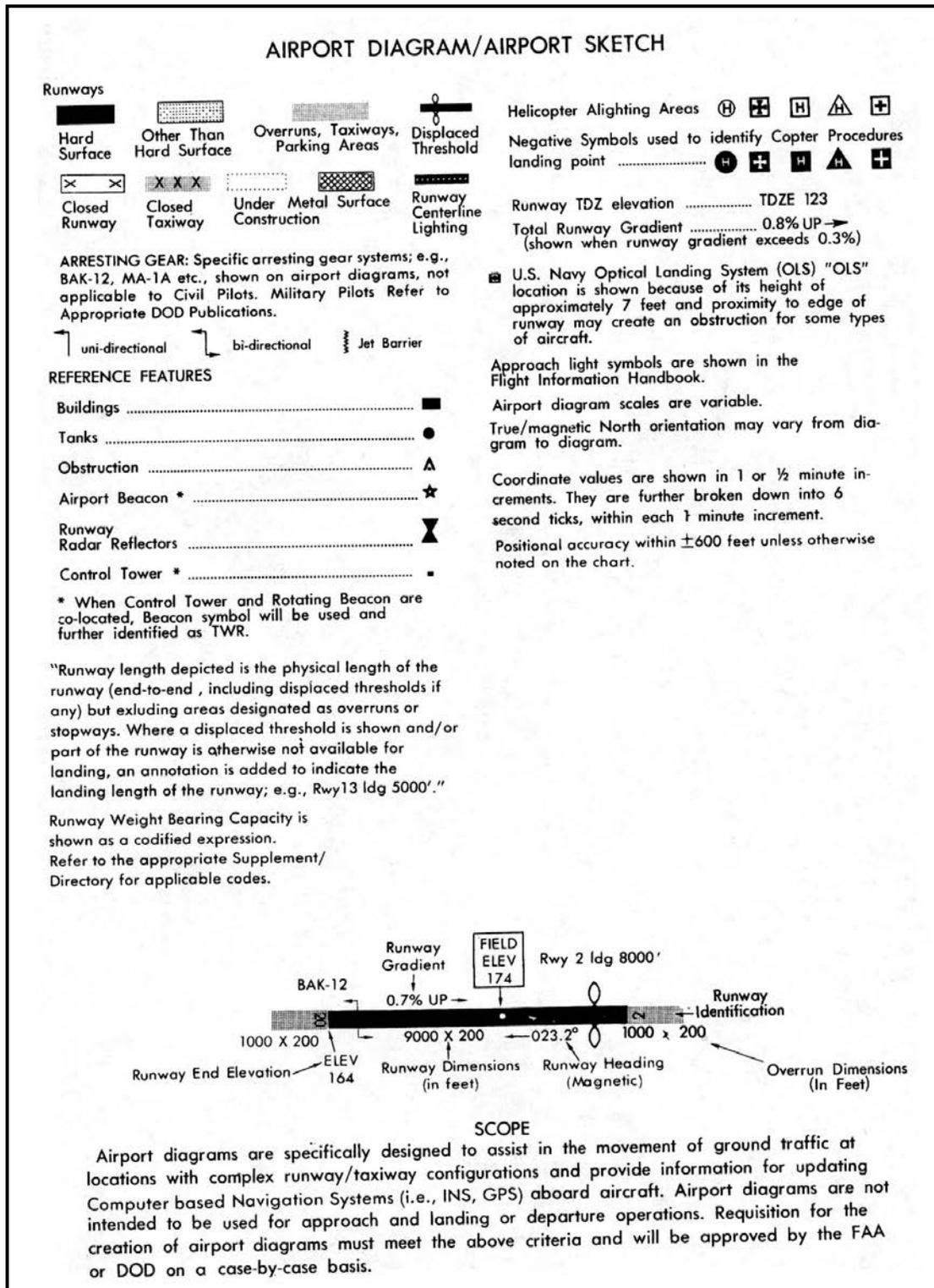


Figure 7-16 Airport Diagram/Sketch Legend

Radar Instrument Approach Minimums - Lists alphabetically (by airport) approach minimums for radar controlled approaches (PAR, ASR) and circling approaches (Figure 7-17).

RADAR INSTRUMENT APPROACH MINIMUMS						
BARKSDALE AFB (KBAD), LA (Bossier City) (02276 USAF)						ELEV 166
RADAR (E) 111.2 118.6 119.9 125.1 350.2 335.55 363.8						
	<u>RWY</u>	<u>GS/TCH/RPI</u>	<u>CAT</u>	<u>DH/ MDA-VIS</u>	<u>HAT/ HAA</u>	<u>CEIL-VIS</u>
ASR (B)	15		ABC	620/40	454	(500-¾)
			DE	620/50	454	(500-1)
	33		AB	620/24	457	(500-½)
			C	620/40	457	(500-¾)
			DE	620/50	457	(500-1)
CIR (C)	All Rwy		ABCD	720-2	554	(600-2)
			E	760-2	594	(600-2)
(A) Opr 1200-0500Z + +. (B) When ALS inop, increase all CAT ½ mile. (C) Circling not authorized W of Rwy 15-33.						
BATON ROUGE METROPOLITAN RYAN FIELD (KBTR), LA						
RADAR (E) 120.3 278.3 Δ NA when control tower closed (Amdt 10A, 7 SEP 00 FAA)						ELEV 70
	<u>RWY</u>	<u>GS/TCH/RPI</u>	<u>CAT</u>	<u>DH/ MDA-VIS</u>	<u>HAT/ HAA</u>	<u>CEIL-VIS</u>
ASR (B)	31 (C)		ABCD	440-1¼	371	(400-1¼)
	13		ABC	560-¾	492	(500-¾)
			D	560-1	492	(500-1)
	22R (D)		ABC	620/50	550	(600-1)
			D	620/60	550	(600-1¼)
	4L		AB	620-1¼	551	(600-1¼)
			C	620-1½	551	(600-1½)
			D	620-1¾	551	(600-1¾)
CIR	All Rwy		AB	620-1¼	550	(600-1¼)
			C	620-1½	550	(600-1½)
			D	680-2	610	(700-2)
(A) Opr 1100-0600Z + +. (B) When control tower closed, ASR NA. (C) Inoperative table does not apply. (D) FOR INOPERATIVE MALSR INCREASE CATEGORIES AB VIS TO RVR 60.						
RADAR INSTRUMENT APPROACH MINIMUMS						
XXIII						

Figure 7-17 Radar Instrument Approach Minimums

Rate of Descent Table - The inside back cover of the approach procedures booklet has a rate of descent table which is useful for planning a precision descent and approach with known weather conditions (Figure 7-18).

INSTRUMENT TAKEOFF OR APPROACH PROCEDURE CHARTS RATE OF CLIMB/DESCENT TABLE (ft. per min)												
A rate of climb/descent table is provided for use in planning and executing climbs or descents under known or approximate ground speed conditions. NOTE: The relationship between climb/descent angle (degrees) and climb/descent gradient (FT/NM) is based on the assumption that 1 degree equals 100 FT/NM.												
CLIMB/ DESCENT ANGLE	CLIMB/ DESCENT GRADIENT FT/NM	GROUND SPEED (knots)										
		60	90	120	150	180	210	240	270	300	330	360
2.0	200	200	300	400	500	600	700	800	900	1000	1100	1200
2.5	250	250	375	500	625	750	875	1000	1125	1250	1375	1500
3.0	300	300	450	600	750	900	1050	1200	1350	1500	1650	1800
3.5	350	350	525	700	875	1050	1225	1400	1575	1750	1925	2100
4.0	400	400	600	800	1000	1200	1400	1600	1800	2000	2200	2400
4.5	450	450	675	900	1125	1350	1575	1800	2025	2250	2475	2700
5.0	500	500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000
5.5	550	550	825	1100	1375	1650	1925	2200	2475	2750	3025	3300
6.0	600	600	900	1200	1500	1800	2100	2400	2700	3000	3300	3600
6.5	650	650	975	1300	1625	1950	2275	2600	2925	3250	3575	3900
7.0	700	700	1050	1400	1750	2100	2450	2800	3150	3500	3850	4200
7.5	750	750	1125	1500	1875	2250	2625	3000	3375	3750	4125	4500
8.0	800	800	1200	1600	2000	2400	2800	3200	3600	4000	4400	4800
8.5	850	850	1275	1700	2125	2550	2975	3400	3825	4250	4675	5100
9.0	900	900	1350	1800	2250	2700	3150	3600	4050	4500	4950	5400
9.5	950	950	1425	1900	2375	2850	3325	3800	4275	4750	5225	5700
10.0	1000	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000

Figure 7-18 Rate of Climb/Descent Table

Example: What should the rate of descent be to stay on a 3° glideslope for a PAR to runway 36? The rate of descent will depend on groundspeed. With an approach speed of 115 KIAS and wind from the north at 10 KTS:

$$\text{Groundspeed} + 115 \text{ KIAS} - 10 \text{ Knot Headwind} = 105 \text{ Knots}$$

105 knots is not listed in the descent table so interpolate between 90 and 120 knots for a 3.0° angle of descent.

<u>90 knots</u>	<u>105 knots</u>	<u>120 knots</u>
450 fpm	? fpm	600 fpm

Answer: Rate of Descent on glidepath should be 525 fpm.

Approach Plates

An Instrument Approach Procedure Chart consists of four parts:

1. PLANVIEW,
2. PROFILE SECTION,
3. MINIMA SECTION, and
4. AIRPORT SKETCH.

Planview

The designation of the particular Instrument Approach Procedure is in the upper and lower left-hand portion of the chart. This identifies the procedure from all others. The airport name along with the city and state where the field is located, is in the upper and lower right-hand portion of the chart. Refer to the example in Figure 7-19 while reading the following discussion of planview information.

Holding Pattern

In the upper right-hand corner of the planview box is a display of the terminal holding pattern including recommended entry turns. It is oriented to magnetic North, as is the whole approach procedure. It should be remembered that the entry turn is based solely upon aircraft heading upon reaching the holding fix. To use this pattern, you should determine from which sector you are approaching and execute the type entry shown by the codes right turn (RT), left turn (LT), or teardrop (TD). Holding procedures will be discussed in the INAV course.

The holding fix is a specified fix used as a reference point in establishing and maintaining the position of an aircraft while holding. Note that the holding fix is an anchor point for the folding pattern. It is always the position where the holding pattern departs, or turns away from, the holding radial. Arrival holding patterns are thin, solid black lines located at, or near, the IAF. Missed approach holding is located near the Missed Approach Track (MAT) and uses its symbology. In Figure 7-19, the holding fix is WEEMS (VAD 190/15). The pattern consists of left-hand turns with 5-mile leg lengths. The inbound (010°) and outbound (190°) courses are provided.

TACAN/DME Fixes

TACAN/DME fixes are identified by a short straight line intersecting a specified radial. If a DME fix or radial is shown on the planview, something happens at that point, e.g., an altitude restriction of turn of an arc.

Initial Approach Fix

The radio navigation facility from which the approach is being executed is shown at the center of the planview box. The point at which the penetration is commenced is known as the IAF and is identified by a small line intersecting a specified radial. (In the case of an approach without DME, there will not be a line since the penetration must begin over the NAVAID, a position known as "High Station.")

The IAF may or may not be located in the holding; most often it is the holding fix. In Figure 7-19, the IAF is at 15 DME on the 190 radial from VAD. Additional identification for the IAF often includes a 5 letter name, the symbol "(IAF)", or a box with its latitude and longitude.

Penetration Track

The penetration track is shown by a bold print dotted line with arrow markings and numerical course indicators. DME fixes or radials which relate to altitude restrictions in the profile section may be found at points along the penetration track. The FAF will be found at the end of the penetration track (Figures 7-18 and 7-19).

Procedure Track

From the FAF inbound to the field is the procedure track. This is when the aircraft is being flown down to the published landing minima. The approach is completed either by visual acquisition of the field at the missed approach point and subsequent landing, or by executing a missed approach (Figures 7-18 and 7-19).

Missed Approach Track

The MAT, and holding pattern if necessary, will be shown by a dashed fine print track with an arrowhead. The missed approach instructions will be written in the profile box. (Figures 7-19 and 7-20.)

Feeder Facilities

A bold print circle, normally 20 NM in radius, around the navigation facility indicates everything within the circle is to scale, or approximately to scale. Outside the circle will be found two concentric dashed rings. The inner ring is labeled "FEEDER FACILITIES." NAVAIDs on the ring are transitional facilities which aid the aircrew in making the transition from enroute to approach. The outer ring, labeled "HIGH ALTITUDE FACILITIES" will depict NAVAIDs found on the High Altitude Charts. The arrows emanating from these navigation aids normally show the course and distance from that navigation aid to the IAF.

NOTE

Some high altitude facilities show radial and DME to feeder facilities or to the holding fix rather than at the IAF. These will be obvious when examining the approach chart, or will be indicated by a "NOTE" in the planview.

Emergency Safe Altitude

The emergency safe altitude is stated in the lower left-hand corner of the planview. The emergency safe altitude gives 1000 feet clearance above the highest obstructions within 100 NM of the specified NAVAID in non-mountainous areas and 2000 feet clearance in designated mountainous areas. In Figure 7-19, it is 16,000 feet MSL.

Minimum Sector Altitudes

Altitudes depicted on the planview which provide 1000 feet of obstacle clearance within a 25 mile radius of the navigation facility upon which the procedure is predicted. Sectors depicted on approach charts must be at least 90° in scope. These altitudes are for emergency use only and do not necessarily assure acceptable navigation signal coverage. In Figure 7-19, there is only one sector with an MSA of 2200 feet MSL.

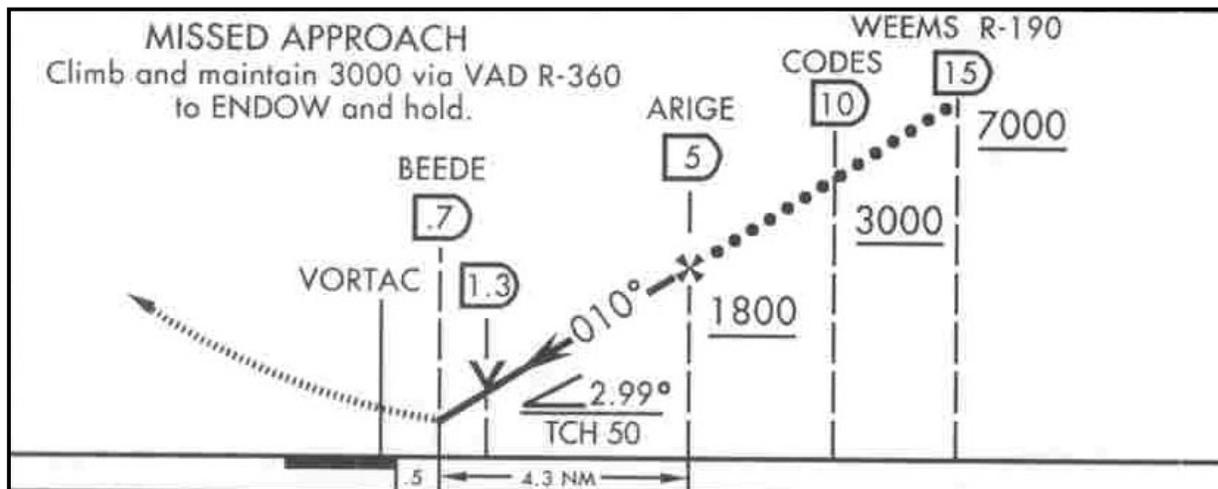


Figure 7-20 Missed Approach

Profile Section

Figure 7-20 shows the profile section which accompanies Figure 7-19, HI-TACAN RWY 36L at Moody AFB. The Profile Section depicts the approach by using the same symbols as the planview and is essentially a cross section of the flight path in the planview. The profile section contains all of the information necessary to fly the approach. The altitudes precede the fix to which they apply, or will be arrowed to the fix. They will be either mandatory, minimum, maximum, or recommended, depending on how the altitude figure is lined. At the end of the penetration track is the FAF which is indicated on the profile view by a boldface "X". Other symbology in the profile section defines the VDP (boldface "V") and MAP (start of missed approach track).

Approach Minima Section

When flying an instrument approach, you are concerned with two sets of minimums. Prior to reaching IAF you must be sure the weather is at or above minimums in order to commence the approach. Then, you need to find your altitude minimums for final approach. Each of the parts of a typical Minima Section was defined in the Explanation of Terms earlier in this chapter. The following examples, using information from the minima section of the HI-TACAN RWY 13 at Cannon AFB, will clarify the relationships between the numbers.

NOTE

The published minimum ceiling for an approach is the minimum height of the ceiling (AGL) above the airport elevation necessary to commence that approach. Ceilings are seldom uniform in height; therefore, in the following illustrations, aircraft distances below the published minimum ceilings are, in actuality, approximations.

The first line in the Minima section of Figure 7-21 lists the minima for the TACAN straight-in approach to Runway 22. Use approach category "C." Because this approach is non-precision, the first altitude shown is a minimum descent altitude (4680 feet MSL). RVR (4000 feet) required follows the MDA. Because it is straight-in, the smaller number (385 feet AGL) is the height of the MDA above the touchdown zone (HAT). Ceiling and visibility required for this approach follow; for a T-39, a 400 foot ceiling and 3/4 SM visibility are necessary to commence the approach. If an RVR is given by approach or tower, it takes priority over the prevailing visibility. (See Figure 7-23 for Planview depiction of the above altitudes.)

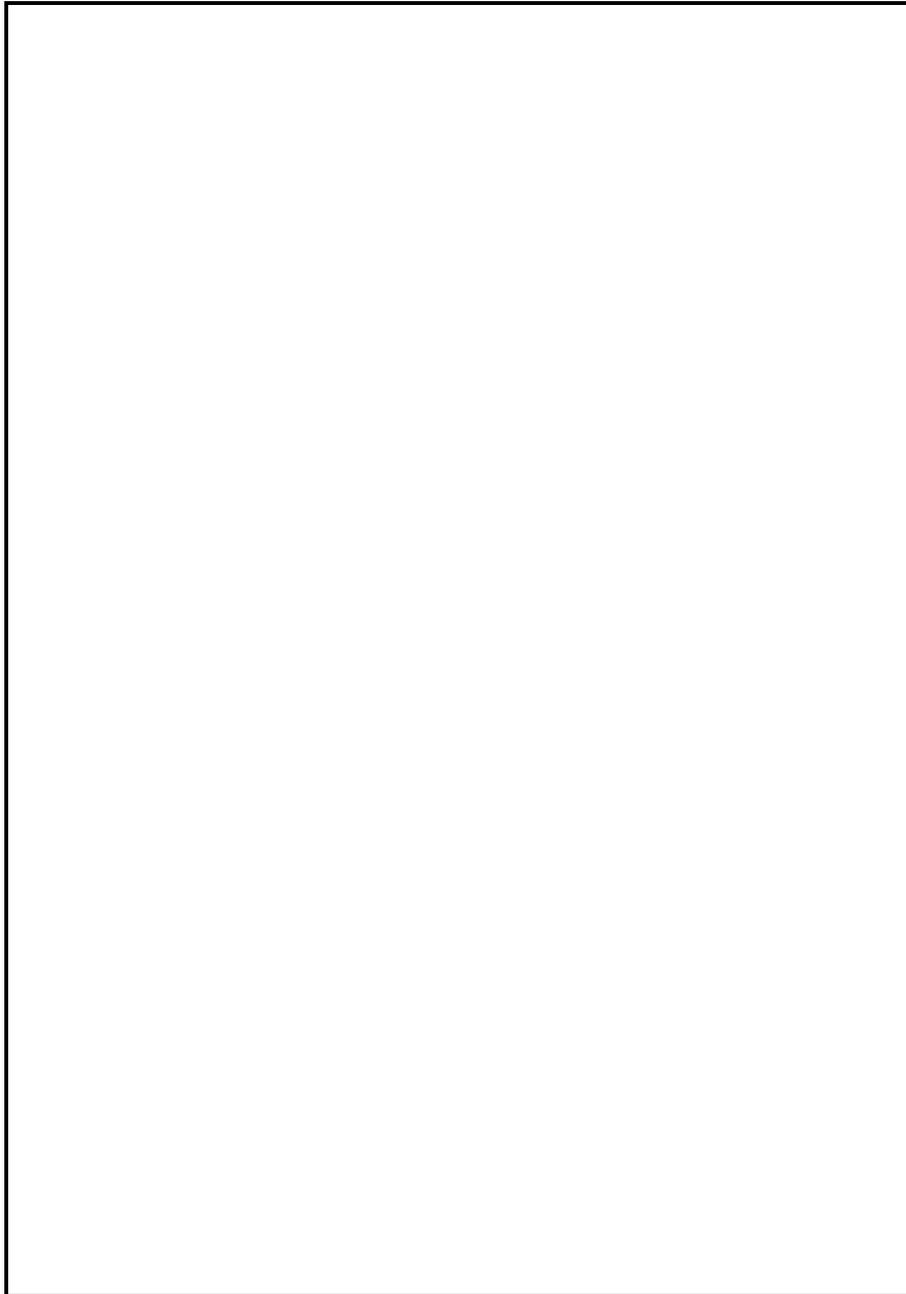


Figure 7-21 HI-TACAN RWY 13

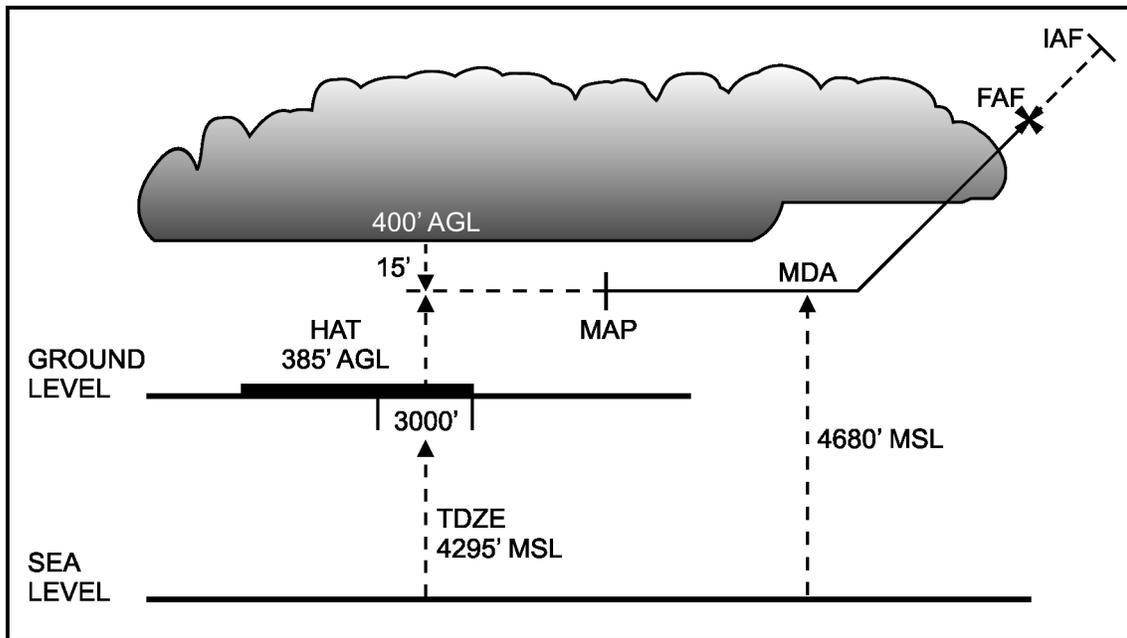


Figure 7-22 Minima Section

Formulas:

$$\mathbf{DH = HAT + TDZE}$$

$$\mathbf{MDA = HAT + TDZE}$$

$$\mathbf{WX_{MIN} = DH / MDA - FE \text{ (field elevation)}}$$

You must have reported weather of at least 400 feet ceiling and 4000 feet RVR before commencing the approach. When reaching Minimum Descent Altitude of 4680 feet MSL, you will be 385 feet above the highest elevation in the Touchdown Zone of 4295 feet MSL (385 feet AGL + 4295 feet MSL = 4680 feet MSL) and approximately 15 feet below the ceiling of 400 feet AGL (400 feet AGL - 385 feet AGL = 15 feet).

After passing the FAF you may descend down to the MDA. You must execute a missed approach if:

1. the runway environment (approach lights, runway, etc.) is not in sight at the MAP,
2. you cannot make a safe landing, or
3. if directed by the controlling agency.

Missed approach instructions are printed in the profile section or the controller may give them verbally.

Circling Approach

The next line in Figure 7-22 lists the circling minima for a non-precision approach to a runway that does not have a published approach. Associated with any circling approach is a MDA and a Height Above Airport (HAA). Visibility for circling is given in statute miles of prevailing visibility. (See Figure 7-23 for the Planview depiction of the altitudes.)

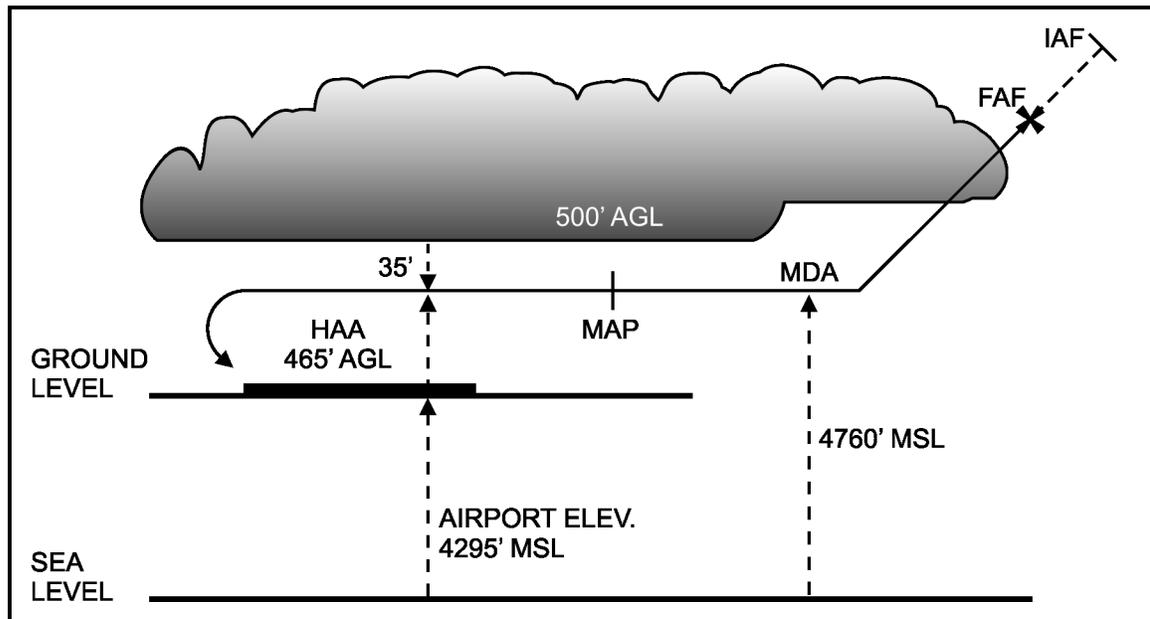


Figure 7-23 Planview Depiction

You must have reported weather of at least a 500 feet ceiling and 1½ miles PV before commencing the approach, when reaching the Minimum Descent Altitude of 4760 feet MSL, you will be 465 feet above the highest elevation on any usable landing surface (4295 feet MSL) and approximately 35 feet below the ceiling of 500 feet. In this example, the TDZE for runway 22 is the same as the airport elevation, but this will often not be the case.

A circling approach is a visual flight maneuver and is used to align the aircraft with the landing runway after the instrument approach is completed. For example, your clearance from Approach Control reads as follows:

"KATT 815, CANNON APPROACH, YOU ARE CLEARED FOR THE HI-TACAN 22 APPROACH TO CANNON, CIRCLE TO LAND RUNWAY 13."

As in Figure 7-24, you would use the published HI-TACAN Instrument Approach Procedure for Runway 13 but you would use the published CIRCLING minimums on that procedure since you will not be landing on Runway 13.

Each landing situation is different because of the variables of ceiling, visibility, wind direction and velocity, obstructions and final approach course. Since these variables exist in many

combinations, there is no set procedure for accomplishing the circling approach. After the descent to circling MDA, and with the runway environment in sight, determine if the ceiling and visibility are sufficient for performing the circling maneuver. If there is any doubt whether the aircraft can be safely flown to the point of touchdown, execute a missed approach. Always turn towards the airfield if executing a missed approach during the circling maneuver, since that is the area of guaranteed obstacle clearance.

DO NOT GO BELOW THE CIRCLING MDA UNTIL THE LANDING ENVIRONMENT FOR THE RUNWAY OF INTENDED LANDING IS IN SIGHT AND THE AIRCRAFT IS IN POSITION TO MAKE A SAFE LANDING ON THAT RUNWAY.

A study of the circling approach illustrations in Figure 7-24 is recommended and the pattern that best suits the situation should be used. The choice of patterns to be flown depends on:

1. obstructions, if any, within the airport landing area;
2. circling restrictions listed on the approach procedure chart; or
3. instructions from the controlling agency.

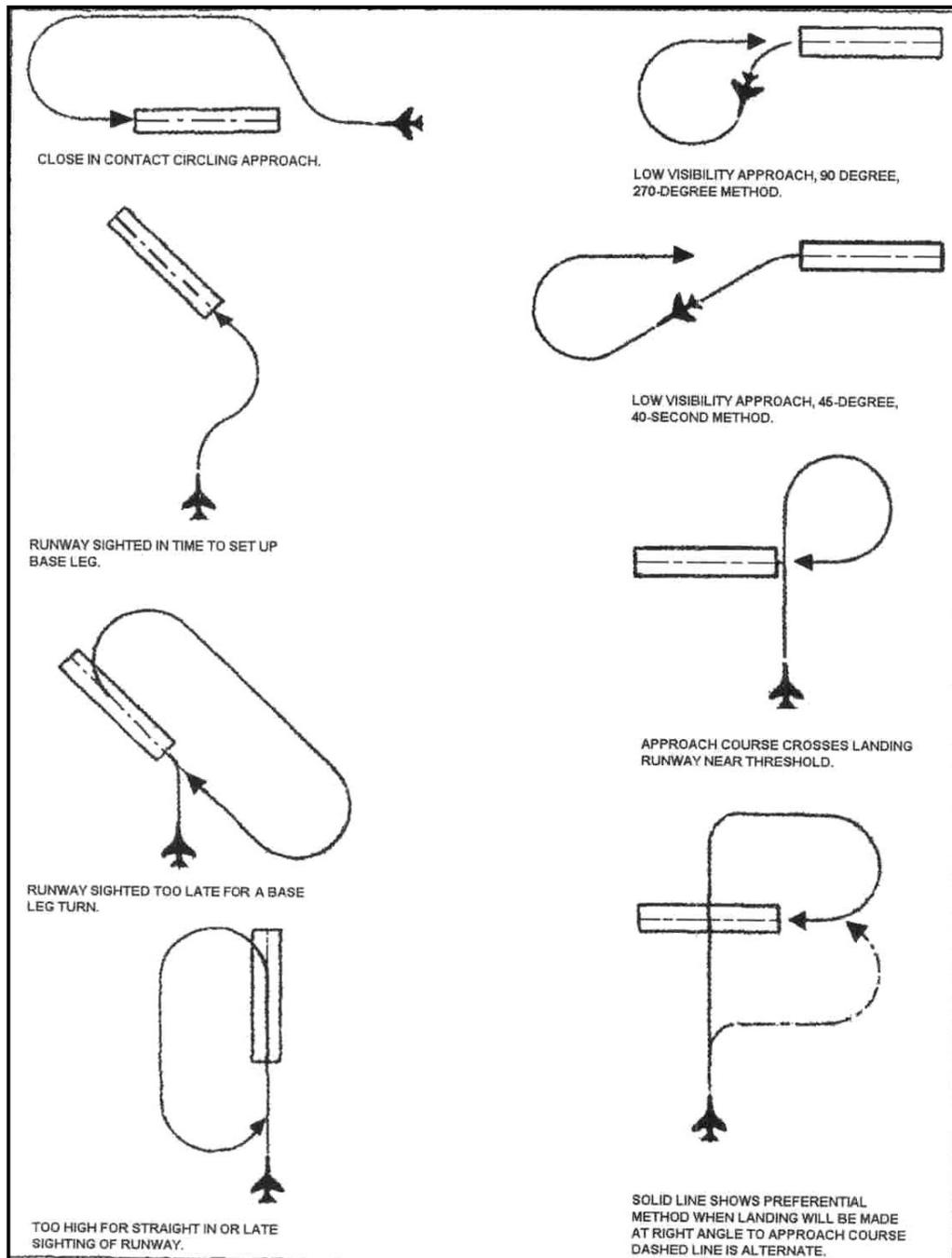


Figure 7-24 Circling Approaches

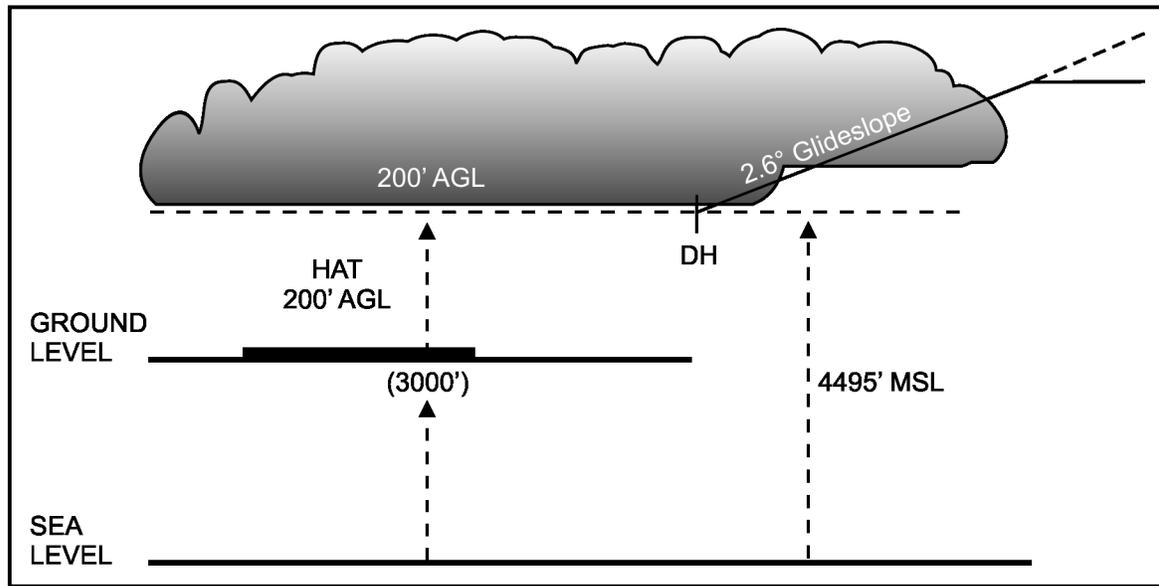


Figure 7-25 Planview Depiction of the Altitudes

PAR Approach

The last line in Figure 7-22 lists the minima for a Precision Approach Radar (PAR). Associated with any PAR is a Decision Height (DH), PV or RVR, HAT, and glideslope (GS). This example uses a 2.6° glideslope, whereas a 3° GS is more common. (See Figure 7-25 for the Planview Depiction of the Altitudes.)

In accordance with OPNAVINST 3710.7, absolute minimums for a single-piloted aircraft executing a precision approach are 200 foot ceiling/HAT and visibility one-half sm/2400 feet RVR or published minimums, whichever are higher. Published minimums for the S-PAR 22 have 100 feet HAT, so you must add 100 feet to the HAT (and to the DH) to determine your single-piloted minimums. Required weather minimums will become 200 feet ceiling and 2400 feet RVR/1/2 SM PV.

A PAR is generally begun with an enroute descent from cruising altitude, but you may request a HI-TACAN penetration with GCA pick-up when inbound on final approach course.

In a precision approach, execute a missed approach when you reach the DH and:

1. the runway environment is not in sight,
2. the pilot cannot execute a safe landing, or
3. when instructed by the controlling agency.

Some minimums sections include information for ASR approaches, but for this example you must refer to the Radar Instrument Approach Minimums section at the front of the booklet.

From Figure 7-26, you must have reported weather of at least 400 feet ceiling and 4000 feet RVR before commencing the ASR approach to Runway 22. After turning to the final approach course, the controller will tell you to begin your descent. At this time, you may either descend to the published MDA, or request your military controller to furnish recommended altitudes each mile on final. These altitudes are based on a rate-of-descent which approximates the glideslope. The MAP is determined by radar range and will be announced by the controller.

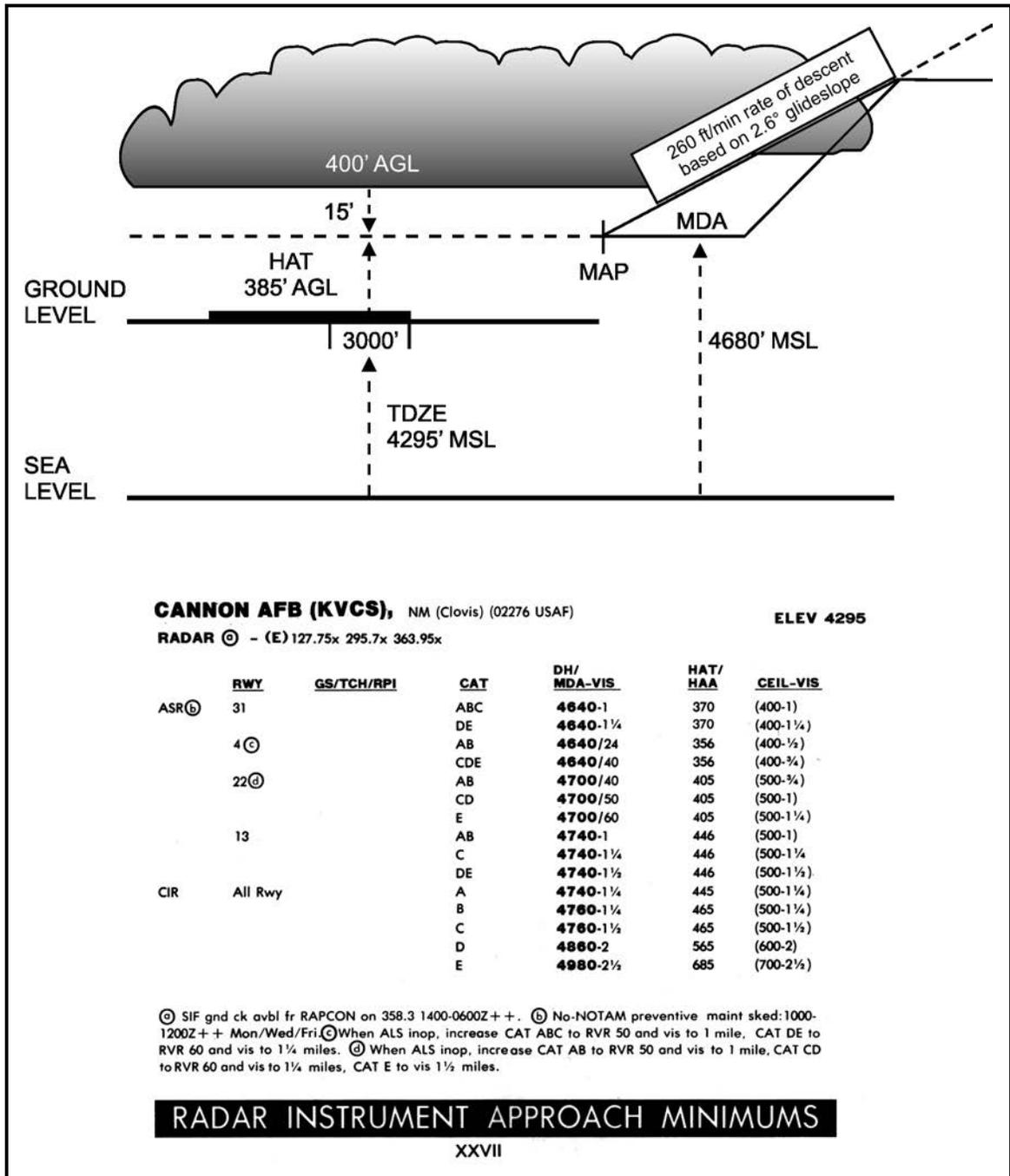


Figure 7-26 Straight-In Surveillance Approach

Airport Sketch

The Airport Sketch is found in the bottom right corner of the Procedure Chart. It shows the field layout, including runways, taxiways, ramp areas, tower, rotating beacon, obstacles, etc. Also shown are runway lengths and widths, placement of arresting gear, runway slope displaced thresholds, and approach lighting codes. Airport elevation is shown in the upper left corner of the airport sketch and touchdown zone elevation is shown next to the approach end of the runway to which the approach procedure is aligned. Supplementary information will also be found in the airport sketch box (Figure 7-27).

Approach Lighting

The type of approach lighting available is depicted at the approach ends of the runways by small circles containing a letter. The legend of the approach lighting codes is found in Section B of the Flight Information Handbook. Note, a dot portrayed above the approach lighting letter indicates sequenced flashing lights (strobes).

An Optical Landing System (OLS) and the availability of High and Medium Intensity Runway Lights (HIRL and MIRL) will be indicated in this sketch box. These are not approach lighting systems. The OLS is shown because it may create an obstruction hazard to some aircraft (C-141, C-5) (Figure 7-27).

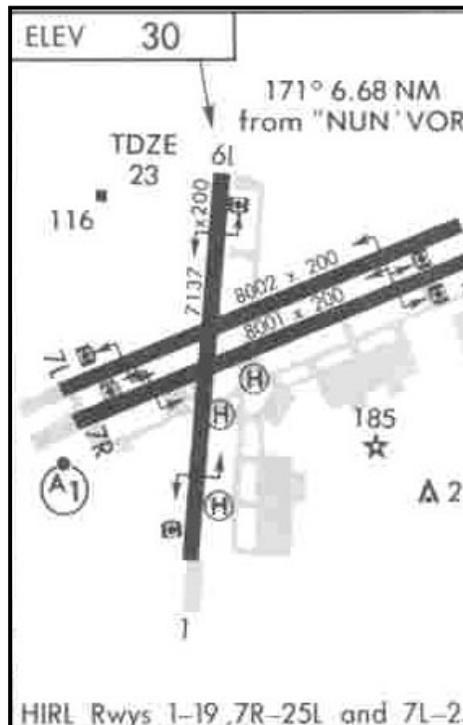


Figure 7-27 Airport Sketch

NOTE

VOR or NDB Approach Procedure Charts, for those procedures predicated on a radio aid which is located away from the field, contain an addition to either the Minimums Section or Airport Sketch. The procedure is flown without DME, therefore the Missed Approach Point will be determined by elapsed time after crossing the FAF. The additional section is a table based on ground speed for determining the time to the MAP. Procedures with the VOR or NDB at the field do not have a FAF and thus do not have this table (Figure 7-28).

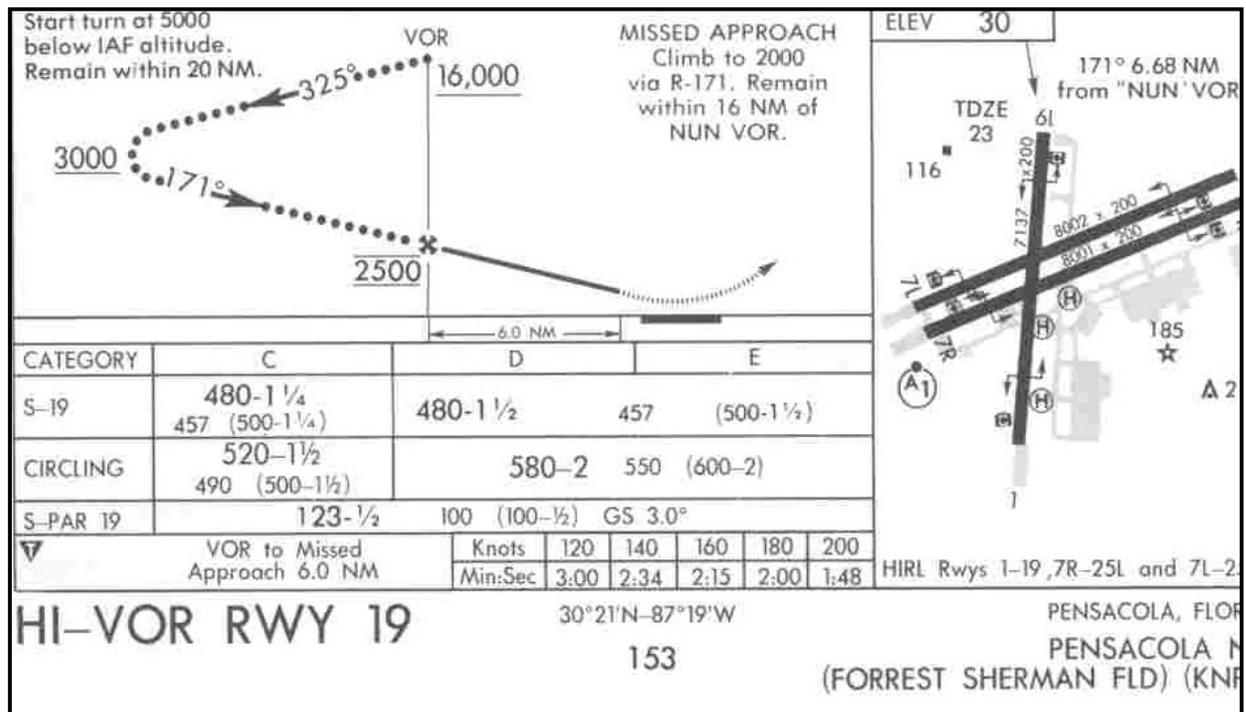


Figure 7-28 HI-VOR RWY 19

Airport Diagrams

The FLIP High and Low Altitude Approach booklets contain detailed diagrams for those airfields that support operations of aircraft equipped with Inertial Navigation Systems (INS). The coordinate values are shown in one-minute increments; they are further broken down into six-second ticks, within each one-minute increment. Information such as runway length, width, magnetic heading, weight bearing capacity, taxiway location and identification, and spot coordinates is provided. See the example in Figure 7-29.

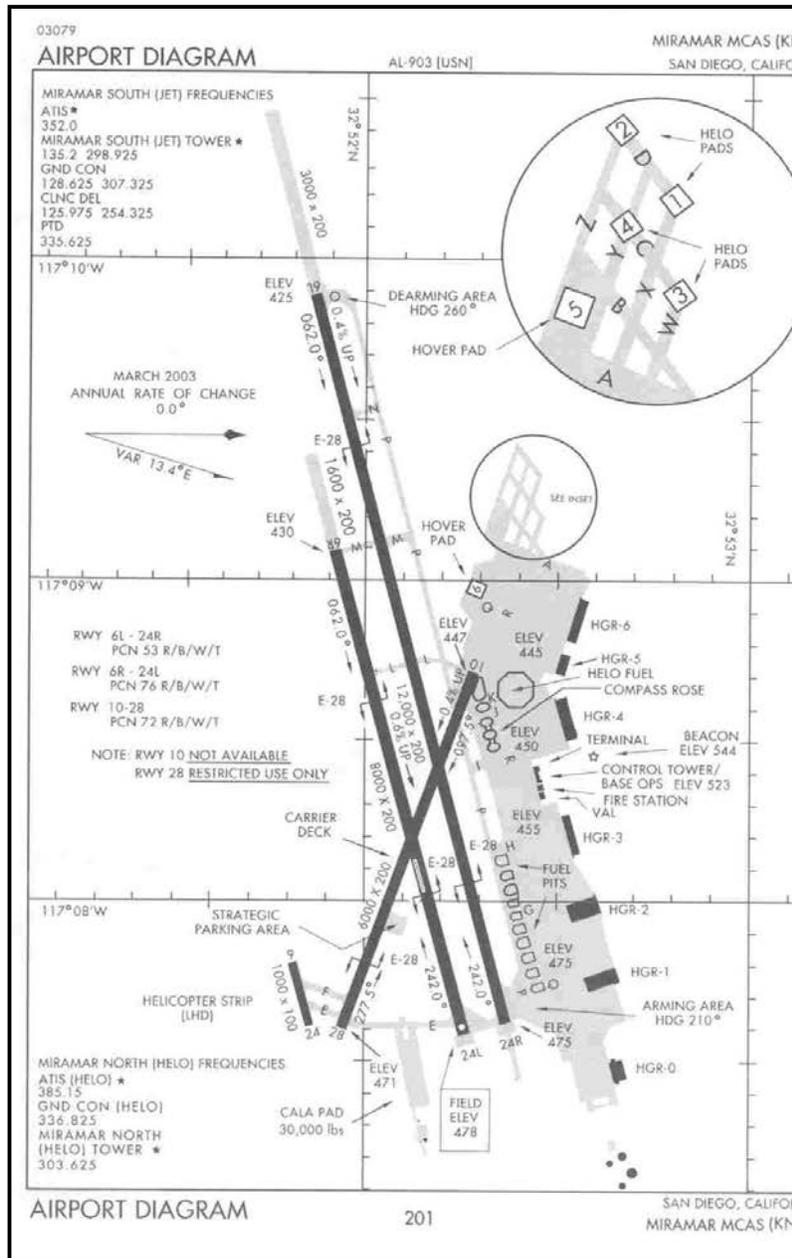


Figure 7-29 Airport Diagram

Terminal Change Notices

Terminal Change Notices (TCNs) are published to disseminate revisions, additions and deletions to the current issues of approach plates. The TCNs for the Approach Plates (Figure 7-30) are issued in booklet form at the mid-point of the 56 day publishing cycle. There is only one TCN to cover all volumes of Low Altitude Approach Plates. During flight planning, or in the event of an in-flight diversion, it is imperative that you consult the TCN to determine valid information pertinent to your flight. If a TCN is in effect, crews must ensure one is carried on board the

aircraft. This, of course, does not remove the need to check NOTAMs for more recent changes to the approach procedures.



Figure 7-30 Terminal Change Notice

Miscellaneous - There are few high altitude approaches which have more than one IAF. Like many low approaches, the ILS RWY 15 (Figure 7-31) has three: the LOM, CHS 055/12 fix, and CHS 219/12 fix are all IAFs. The profile section only contains altitude information for the

The designation "NoPT" indicates that a procedure turn is not required nor expected from that IAF, unlike the LOM. To fly this approach using the LOM as the IAF, you would mark on top the LOM then proceed outbound 332° until making a procedure turn (right 017°, left 197°). The only requirement for making the procedure turn is to stay within ten miles. Remaining at or above 1600 feet, intercept the 332° radial and, proceed inbound to the LOM on a course of 152. If you are equipped for an ILS approach, maintain 1600 feet until intercepting the glidepath and fly it down to your DH of 244 feet MSL (shortly after the Middle Marker). Those flying a Localizer or Circling Approach will descend to the appropriate MDA after LOM station passage. The MAP is not defined by a fix but rather by elapsed time.

Unlike VOR or TACAN approaches, which may use the same NAVAID for approaches to several runways, each runway with an ILS approach will have a unique localizer frequency. It is imperative that you dial in the proper frequency or else the steering commands, if available at all, will be incorrect.

One other difference between high and low altitude approaches is that high altitude approaches have minimums for category C, D, and E aircraft, whereas low altitude approaches plates have minimums for categories A through D.

704. SUMMARY

The approach plates illustrate a series of predetermined maneuvers for the orderly transition of aircraft from instrument flight to landing. This unit reviewed information on the penetration track, procedural track, arrival and missed approach holding patterns, minimum and maximum altitudes, planviews, profile views, minima section, airport sketch, radar minimums and airfield diagrams.

705. CHAPTER REVIEW

1. Read Chapter 7 of the FTI.
2. Do Lesson 7 on the Computer Based Training for FLIP.
3. Complete the Unit Review Questions.

CHAPTER SEVEN REVIEW QUESTIONS

1. What name is Bob Sikes, FL listed under?

Use Category C on the NAS Jacksonville HI-TACAN RWY 27 for following questions:

2. What is the IAF?

3. What is your course after the IAF?

4. What is the FAF?

5. What is your course at the FAF?

6. What does the line above and below 3000 at 9 DME indicate?

7. What is the MDA for a straight in approach?

8. What does the 447 indicate under the minimums section?

9. Is the 447 Height Above Airport (HAA) or Height Above Touchdown (HAT)?

10. What about 478 for the circling approach (HAA or HAT)?

11. What is the difference between a Decision Height (DH) and Minimum Descent Altitude (MDA)?

12. What is the Missed Approach Point (MAP)?

13. What is the weather required to shoot the circling approach?

14. What is the MSA and what does it indicate?

15. What is the ESA and what does it indicate?

16. What is the UHF tower frequency?

17. What lights does RWY 9 have?

18. On the Jacksonville Intl HI-TACAN RWY 13, what does the V at 14.6 DME indicate?

Use Category B on the NAS Pensacola TACAN RWY 19 for following questions:

19. How would you identify the IAF?

20. What radial is the IAF on?

Use Category B on the Pensacola Rgnl VOR RWY 8 for following questions:

21. What is the initial heading after reaching the IAF?

22. What is the heading after crossing the FAF?

23. How is the missed approach point determined?

24. What does the Triangle T in the upper left hand corner indicate?

25. What does TDZE indicate on the airport view?

CHAPTER EIGHT

DEPARTURE PROCEDURES

800. INTRODUCTION

Departure Procedures (DPs) contain information on specific departures routing from airports. Proper usage will result in an orderly traffic flow and a decreased aircrew/air controller workload.

References

1. FLIP General Planning
2. DPs for NAS PENSACOLA

801. LESSON TOPIC LEARNING OBJECTIVES

Enabling Objective

F.8. Locate, interpret, and apply information on FLIP Departure Procedures.

Enabling Steps

F.8.1. Extract departure information from the planview of DPs.

F.8.2. Extract departure information from the written route description of DPs.

Instructional Aids

NAS Pensacola DPs

802. DEPARTURE PROCEDURES

DOD DPs are incorporated in the appropriate High or Low Altitude approach plates, placed after the approach procedures, but before the airport diagrams. DPs are divided into two sections: route description and planview. The route description contains navigation and altitude information for the departure. The planview shows the route from overhead while repeating route description information (Figure 8-1).

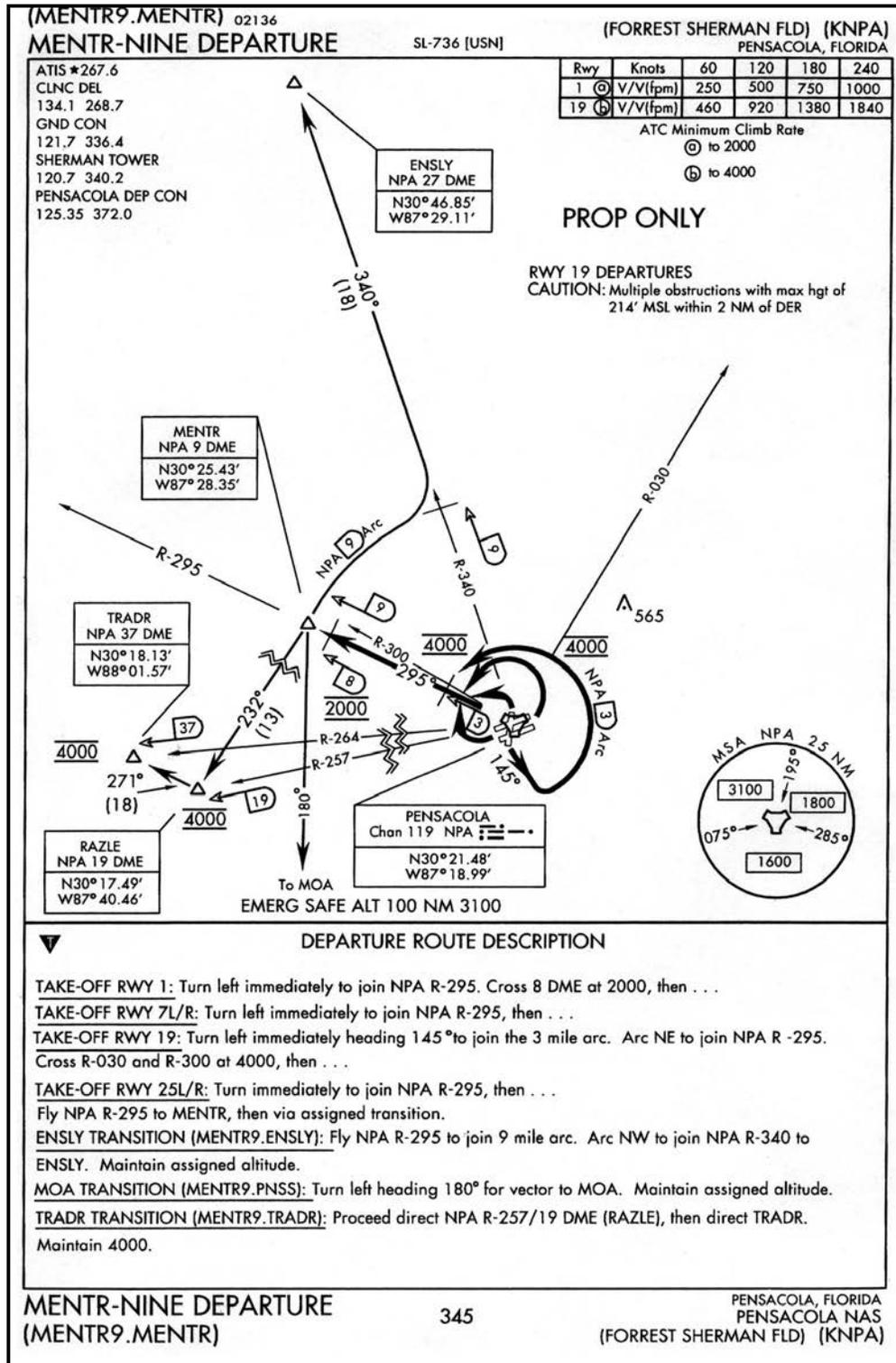


Figure 8-1 MENTR9 Departure

8-2 DEPARTURE PROCEDURES

The use of DPs by Naval Aviators is not mandatory by OPNAV, but their use is encouraged, provided no flight degradation will ensue. Pilots of aircraft operating from locations where DP procedures are effective may expect ATC clearances containing a DP. Use of a DP requires pilot possession of at least the textual description of the DP procedures. Controllers may omit the departure control frequency if it is published on the DP. If the pilot, for any other reason, does not wish to use a DP, he is expected to advise ATC.

NOTE

You may find that certain high density military installations require DP usage for noise abatement or other reasons. Some may require a DP briefing from Base Operations prior to departure.

DPs will be depicted in one of two basic forms:

1. **Pilot Navigation (PILOT NAV) DPs** are established where the pilot is primarily responsible for navigation on the DP route. They are established for airports when terrain and safety related factors indicate the necessity for a PILOT NAV DP. Some PILOT NAV DPs may contain vector instructions which pilots are expected to comply with until instructions are received to resume normal navigation on the filed/assigned route or DP procedure.
2. **VECTOR DPs** are established where ATC will provide radar navigational guidance to filed/assigned route or to a fix depicted on the DP.

Often a DP will route aircraft close to restricted/warning areas, high terrain or vertical obstructions. Adherence to such a DP is especially critical if the aircraft is IMC or has lost communications (**NORDO**). If a DP is requested, the aircrew must meet minimum climb rate required for crossing restrictions. When using a DP, the DP and transition point must be stated in your ATC clearance. Once a DP is accepted in a clearance, the aircrew must conform to exact routings, altitudes and specific restrictions shown on the departure chart, or received from the air traffic controller. Figure 8-2 is an example of a DP for Oceana NAS.

Except for radar vectors, route amendments to the published procedure will not be accepted unless the entire procedure is issued verbatim.

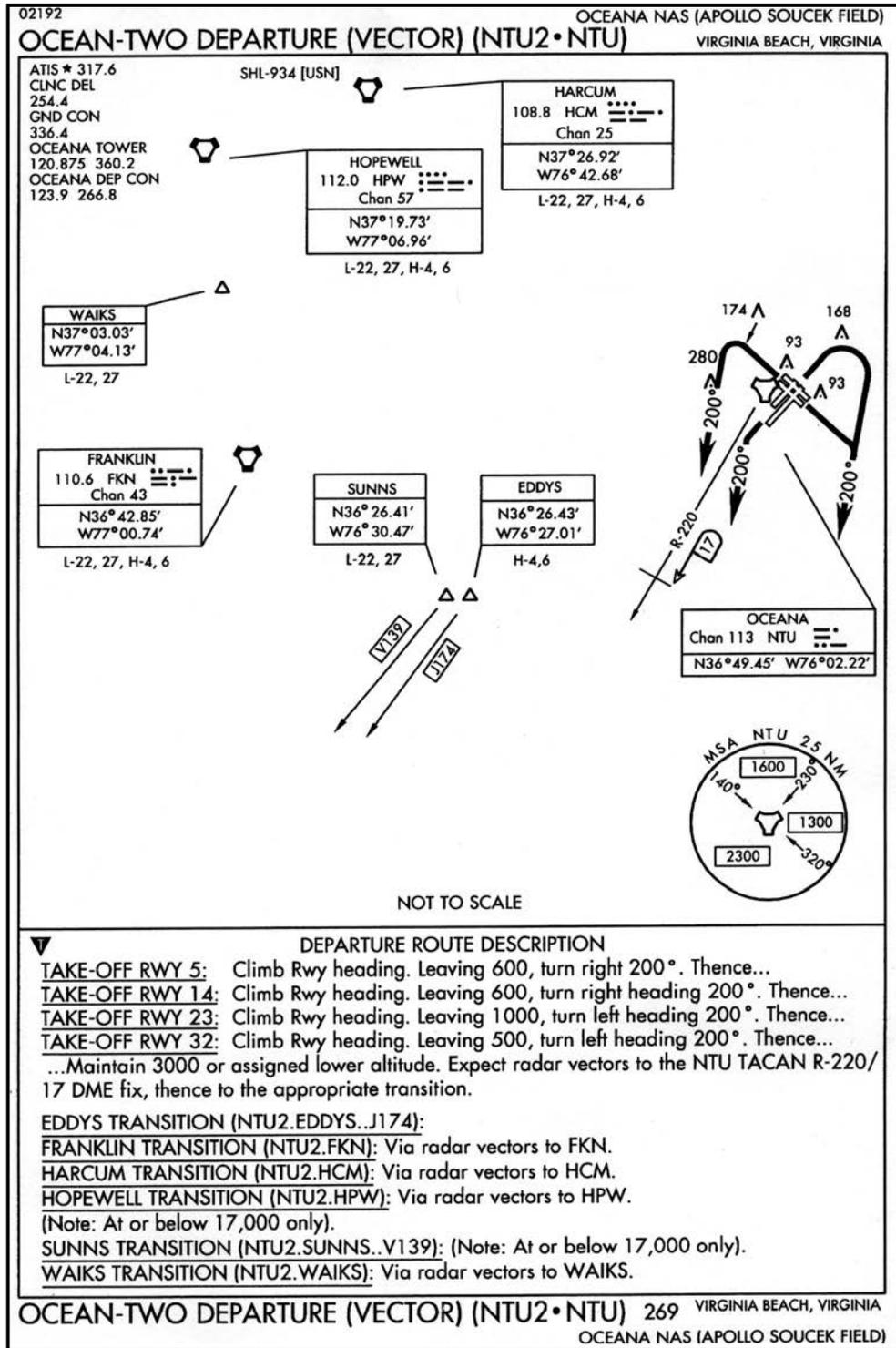


Figure 8-2 DP for Oceana NAS

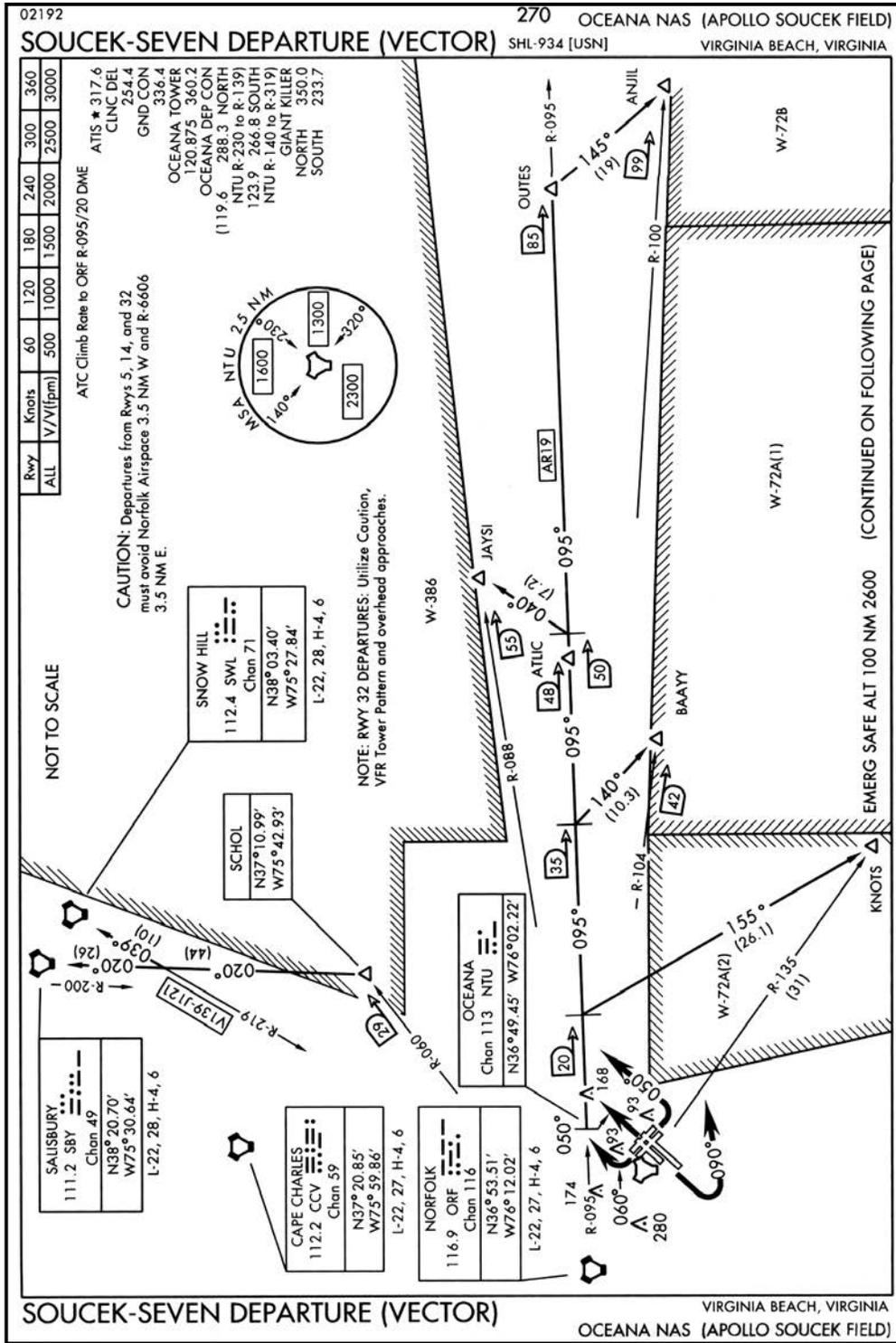


Figure 8-3 SOUCEK7 Transition

01081	OCEANA NAS (APOLLO SOUCEK FIELD) VIRGINIA BEACH, VIRGINIA
SOUCEK-SEVEN DEPARTURE (VECTOR)	
SHE-934 (USN)	
▽ DEPARTURE ROUTE DISCRIPTION	
<p>TAKE-OFF RWY 5: Climb on rwy heading. Thence...</p> <p>TAKE-OFF RWY 14: Climb on rwy heading, leaving 600 turn left to heading 050°. Thence...</p> <p>TAKE-OFF RWY 23: Climb on rwy heading, leaving 1000 turn left to heading 090°. Thence...</p> <p>TAKE-OFF RWY 32: Climb and maintain assigned altitude, turn right heading 060° within 2 NM. Thence...</p> <p>Maintain 7000 (props), 10,000 (jets) or assigned altitude. Expect vectors to the appropriate transition/fix.</p> <p>ANIL TRANSITION (NTU013): Via ORF R-095 to 85 DME, then fly heading 145° to ORF R-100/99 DME (ANIL).</p> <p>ATLC TRANSITION (NTU.ATLC): Via ORF R-095 to ATLC.</p> <p>BAAYY TRANSITION (NTU011): Via ORF R-095 to 35 DME, then fly heading 140° to ORF R-104/42 DME (BAAYY).</p> <p>CAPE CHARLES TRANSITION (NTU.CCV): Via vectors to CCV.</p> <p>JAYSI TRANSITION (NTU012): Via ORF R-095 to 50 DME, then fly heading 040° to ORF R-088/55 DME (JAYSI).</p> <p>KNOTS TRANSITION (NTU002): Via ORF R-095 to 20 DME, then fly heading 155° to NTU R-125/ 31 DME (KNOTS).</p> <p>SALISBURY TRANSITION (NTU.SBY): Via vectors to SCHOL, thence SBY R-200 to SBY.</p> <p>SCHOL TRANSITION (NTU.SCHOL): Via vectors to SCHOL.</p> <p>SNOW HILL TRANSITION (NTU.SWL): Via vectors to SCHOL, thence SBY R-200 and V139 or J121 to SWL.</p>	
SOUCEK-SEVEN DEPARTURE (VECTOR)	
	VIRGINIA BEACH, VIRGINIA OCEANA NAS (APOLLO SOUCEK FIELD)

Figure 8-4 SOUCEK7 Departure

When an aircraft is radar vectored off an assigned DP/DP transition, aircrews shall consider the DP canceled unless the controller adds "except to resume DP." If ATC reinstates the DP and wishes any restrictions associated with the DP to still apply, they will state "comply with instructions."

ATC will often issue an amended altitude clearance to aircraft navigating a DP. If the DP restrictions are not restated by the controller, they are canceled and the aircraft may commence an unrestricted climb to the assigned altitude. The pilot and NFO are responsible, however, for maintaining the departure ground track.

A transition of a DP is a procedure used to connect the basic DP with one of several enroute airways. The start of the transition is in the general vicinity where the departure phase of your flight will terminate. The aircraft will be handed off to Air Route Traffic Control Center (ARTCC) for the enroute phase of flight. The DP transitions for example in Figure 8-3 are Salinas, Los Banos, Fresno, and Avenal.

Notice in Figure 8-5 the full name of the DP and the airport is located at the top and bottom of the sheet. The planview is a maplike depiction of the departure corridor, but it may not contain all of the information necessary to interpret the DP. You should refer to the Route Description for the complete instructions to depart a given runway. All navigational information from lift-off to the named intersection (TRADR in this case) will be in this section, followed by altitude restrictions. The definitions of the various DP Transitions will be listed after the departure route data with any pertinent notes.

When departing NAS Pensacola on a flight to the north or west using the jet routes, you will probably be cleared to fly this DP. The altitude in your ATC clearance may not be what you have filed on your flight plan, but it must be one in the high altitude structure. You will initially climb to your first "at or below" restriction, either 4000 or 9000 feet depending on duty runway. Once you have passed your last "at or below" restriction, you can commence a climb to the altitude in your clearance, ensuring that you meet all of the "at or above" altitude restrictions on the way up. If your assigned altitude were FL 230, you would climb to it past the "at or below 15,000 feet" hold-down.

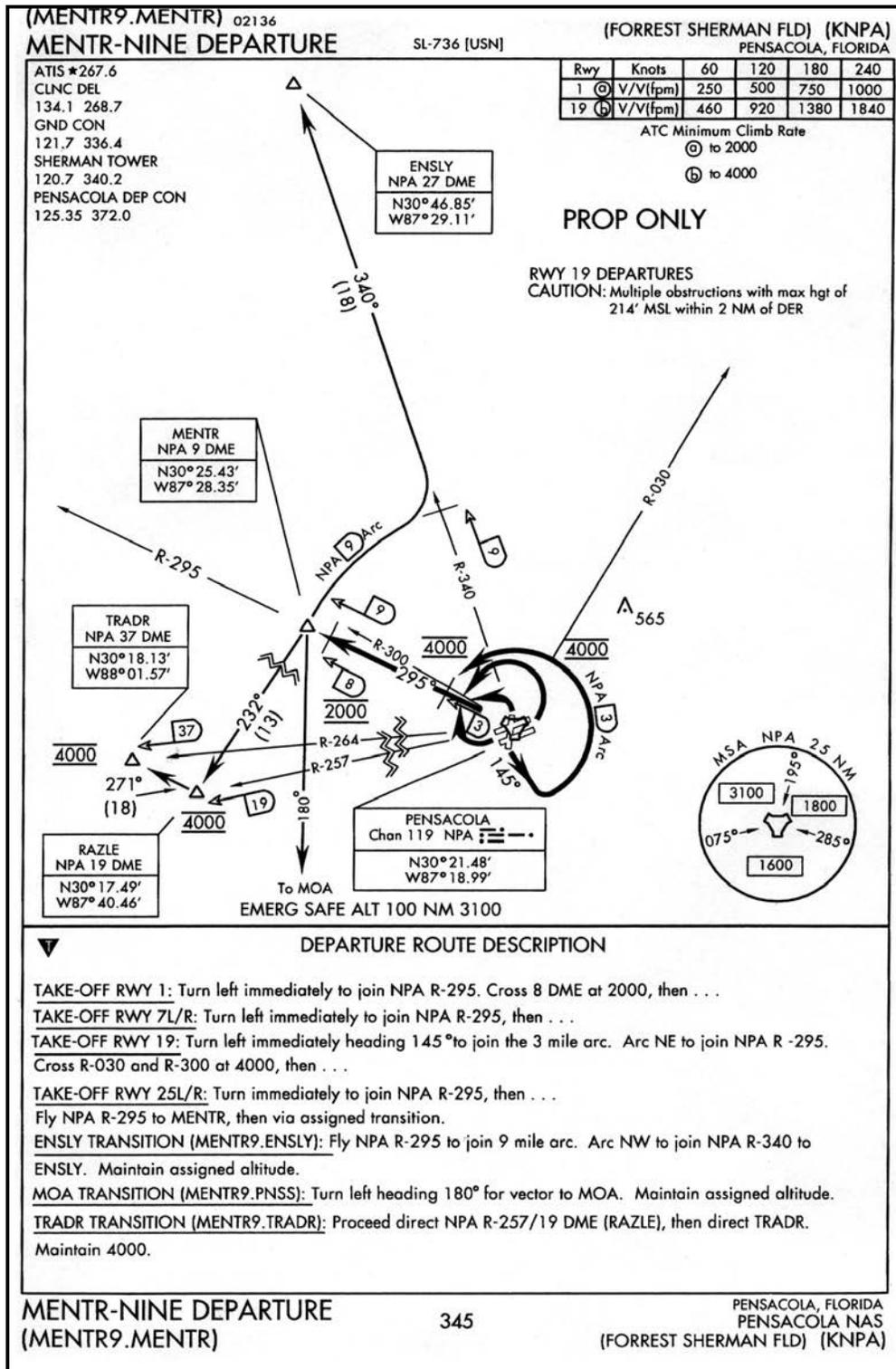


Figure 8-5 MENTR-NINE Departure

8-8 DEPARTURE PROCEDURES

Let us follow the departures for all four runways and note how an aircraft would comply with applicable altitude restrictions when it has been cleared to 9000 feet.

The Takeoff

Runway 01: First ensure you have a climb rate of at least 500 FPM if you are in a T-34 climbing out at 120 KIAS (Top right corner of DP). Next you turn left to join the NPA 295 radial outbound. Ensure you level off no higher than 2000 feet (till 8 DME). After 8 DME you can begin your climb again to your assigned altitude, unless on the TRADR transition.

Runway 7L/R: Turn left to join the NPA 295 radial outbound. A recommended heading to join the radial is 270. Once established on the radial, turn right to 295 (if in a no-wind condition). Climb to assigned altitude, unless on the TRADR transition.

Runway 19: First, ensure a climb rate of at least 920 fpm. Next, turn left immediately to a heading of 145. At 3 DME, arc to the NE, Level off at 4000 feet, and ensure you cross the NPA radials 030 and 340 at 4000 feet. After crossing the 340 radial, climb to your assigned altitude, unless on the TRADR transition. Then turn right to intercept the NPA radial 295 outbound.

Runway 25: Turn right immediately to join the NPA 295 radial outbound. A recommended heading is 320. Once established on the radial, turn left to a heading of 295 (if in a no wind condition). Climb to your assigned altitude, unless on the TRADR transition.

Established on the 295 Radial

Fly the NPA 295 radial to MENTR (NPA 295/9) then via the assigned transition.

The Transition

ENSLY Transition: Arc NW on a 9 DME arc. Turn left (outbound) to intercept the NPA 340 radial. Fly the radial until reaching ENSLY (NPA 340/27).

MOA Transition: Turn left heading 180 and wait for vectors into the MOA.

TRADR Transition: Maintain 4000 feet. Turn left direct to RAZLE (NPA 257/19). A recommended heading is 232. After RAZLE, turn right direct to TRADR (NPA 264/37). A recommended heading is 271. Upon reaching TRADR, you are cleared to climb to your assigned altitude.

Standard Terminal Arrivals

Standard Terminal Arrivals (STARs) (Figure 8-6) are available for many areas of high traffic density. They assist ATC in the sequencing and separation of IFR traffic to these terminal areas. A STAR works like a DP in reverse, taking the aircraft from enroute navigation to a position from which an approach can be commenced. The STAR uses airways and fixes with published altitude restrictions for a standard let down to the terminal area (Figure 8-7). As with DPs,

STARs are not mandatory. However, since it is easier to look at a published STAR than to copy a similar clearance and then find the information on your charts, wise NFOs will carry a copy.

The manner of interpreting STARs is exactly the same as that used with DPs; there is a planview followed by a route description.



Figure 8-6 Standard Terminal Arrivals

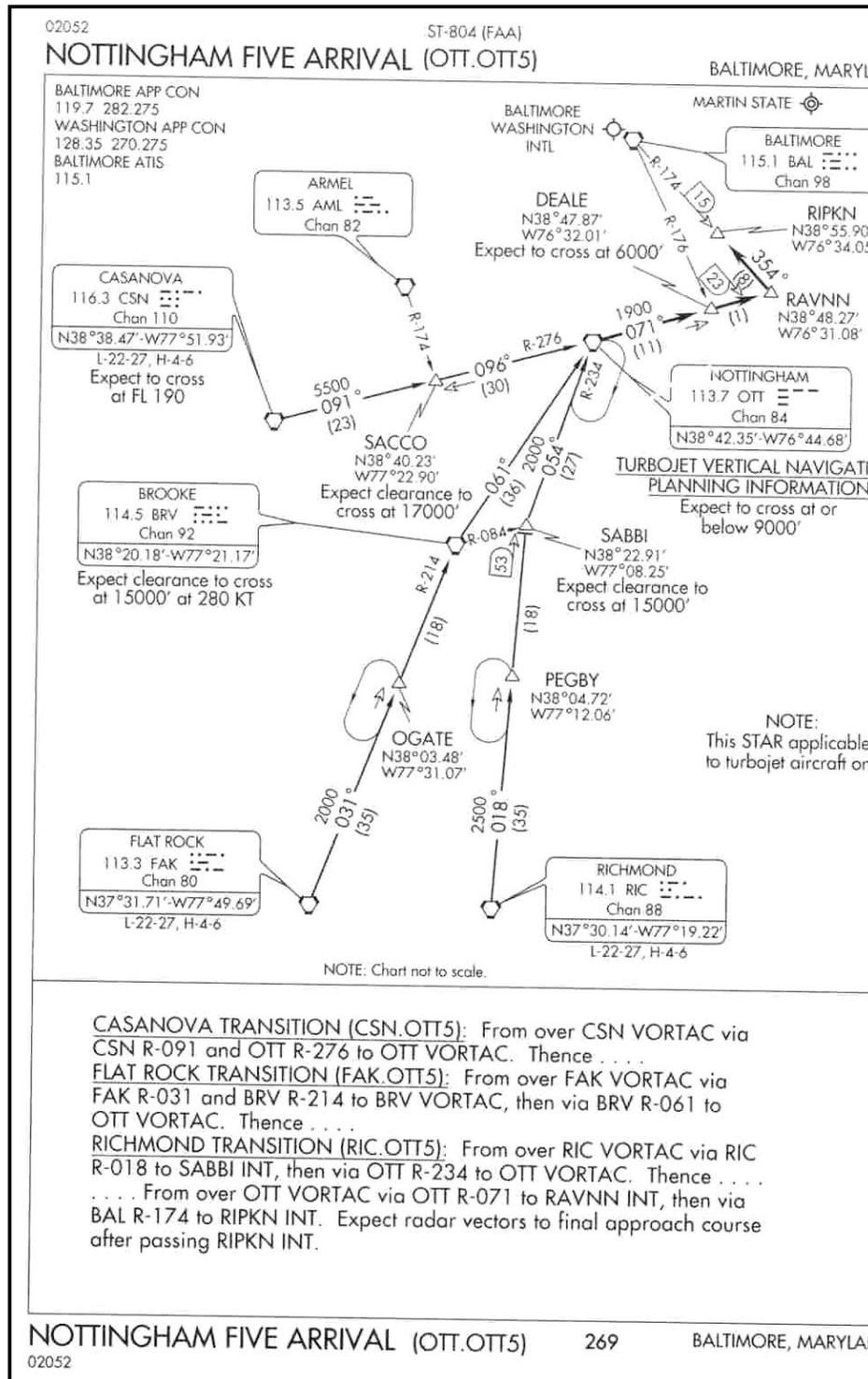


Figure 8-7 Terminal Area

803. SUMMARY

As discussed in this unit, DPs provide a pictorial view and route description of departures, and are available for military and civil installations. They provide information such as frequency plans and navigation information needed for the departure. STARs provide similar information for arrival to a terminal area. Additionally, they include navigational information not depicted on enroute High or Low Altitude Charts. Proper use of DPs and STARs by aircrews will ensure a safe and orderly flow of traffic out of and into an airfield.

804. CHAPTER REVIEW

1. Read Chapter 8 of the FTI
2. Do Lesson 8 on the Computer Based Training for FLIP.
3. Complete the Unit Review Questions

CHAPTER EIGHT REVIEW QUESTIONS

Use the **MENTR-NINE DEPARTURE** at Pensacola NAS to answer the following questions.

1. What is your initial heading if taking off RWY 19?
2. What altitude restrictions are there for runway 7L?
3. Define MENTR using radial and DME.
4. What is your minimum climb rate when departing runway 19 in a T-34?

Bonus** What is the standard rate of climb for RWY 7?

5. What altitude restriction is there for departing runway 1?
6. What STAR does Cape Canaveral have?

Use the **Bonham Four Arrival** for the following questions.

7. Define Robey.
8. Define Loszy.
9. If you are on the Little Rock Transition-
 - a. When do you switch your NAVAIDs, and to what station?
 - b. Where do you go after reaching LEMYN if you are in a T-34 expecting to land north?
 - c. Where do you go after reaching LEMYN if you are in a T-39 landing north?

THIS PAGE INTENTIONALLY LEFT BLANK

CHAPTER NINE

LESSON REVIEW

900. INTRODUCTION

The purpose of the Flight Information Publication lesson review is to provide experience through actual involvement with course materials, lessen the abstract aspects of learning and provide an atmosphere of informal open discussion for the students.

Descriptions

An overview of chapters 1-8 will be conducted by the instructor. Specific emphasis will be placed on addressing those concepts that are basic and germane to every aviator. All course learning objectives will be reviewed for understanding and clarity. An atmosphere of open discussion will serve as the review session format throughout the "Questions and Answer" period.

Requirements

The MCG will designate the allotted time for the review. During the review, students will use reference materials and training devices as each deems necessary.

THIS PAGE INTENTIONALLY LEFT BLANK

CHAPTER TEN
EXAMINATION/EXAM REVIEW

1000. INTRODUCTION

The purpose of the exam is to test your knowledge of the material in chapters 1-8 of the publications used in flight. One and one half hours is allotted for the exam. In order to successfully complete the examination, you are required to answer a minimum of 80% of the questions correctly.

The exam also serves as a good review of the subject material. One hour is allotted to debrief the examination and the instructor will debrief any questions about the course material.

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX A
GLOSSARY

A100. NOT APPLICABLE

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX B
CHAPTER REVIEW ANSWERS

CHAPTER ONE

1. FLIP ES (GP1-1)
2. GP(6) (GP1-1)
3. AP1 (GP1-3)
4. See GP2-5
5. See GP2-11
6. N (GP4-6)
7. IAF or STAR (GP4-11)
8. V4H (GP4-15/16)
9. 30 min (GP5-1)
10. Ground Control/Clearance Delivery (GP5-8)
11. Detailed (GP5-8)
12. 5 (GP5-9)
13. False (GP5-12)
14. Newly assigned alt/flight level (GP5-11)
15. Standby or off (GP5-11)
16. 310 (GP5-12)
17. FIH (GP5-12)
18. F (GP5-12)
20. 200 (GP5-13)
21. C (GP5-15)
22. T (GP5-15)
23. 250 (GP5-16)

CHAPTER TWO

1. Martin Marietta (AP1 3-26)
2. Deer (AP1 3-70)
3. CTY J91 ATL...(AP1 3-143)
4. Prohibited (AP1/A 1), 3 NM radius (AP1A 61)
5. To FL 250 (AP1A 77)
6. Seattle Center (AP1A 71)
7. Airspace Scheduling (AP1A 147)
8. Texarkana 160/9 (AP1A 125)
9. 301 OG/SUA (AP1B 1-45)
10. 876-6518 (AP1B 2-26)
11. 10 NM either side (AP1B 2-95)
12. 4327N 12454W (AP1B 4-60)
13. 1000 - 1500 AGL (AP1B 2-121)
14. a (AP1 3-115)
15. b (AP1A 61)
16. b (AP1A 73)
17. b (GP 1-3)
18. c (AP1B 2-69)
19. c (AP1B 2-69)
20. a (AP1A 147)
21. b (AP1B 2-39)
22. c (AP1B 2-2)
23. c (AP1A 75)
24. c (AP1B 4-64)
25. c (AP1 3-26)
26. d (AP1 3-169)
27. a. (Two-way radio)
28. b. (267.9)

B-2 CHAPTER REVIEW ANSWERS

CHAPTER THREE

1. 180 (C-24-27)
2. T (C-27)
3. F, 342.0 (C-25)
4. Andrews at (301) 981-2840 (C-4)
5. ARTCC, Terminal ATC, or FSS; METRO (C-64)
6. Information ___ received (C-63)
7. 1500Z, 1000L (E-4)
8. 2997 (D-5)
9. Yes (C-61)
10. GMT (C-64)
11. 5000, 5 (C-64)
12. 99 to 46 (B-25)
13. Red over White (B-35)
14. CIRVIS (B-37)
15. 4400 (B-4)
16. 45 to 16 (B-25)
17. Intermittent CAT (C-62)
18. 7600 (A-6)
19. EFC, ETA (A-7)
20. F (A-9)
21. ID, Friend or Foe (F-13)
22. GCA system not available (F-30-37)

CHAPTER FOUR

General Mitchell INTL

1. 723 Feet
2. 5127, PPR required
3. 0030Z
4. Yes, A-1A
5. 10 or more
6. 126.4, on ground freq 263.125
7. 410 KHz
8. Yes, PPR for ANG & AFRC
9. Yes, J8
10. 376.1
11. Yes
12. 307.0

NAS Whidbey Island

1. NUW
2. E-5, E-28, No
3. 380.8
4. NUW 85, at field
5. Yes
6. Call 820-2604/6707
7. 340.2
8. Yes

NAS Corpus Christi

1. JP5
2. No
3. 2, 0
4. Yes (SP)
5. Landing or taxi lights
6. No
7. None, 20 min notice required
8. No
9. 346.8
10. 130 NM, 141-r 15 NM, 87
11. Yes
12. Right
13. Yes
14. Yes

CHAPTER FIVE

1. 88X
2. No
3. Low Power - 40 DME range
4. AEX119065
5.
 - a. 89
 - b. AEX
 - c. 18,000
 - d. 302
 - e. 299
 - f. No
6. 130 NM
7.
 - a. Has approved low approaches
 - b. Has DOD approved high approaches
 - c. VFR field only
 - d. Civilian Field
 - e. Military Field
 - f. Civil Military
8. 5000 feet
9. Indicates FSS and NAVAID carry same name
10. Freq for MCN FSS
11. No (closed arrow)
12. 143 DME
13. Houston
14.
 - a. To 18,000
 - b. Houston Center
 - c. Restricted Area

CHAPTER SIX

1.
 - a. Has approved approaches
 - b. Has DOD approved approaches
 - c. Has no IFR approaches

2.
 - a. 219 feet
 - b. Class C airspace
 - c. Part Time
 - d. Atis
 - e. 8500 feet
 - f. Houston 288.15, 127.65
 - e. Anniston Radio 123.65, 122.2

3.
 - a. 17,000
 - b. 3000 (going east)
 - c. 29 (Axeja)

4. 50 DME

5.
 - a. 3000
 - b. 5000
 - c. 3000
 - d. 2000

CHAPTER SEVEN

1. Crestview, FL
2. NIP204035r
3. 024
4. NIP104006
5. 284
6. Mandatory Altitude
7. 460
8. Distance between MDA and ground
9. HAT
10. HAA
11. DH-execute Missed App when reached MDA-Lowest altitude on App. Execute Missed Approach when at Missed Approach Point.
12. Point over the ground determined by DME, station passage, or time.
13. 500-1 ½
14. Minimum Safe (Sector) Altitude/1000 feet of obstacle clearance
15. Emergency Safe Altitude/1000 feet of obstacle clearance in non-mountainous areas and 2000 feet of clearance in mountainous areas
16. 355.8
17. HIRL, REIL, PAPI, NOLS, Approach Lights
18. Visual Descent Point
19. Choca or NPA351010
20. 351
21. 269
22. 089
23. Timing, 2:12
24. Take Off Minimums
25. Touchdown Zone Elevation

CHAPTER EIGHT

1. 145
2. None
3. NPA295009
4. 920

Bonus** 200 FPM

5. 2000
6. BITHO SEVEN
7. BYP035060
8. TUL157050
9.
 - a. 113 DME
 - b. 190 heading
 - c. Direct Stonz waypoint