

龚琼兰

中国民航飞行学院

ZHONGGUO MINHANG FEIXING XUEYUAN

杰普逊航图阅读与应用

Reading Proficiency & Application
at Jeppesen Chart



西南交通大学出版社
[Http://press.swjtu.edu.cn](http://press.swjtu.edu.cn)

◎ 责任编辑 / 林阳 王婷

◎ 责任校对 / 李梅

◎ 封面设计 / JADE.HE DESIGN STUDIO

中国民航飞行学院

杰普逊航图阅读与应用

ISBN 7-81104-142-1



9 787811 041422 >

ISBN 7-81104-142-1/V·007

定价: 22.00元

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图书在版编目 (C I P) 数据

杰普逊航图阅读与应用 / 龚琼兰. —成都: 西南交通大学出版社, 2005.8

书名原文: Reading Proficiency Application at Jeppesen Chart

ISBN 7-81104-142-1

I. 杰... II. 龚... III. 航空导航—导航图—英文
IV. V249.3

中国版本图书馆 CIP 数据核字 (2005) 第 089549 号

杰普逊航图阅读与应用

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责任编辑	林 阳 王 婷
责任校对	李 梅
封面设计	何东琳设计工作室
出版发行	西南交通大学出版社 (成都二环路北一段 111 号)
发行部电话	028-87600564 87600533
邮 编	610031
网 址	http://press.swjtu.edu.cn
电子邮箱	cbsxx@swjtu.edu.cn
印 刷	四川森林印务有限责任公司
成品尺寸	170 mm × 230 mm
印 张	12
字 数	278 千字
版 次	2005 年 8 月第 1 版
印 次	2005 年 8 月第 1 次印刷
书 号	ISBN 7-81104-142-1/V · 007
定 价	22.00 元

图书如有印装问题 本社负责退换

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前 言

杰普逊航图是世界民用航空通用导航图。由于导航图种类繁多，标识复杂，给学习者造成较大困难。本书特编辑了有关杰普逊航图的知识，配合英语说明插入各类航图，帮助读者以英语为工具，在学习杰普逊航图知识的同时，提高英语阅读理解能力，为读者正确应用航图资料奠定了基础。

本书主要内容包括航图类别、仪表进近、航段划分、进近平面图、剖面图、机场图、高低空航路图、通信和区域图、离场图和标准终端进场图。编写本书时考虑到读者的需要，尽量以实用为主，并增加了最新航图资料，如新的进近图和机场图格式以及项目内容举例和说明。此外，书中还附录了荷兰阿姆斯特丹国际机场，加拿大渥太华机场和法国巴黎奥利机场的实用训练套图和术语缩略语表。

《杰普逊航图阅读与应用》共分 10 个单元。每个单元包含有：词汇和术语、课文、句子理解、阅读理解练习和识图。第一部分词汇和术语中介绍有关单词和术语的意义，帮助读者扫清学习障碍。第二部分课文介绍航图知识，标识内容和使用原理。第三部分就课文中出现的难度较大的句子给予注释，帮助读者理解句子。第四部分就课文内容进行理解练习。书中附有全部练习答案供读者参考。第五部分根据课文内容选编的航图帮助读者深入、具体理解航图内容，达到熟练掌握，以求运用。

本书可供飞行技术，空中交通管制、签派、情报专业人员和航图知识爱好者作阅读材料使用，以帮助提高英语理解能力；亦可作课堂教学的教材使用。教师可根据书中内容进行课堂教学，练习阅读理解，也可重点练习用英语听说，培养用英语进行交际的能力。

本书经过三年教学培训中的试用，受到广大师生的欢迎和好评。但由于编者水平有限，难免存在缺点和不足，恳请各位专家和读者给予批评指正，在此表示衷心感谢。

本书在编写过程中，参考了以下相关资料：

1. 《Aeronautical Dictionary with Emphasis on A.T.C. Communication Terms》 Aviation Language Schools, INC. Miami, Florida, U.S.A. 1994
2. 《Instrument Rating Manual》 Jeppesen Sanderson, Inc. 1990.
3. 《New Approach Chart Format Orientation Handbook》 Jeppesen Sanderson, Inc. 1997.9

4. 《杰普逊航路手册指南》 马志刚, 田方. 中国民用航空总局空中交通管理局 2003.11
5. 《杰普逊航路图例说明》 中国国际航空公司飞行安全技术处
6. 《英汉对照杰普逊航图入门》 中国民用航空局航行司, 中国民用航空局第一研究所 1991.12

编 者

2005 年 1 月

Contents

Unit 1	Instrument Approach Charts	1
	• Introduction of Types of Charts	2
	• Instrument Approach Charts	2
	• Approach Chart	2
	• Approach Segments	3
	• Initial Approach Segment	4
	• Intermediate Approach Segment	4
	• Final Approach Segment	5
	• Missed Approach Segment	6
Unit 2	Chart Layout (I)	9
	• Heading Section	10
	• Plan View	13
Unit 3	Chart Layout (II)	21
	• Profile view	22
	• Stepdown Fix and VDP	24
	• Landing Minimums	25
Unit 4	Chart Layout (III)	31
	• Aircraft Approach Categories	32
	• Visibility Requirements	32
	• Minimum Descent Requirements	33
	• Inoperative Components	35
	• A Typical Approach Procedures	35
Unit 5	Airport Chart	42
	• Heading Section	43
	• Plan View and Additional Runway Information	44
	• Takeoff and Alternate Minimums	47
Unit 6	Enroute Charts	53
	• Enroute Charts	54
	• Front Panel	54
	• Navigation Aids	56
Unit 7	Victor Airways	62
Unit 8	Communications and Area Charts	71
	• Airports	73
	• Airspace	73
	• Area Charts	74
Unit 9	Departure Charts	81

	• Standard Instrument Departure	83
	• Pilot Nav SID	83
Unit 10	Standard Terminal Arrival Route	92
	• Vector SID	93
	• Standard Terminal Arrival Route	94
	• Approach Chart Legend New Format	97
	• Heading	101
	• Heading Information	101
	• Plan View	103
	• Approach Plan View Graphic	103
	• Profile View	104
	• Profile View Graphic	104
	• Conversion Tables and Icons	105
	• Minimums	105
	• Landing Minimums	105
Appendixes I	Set Charts of Schiphol Airport, Amsterdam, Netherlands	113
Appendixes II	Set Charts of Ottawa/Macdonald-Cartier International Airport, Ottawa, ONT, Canada	135
Appendixes III	Set Charts of Orly Airport, Paris, France	154
Appendixes IV	Abbreviations	167
Appendixes V	Answers to the Exercises	178
	参考文献	185

Unit One

INSTRUMENT APPROACH CHARTS

I . Words and Terms

instrument flight		仪表飞行
departure phase		离场阶段
enroute structure		航路结构
standard instrument departure		标准仪表离场
terminal arrival route		终端进场航路
altitude	<i>n.</i>	(海拔) 高度
instrument landing system		仪表着陆系统
threshold	<i>n.</i>	跑道入口
elevation	<i>n.</i>	标高
touchdown zone		接地带
reference	<i>n.</i>	参数, 基准
procedure	<i>n.</i>	程序
proficient	<i>a.</i>	精通的
segment	<i>n.</i>	航段
fix	<i>n.</i>	航路点
initial approach		起始进近
feeder route		过渡航路
arc procedure		圆弧程序
course reversal		反向航道
intersect	<i>vt.</i>	交叉; 切入
incorporate	<i>vt.</i>	组合, 综合
inbound course		向台航道
clearance	<i>n.</i>	允许, 许可
glide slope		下滑道
final approach fix		最后进近航路点
navaid	<i>n.</i>	助航设备

missed approach point

复飞点

II . Text

Introduction of Types of Charts

Instrument flight may be broken down into three broad phases. The departure phase takes you from the airport to the enroute structure. The enroute phase is used to travel from one location to another, and the arrival phase permits you to transition from the enroute structure to your destination. The arrival phase may begin with a published arrival procedure usually ends with an instrument approach.

Instrument charts for each of these phases are published by Jeppesen Sanderson, Inc., a private firm, and the United States Department of commerce, which produces the National Ocean Service (NOS) charts. Jeppesen charts are used by most civil operators, including most air carriers. Therefore, it is important to be familiar with the chart formats.

According to different phases of flight Jeppesen charts can be divided into: the standard instrument departure (SID), enroute charts, the standard terminal arrival route (STAR), airport charts and the approach charts which are most frequently used in training. Therefore, standard approach procedure and relative approach charts will be dealt with first in full consideration.

Instrument Approach Charts

The standard instrument approach procedure, or IAP, allows you to descend safely from the enroute altitude to a relatively low altitude near a runway at your destination. In the case of an instrument landing system (ILS) approach, you typically arrive at a point located approximately one-half mile from the runway threshold at an altitude of 200 feet above the elevation of the touchdown zone. At this point, if certain visual requirements are met, you may continue to a landing using visual references. If the visual requirements cannot be met at this point, or if the required visual cues are lost after passing it, you must discontinue the approach and follow the missed approach procedure.

Approach Chart

Although there are many different types of approaches in use, most incorporate common procedures and chart symbology. Therefore, your ability to

read one approach chart generally means you will be able to read others. This section is designed to help you become proficient at reading charts. An ILS approach chart has been selected, since this type of chart includes most of the features found on other approach charts.

Approach Segments

Before looking at approach chart symbology, it is helpful to have a basic understanding of an approach procedure. An instrument approach may be divided into as many as four segments: initial, intermediate, final, and missed approach. These segments often begin and end at designated fixes. However, they also can begin and end at the completion of a particular maneuver, such as a course reversal. (Figure 1-1)

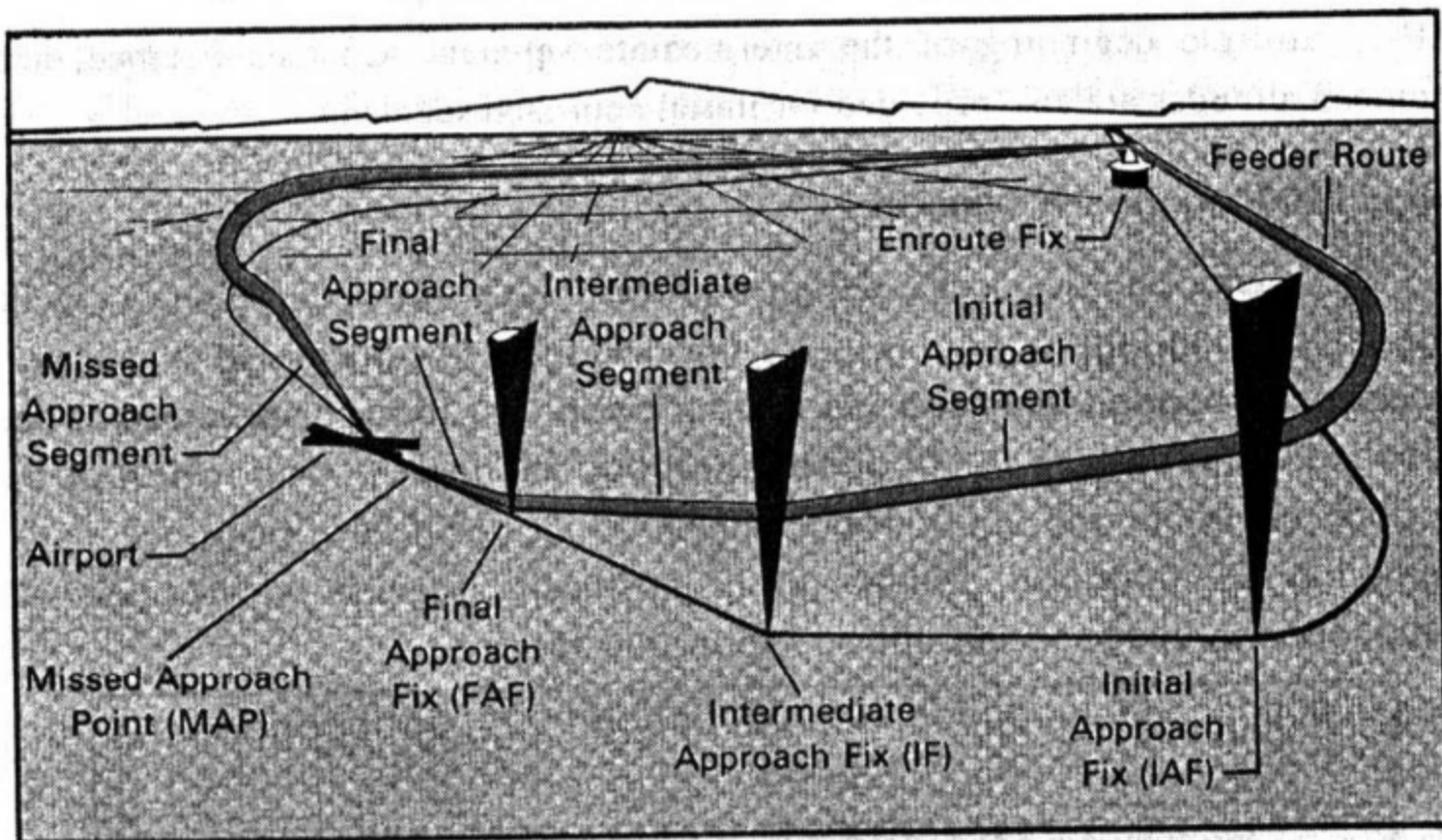


Figure 1-1 A feeder, or terminal route may be used to take you from the enroute structure to an initial approach fix (IAF). Next, you follow an initial approach segment to an intermediate fix (IF). From here, you follow the intermediate segment to the final approach fix (FAF).

The final approach segment ends at the runway, airport, or missed approach point (MAP). Upon reaching the MAP, if you are unable to continue the approach to a landing, you follow the missed approach segment back to the enroute structure.

Feeder routes, although technically not considered approach segments, are an integral part of many instrument approach procedures. They provide a link between the enroute and approach structures. Although an approach procedure may have several feeder routes, you generally use the one closest to your enroute arrival point. When a feeder route is shown, the chart provides the course or bearing to be flown, the distance, and the minimum altitude.

Initial Approach Segment

The purpose of the initial approach segment is to provide a method for aligning your aircraft with the approach course. This is accomplished by using an arc procedure, a course reversal such as a procedure turn or holding pattern, or by following a route which intersects the final approach course. These procedures are discussed later.

An initial approach segment begins at the **initial approach fix (IAF)** and usually ends where it joins the intermediate approach segment. A given procedure may have several initial approach segments. Where more than one exists, each will join a common intermediate segment, although not necessarily at the same location.

Occasionally, a chart may depict an IAF, even though there is no initial approach segment for the procedure. This usually occurs where the intermediate segment begins at a point located within the enroute structure. In this situation, the IAF signals the beginning of the intermediate segment. Course, distance, and minimum altitudes are also provided for initial approach segments.

Intermediate Approach Segment

The intermediate segment is designed primarily to position your aircraft for the final descent to the airport. During it, you typically reduce your airspeed to at or near the approach airspeed, complete the landing check-list [except for extending the landing gear and making the final flap selection], and make a final review of the approach procedure and applicable minimums. Like the feeder route and initial approach segment, the chart depiction of the intermediate segment provides you with course, distance, and minimum altitude information. (Figure 1-2)

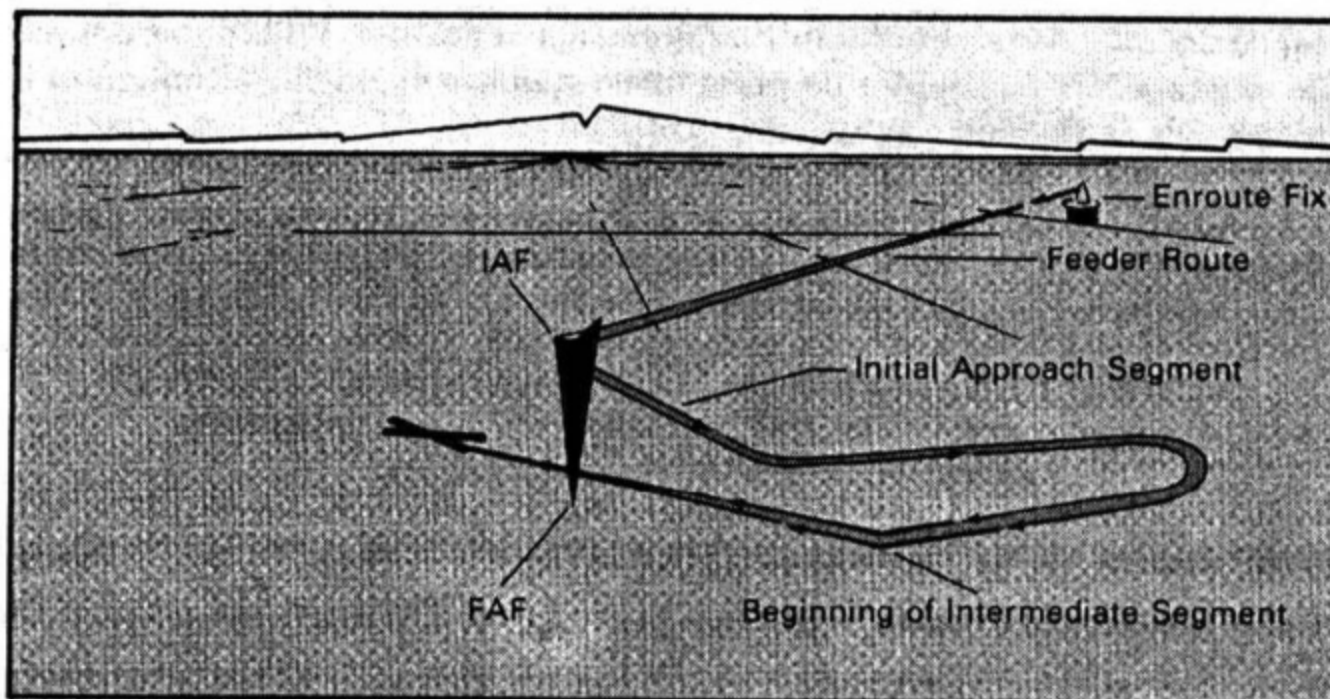


Figure 1-2 An instrument approach that incorporates a procedure turn is the most common example of an approach which may not have a charted intermediate approach fix. The intermediate segment, in this case, begins when you intercept the inbound course after completing the procedure turn.

The intermediate segment is normally aligned within 30° of the final approach course, begins at the **intermediate fix** (IF), or point, and ends at the beginning of the final approach segment. In some cases, an intermediate fix is not shown on an approach chart. In this situation, the intermediate segment begins at a point where you are proceeding inbound to the final approach fix, are properly aligned with the final approach course, and are located within the prescribed distance from the final approach fix.

ATC may provide you with radar vectors to any point along the initial or intermediate approach segments. During a radar vector, it is your responsibility to continually be aware of your position in case of communications failure. It is also your responsibility to see and avoid other aircraft when operating in VFR conditions.

Two common situations can arise when you are radar vectored to an approach. The first occurs when ATC assigns you an altitude that is below the minimum altitude charted for your area. It is important for you to realize that the controller's display is divided into sectors. Within each sector, a **minimum vectoring altitude** (MVA) is established, which may be lower than the minimum charted altitude.

The second situation occurs when ATC vectors you through the final approach course without giving you an approach clearance. In this situation, you must continue to maintain the last assigned heading and not intercept the final approach course until specifically advised to do so by ATC. Such a procedure is commonly used by ATC to provide separation between you and another aircraft.

Although each of these is commonly encountered, it also can signal a potentially dangerous situation. As the pilot in command, you should immediately question any clearance that will compromise the safety of the flight or that is different from what you expected to receive under the prevailing conditions.

Final Approach Segment

The purpose of the final approach segment is to allow you to navigate safely to a point at which, if the required visual references are available, you can continue the approach to a landing. If you cannot see the required cues at the missed approach point, you must execute the missed approach procedure. The final

approach segment for a precision approach begins where the glide slope is intercepted at the minimum glide slope intercept altitude specified by the approach chart. If ATC authorizes a lower intercept altitude, the final approach segment begins upon glide slope interception at that altitude. For a non-precision approach, the final approach segment begins either at a designated **final approach fix (FAF)** or at the point where you are aligned with the final approach course. When an FAF is not designated, this point is typically where the procedure turn intersects the final approach course inbound. The final approach segment ends either at the designated missed approach point or when you land.

Although the charted final approach segment provides you with course and distance information, many factors influence the minimum altitude to which you can descend. These include the type of aircraft being flown, the aircraft's equipment and approach speed, the operational status of nav aids, the airport lighting, the type of approach being flown, and local terrain features.

Missed Approach Segment

The purpose of the missed approach segment is to allow you to safely navigate from the MAP to a point where you can attempt another approach or continue to another airport. Every instrument approach will have a missed approach segment along with appropriate heading, course, and altitude information.

The missed approach segment begins at the **missed approach point (MAP)** and ends at a designated point, such as an initial approach or enroute fix. The actual location of the missed approach point depends upon the type of approach you are flying. For example, during a precision approach the MAP occurs when you reach a designated altitude called the **decision height (DH)**. For non-precision approaches, the missed approach point occurs either at a fix defined by a nav aid or after a specified period of time has elapsed since you crossed the final approach fix.

III. Sentence Comprehension

1. In the case of an instrument landing system (ILS) approach, you typically arrive at a point located approximately one-half mile from the runway threshold at

an altitude of 200 feet above the elevation of the touchdown zone.

飞盲降进近时，飞机总是到达一个特定位置，该位置在离跑道入口大约半英里处，离接地带标高 200 英尺高度。

2. An instrument approach may be divided into as many as four segments: initial, intermediate, final, and missed approach.

仪表进近可以分成多达 4 个航段：起始进近，中间进近，最后进近和复飞航段。

3. This is accomplished by using an arc procedure, a course reversal such as a procedure turn or holding pattern, or by following a route which intersects the final approach course.

完成起始进近的方法可以使用圆弧程序，反航道如程序转弯或等待航线，或沿一条指定的航路切入最后进近航道。

4. The intermediate segment is normally aligned within 30° of the final approach course, begins at the **intermediate fix** (IF), or point, and ends at the beginning of the final approach segment.

中间进近航段通常对正在最后进近航道的 30° 内，在中间进近航路点开始，到开始最后进近航段时结束。

IV. Exercises

A. Answer the following questions:

1. What are the three phases of flight?
2. What does the standard instrument approach procedure (IAP) allow a pilot to do?
3. How many segments may an instrument approach be divided into? What are they?
4. What are the procedures mentioned to accomplish the initial approach segment?
5. What is IAF?

B. Identify the callouts in the charts.

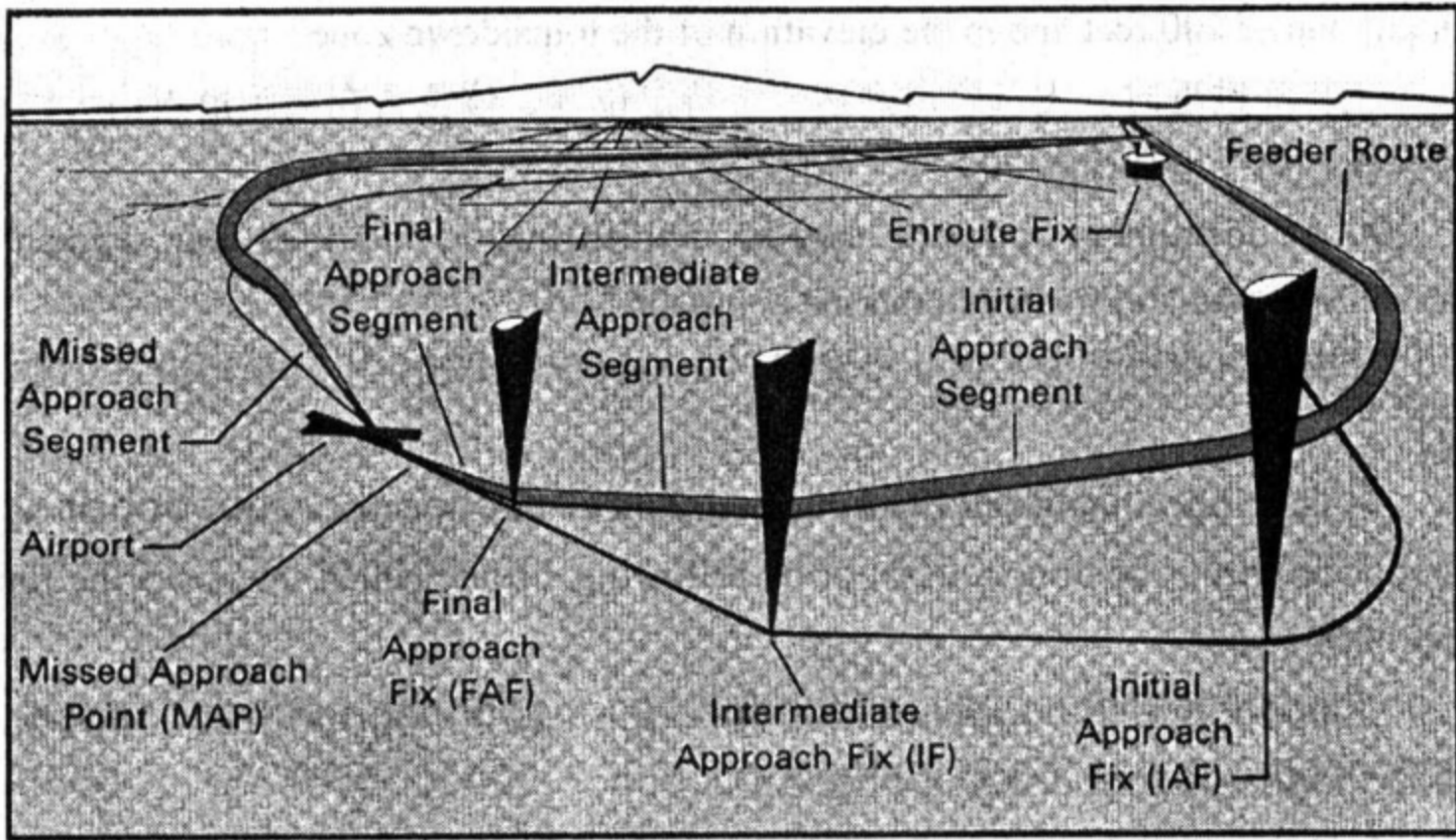


Figure 1-3

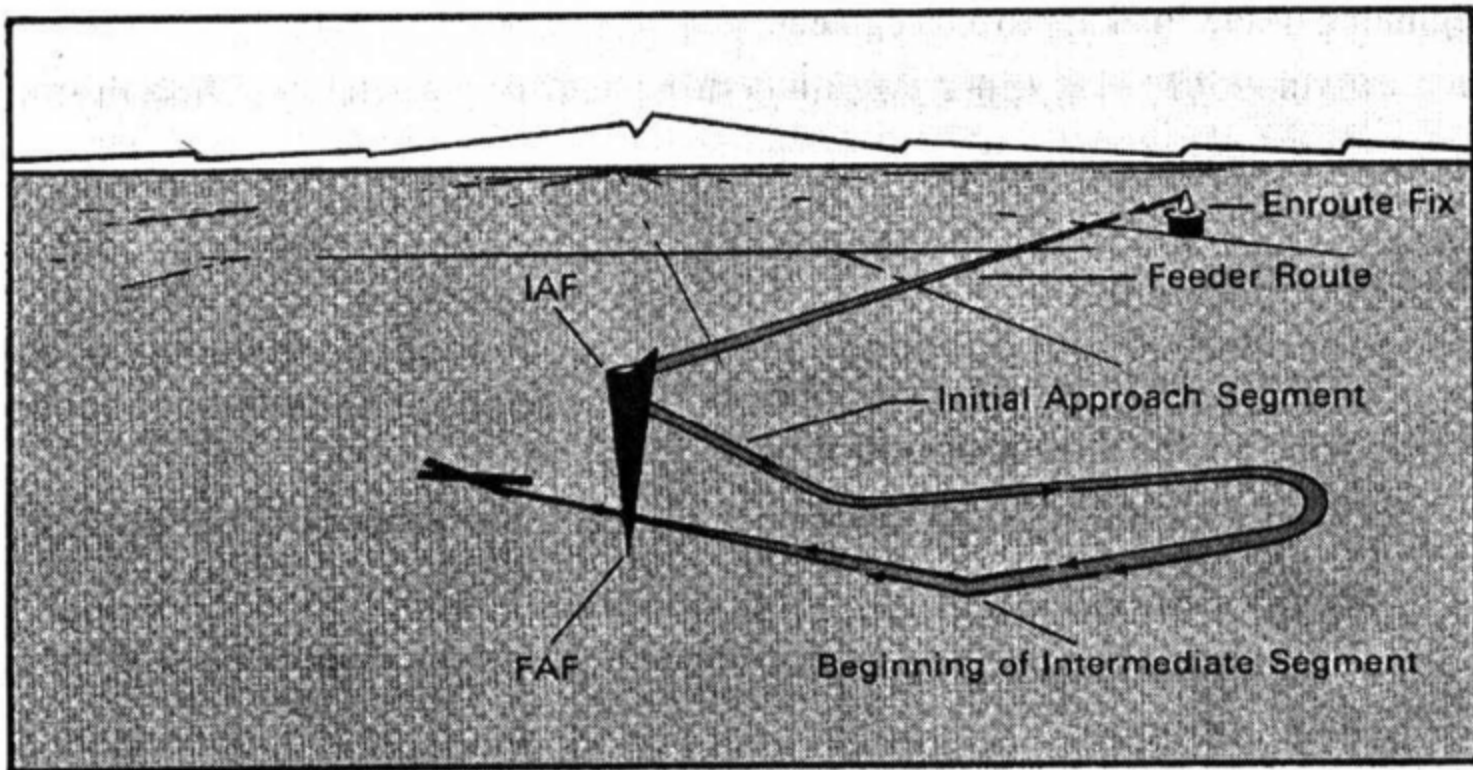


Figure 1-4

Unit Two

CHART LAYOUT (I)

I . Words and Terms

portray	<i>vt.</i>	描述
symbology	<i>n.</i>	符号
layout	<i>n.</i>	布局
geographic name		地理名称
procedure name		程序名称
straight-in landing		直接进近着陆
maneuver	<i>n.</i>	机动飞行
circling approach		绕场进近
clearance	<i>n.</i>	超障
sector	<i>n.</i>	扇区
minimum safe altitude		最低安全高度
clockwise	<i>adv.</i>	顺时针方向
emergency	<i>n.</i>	应急, 紧急
omission	<i>n.</i>	省略
alternate	<i>a.</i>	备用的
communications contact		通信联系
common traffic		公共交通
advisory frequency		咨询频率
facility box		设备框
outbound course		背台航道
localizer	<i>n.</i>	航向台
lead radial		引导径向线
transition	<i>n.</i>	过渡
primary approach facility		主进近设施
missed approach path		复飞航路
holding fix		等待点