INSTRUMENT APPROACH BRIEFING

As workload permits, the PM will obtain the destination weather and landing information as soon as practical, tune and identify all appropriate navigation and communication frequencies and program the FMS to the extent possible for the approach to be used. At an uncontrolled airport, the PM will contact Unicom and obtain airport advisory information as soon as practical and, if possible, monitor the frequency for traffic. A crew briefing on the approach to be used shall be given for all Instrument or Visual approaches. It is recommended that the autopilot be used during the crew-briefing phase.

The briefing and verification of all settings made by the PM will be completed by the PF. The PF may direct the PM to conduct the briefing if the cockpit workload dictates, such as last minute approach/runway changes. If the PF is giving the briefing, he shall transfer control of the aircraft to the other crewmember and assume the duties of the PM. If a visual approach is in use, it should be backed up by an instrument approach and/or FMS centerline if available. The Approach Briefing should include a discussion of at least the following:

1. Airport, approach procedure, and runway to be used

2. Pertinent altitudes, including the Final Approach Fix altitude, step-down fixes, Minimum Descent Altitude/Decision Altitude, as well as the field elevation and visual traffic pattern altitude

3. All navigation frequencies to be used and the inbound course

4. Minimum visibility requirements

5. Target approach speed and descent rate

6. Flap setting (if not standard)

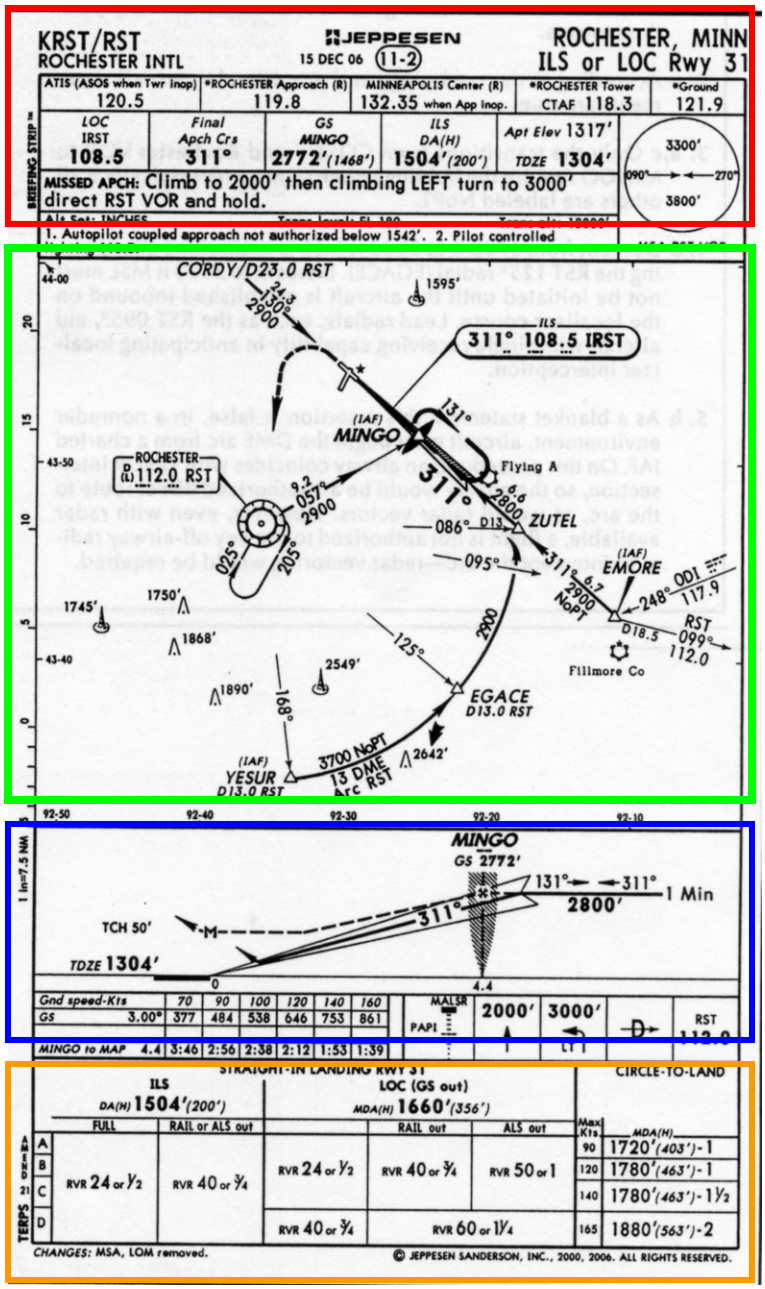
7. Final approach course timing (if applicable)

8. VDP (if applicable)

9. Missed Approach procedure(s), to include Go-Around

10. Runway dimensions and lighting aids

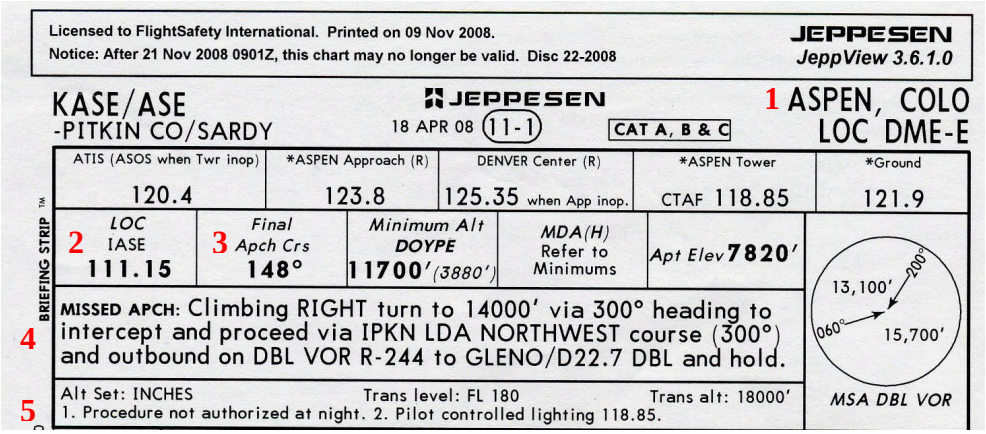
11. FBO location on the field and proposed taxi route from the landing runway


KRST/RST
ROCHESTER INTL
JEPPESEN
15 DEC 06 (11-2)
ROCHESTER, MINN
ILS or LOC Rwy 31
ATIS (ASOS when Twr inop) 120.5
*ROCHESTER Approach (R) 119.8
MINNEAPOLIS Center (R) 132.35 when App inop.
*ROCHESTER Tower CTAF 118.3
*Ground 121.9
LOC IRST 108.5
Final Apch Crs 311°
GS MINGO 2772'(1468')
ILS DA(H) 1504'(200')
Apt Elev 1317'
TDZE 1304'
3300'
090°
270°
3800'
MISSED APCH: Climb to 2000' then climbing LEFT turn to 3000' direct RST VOR and hold.
1. Autopilot coupled approach not authorized below 1542'. 2. Pilot controlled
CORDY/D23.0 RST
1595'
ILS
311° 108.5 IRST
(IAF)
MINGO
131°
311°
ROCHESTER
112.0 RST
Flying A
ZUTEL
086°
095°
025°
205°
057°
1750'
1745'
1868'
1890'
2549'
125°
198°
EGACE
D13.0 RST
(IAF)
YESUR
D13.0 RST
3700 NoPT
13 DME Arc RST
2642'
(IAF)
EMORE
248° ODI 117.9
RST 099° 112.0
Fillmore Co
MINGO
GS 2772'
131°
311°
1 Min
2800'
TCH 50'
TDZE 1304'
1 In=7.5 NM
Gnd speed-Kts 70 90 100 120 140 160
GS 3.00° 377 484 538 646 753 861
MINGO to MAP 4.4 3:46 2:56 2:38 2:12 1:53 1:39
MALSR
PAPI
2000'
3000'
RST
STRAIGHT-IN LANDING RWY 31
ILS
DA(H) 1504'(200')
LOC (GS out)
MDA(H) 1660'(356')
CIRCLE-TO-LAND
FULL
RAIL or ALS out
RAIL out
ALS out
Max Kts
MDA(H)
A
B
C
D
RVR 24 or 2½
RVR 40 or ¾
RVR 24 or 2½
RVR 40 or ¾
RVR 50 or 1
RVR 40 or ¾
RVR 60 or 1¼
90 1720'(403')-1
120 1780'(463')-1
140 1780'(463')-1½
165 1880'(563')-2
TERPS
CHANGES: MSA, LOM removed.
© JEPPESEN SANDERSON, INC., 2000, 2006. ALL RIGHTS RESERVED.

The top section, outlined in **red**, is referred to as the "**Briefing Strip**". It contains vital information about the approach, including frequencies, notes, and the textual description of the missed approach procedure.

The next section, outlined in **green**, is called the "**Plan View**". It shows an overhead map of the entire approach procedure, including the missed approach. The plan view will help us to form the 3 dimensional picture of how the approach will look.

Below the Plan View is the "Profile View", which is outlined here in **blue**. The **profile view** shows the vertical aspect of the approach, as well as minimum altitudes for each category of aircraft. It is used along with the Plan View to help us complete the 3 dimensional picture of the approach.



BRIEFING STRIP

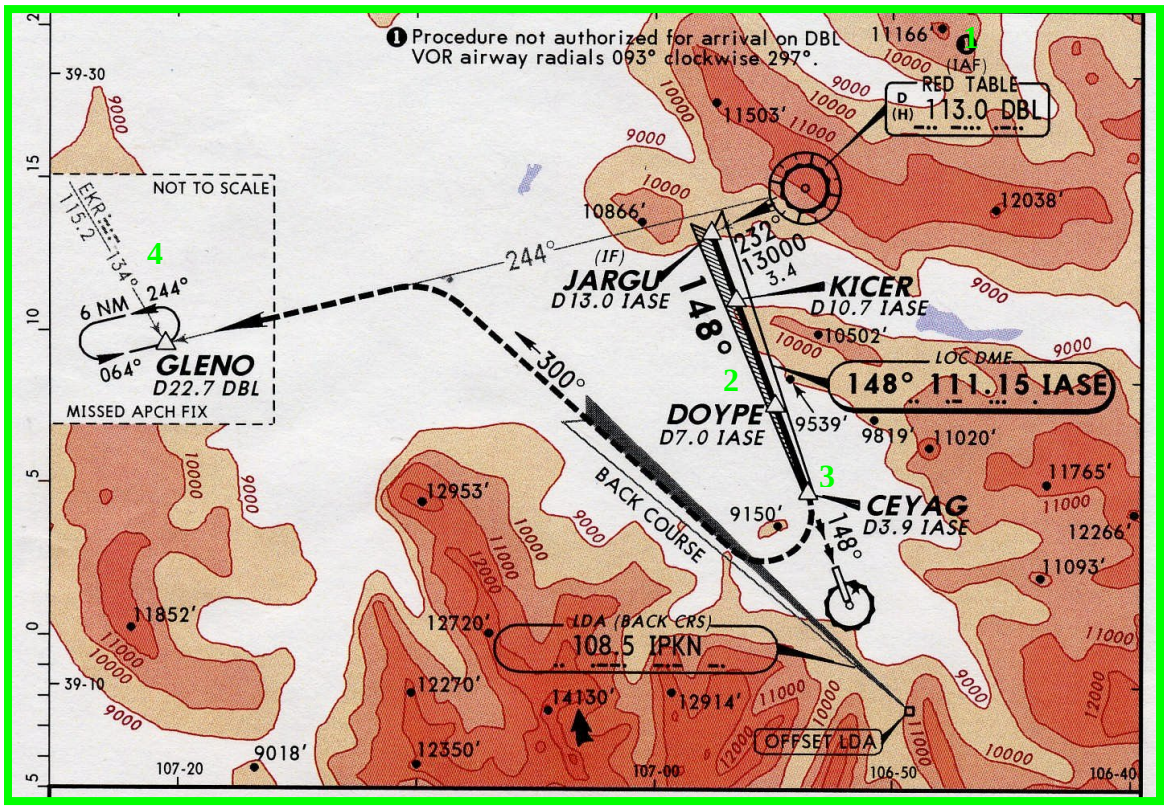
1. First step is to check the location. This is the first line of defense against using the wrong chart.

2. The next piece of info shows the primary navigation source for the approach. In this example, we are using the localizer with a frequency of 111.15

3. Next is the final approach course, in this case it is 148. If the #1 nav is not being used, this is a good time to set the OBS or HSI needle to 227. If the #1 nav is being used, but the #2 is available, it is recommended to switch navigation to the #2 nav, which would free up the #1 nav for the approach.

4. The next section is the textual description of the missed approach procedure. This will be used in conjunction with the plan view to gain a complete understanding of how the missed approach procedure is to be flown. Every approach should be briefed with the mindset that the missed approach WILL be flown.

5. This section lists any comments and requirements associated with the approach. This is a common overlooked section and includes some very important information regarding the approach.



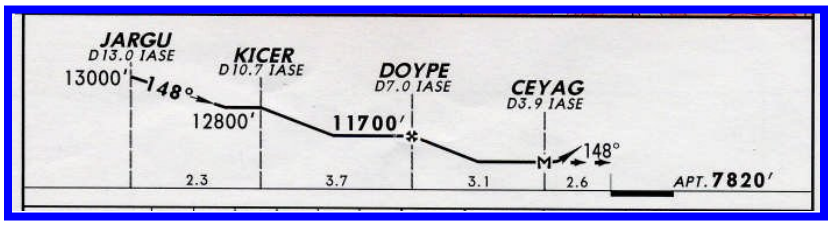
1. First step is to identify the initial approach fixes. These are where the approach officially begins. If there are more than one, you should determine which one will be the best to use depending on what direction you are arriving from. In the example above, there is only one, it is the Red Table (DBL) VOR. Initial approach fixes can always be identified by "IAF".

2. Next step is to identify the Final Approach Fix (FAF), and how to get from the IAF to the FAF. Sometimes "FAF" is used to identify the FAF on the plan view. The most definite way to identify it is by the maltese cross symbol on the profile view. In this example , the FAF is DOYPE DME fix. The Approach is labeled LOC DME, indicating DME is required to fly this approach. 7.0 DME from ASE.

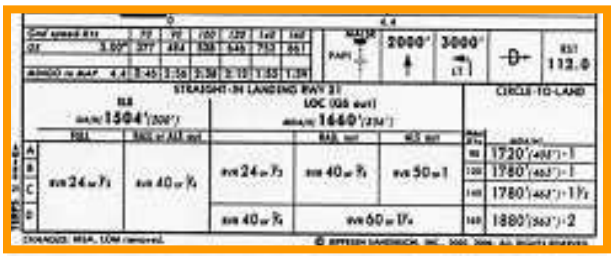
3. The missed approach always begins where the solid line ends and the dotted line begins. This is indicated on the profile view with an M. On the final approach segment, be sure to take note of a possible stepdown(s) between the FAF and the MAP.

4. Identify the missed approach holding fix and the missed approach procedure. In this example, the RST VOR is where the missed approach procedure terminates and you would have to hold until receiving a further clearance. Earlier we read the textual description of the missed approach. We can compare that to the dotted line on the plan view to see how the procedure would be carried out. This is also a good time to determine what type of hold entry you would perform once reaching the missed approach holding fix.

PROFILE VIEW



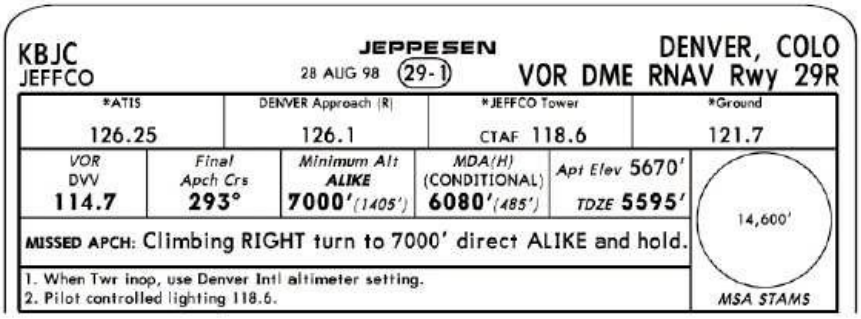
MINIMUMS SECTION



There is a graphical representation of the missed approach procedure to help jog your memory when flying the missed approach. It is imperative that the textual description of the procedure be thoroughly briefed prior to beginning the final approach segment. The graphical representation is only used as a reminder and should not be used as the primary means of interpreting the missed approach procedure.

Below the vertical profile is the **minimums chart**. It is divided into columns (aircraft categories) and rows (type of approach). The aircraft categories are based on approach speeds. Category A is used for approach speeds up to 90 kts. Category B is used for approach speeds between 91 and 120 kts. Category C is used for approach speeds between 121 and 140 kts. Category D is for approach speeds between 141 and 165 kts. Circling minimums for the Excel/XLS are Category C and the maneuver area around the airport is 1.7 NM.

APPROACH BRIEFING STRIP


KBJC
JEFFCO

JEPPESEN
28 AUG 98 (29-1)

DENVER, COLO
VOR DME RNAV Rwy 29R

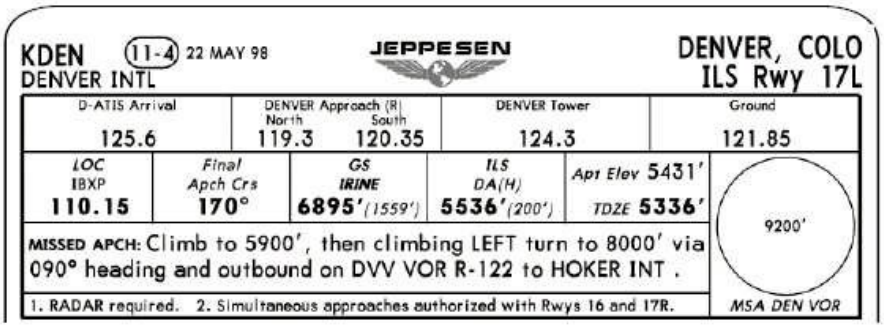
*ATIS	DENVER Approach (R)	*JEFFCO Tower	*Ground
126.25	126.1	CTAF 118.6	121.7

VOR DVV	Final Apch Crs	Minimum Alt ALIKE	MDA(H) (CONDITIONAL)	Apt Elev 5670'
114.7	293°	7000' (1405')	6080' (485')	TDZE 5595'

MISSED APCH: Climbing RIGHT turn to 7000' direct ALIKE and hold.

1. When Twr inop, use Denver Intl altimeter setting.
2. Pilot controlled lighting 118.6.

14,600'
MSA STAMS


KDEN
DENVER INTL

(11-4) 22 MAY 98

JEPPESEN

DENVER, COLO
ILS Rwy 17L

D-ATIS Arrival	DENVER Approach (R) North	DENVER Approach (R) South	DENVER Tower	Ground
125.6	119.3	120.35	124.3	121.85

LOC IBXP	Final Apch Crs	GS IRINE	ILS DA(H)	Apt Elev 5431'
110.15	170°	6895' (1559')	5536' (200')	TDZE 5336'

MISSED APCH: Climb to 5900', then climbing LEFT turn to 8000' via 090° heading and outbound on DVV VOR R-122 to HOKER INT .

1. RADAR required. 2. Simultaneous approaches authorized with Rwys 16 and 17R.

9200'
MSA DEN VOR

The Briefing Strip™ format is designed to be a checklist of some of the most important items when first studying an approach chart. It has items in addition to the communications data such as the primary navaid for the approach, the final approach course, field elevation and procedure identification. The approach procedure identification is shown under the city name. If the approach has straight-in landing minimums, the straight-in runway will be included following the approach type.

The first illustration for Denver, Colorado shows this is the ILS approach to runway 17L. **Any** other runway would require the use of circling minimums (if they are available). For example, since this approach is labeled ILS Rwy 17L, straight-in minimums *could not* be used for landing on Runway 17R. If a procedure were titled VOR Rwy 35L/R, straight-in landing minimums would be authorized on both of the parallel runways identified by title. In some cases, a side-step runway is authorized with straight-in landing minimums, but they are usually *higher* than for the runway in the approach procedure title. When the approach procedure does not authorize straight-in landing minimums, a hyphen and a letter will follow the type of approach. According to the TERPs procedure design criteria, straight-in landing minimums are not available when the final approach segment is more than 30 degrees from the runway alignment, the final approach is too steep, or the final approach doesn't come close enough to the runway threshold (or extended centerline). The procedure identification includes the type of radio equipment to be used to fly the approach. In the US, Canada, and other countries which use the TERPs procedure design criteria, the procedure identification includes the type of navigation aids which provide final approach guidance. If the approach is labeled VORTAC, VOR DME, ILS DME or LOC DME, DME ***must*** be used in addition to azimuth guidance. If DME is stated only in the plan and profile views, then its use is optional; however, the minimums may be adversely affected in such a case. The method used by the TERPs procedure designers to identify instrument approach procedures is very consistent. For ILS approaches, the localizer, glide slope, outer marker (or authorized substitute), plus stated visual aids **must** be used to get the lowest minimums. On ILS approaches, if some components or visual aids are not available or are not used, higher minimums usually apply.

Most countries follow the ICAO standards which state that the types of navaid(s) on which the instrument approach procedure is established shall be part of the identification. As a result, titles such as VOR NDB ILS DME Rwy 15 might be a procedure identification used by a country to indicate all the types of navaids that might be used on the approach, depending on the transition and the missed approach. The approach procedure identifications are from the applicable authoritative source in each country, so they can vary from country to another. In general, the title is a common reference to be used by both the controller and pilot to ensure both are “playing” off the same page.

After the communications boxes, the primary facility upon which the approach is predicated is included with its identifier and frequency. Other navaids necessary for the approach are found in the plan view. The final approach course is included as part of the briefing as well as the FAF and the lowest landing minimum. On ILS approach charts, the altitude of the glide slope at the LOM (or its substitute) is included as a means of cross checking the altimeter when passing the fix. On non-precision approaches, the minimum altitude at the FAF is shown.

By definition, the field elevation is the elevation of the *highest* usable landing surface on the airport. That elevation is included toward the right of the Briefing StripTM (plus next to the runway in the profile). The touchdown zone elevation (TDZE) is included with the airport elevation.

Minimum Sector Altitudes

Most important — the minimum sector altitudes (MSA) listed in the heading data of Jeppesen approach charts are included for **emergency** use only in the United States and most countries. An MSA provides at least 1,000 feet of obstruction clearance within a 25-nautical mile radius of the fix designated below the MSA circle. The 1000-foot clearance applies in both mountainous and nonmountainous areas. The center of the MSA is normally the locator on ILS or localizer approaches, the VOR on VOR or VOR/DME approaches, and the NDB on NDB approaches. On GPS approaches, the MSA is typically centered on the landing run- way threshold. MSAs are usually not provided on back course or radar approaches. MSA sectors are designated between two magnetic bearings to the facility upon which the MSA is based. There are two reasons why the MSAs should **not** be used as normal flight altitudes:

1. In mountain terrain areas, FAR 91.177 states that an altitude of **2,000 feet** must be maintained above the highest obstacle...(for direct routes).

2. Since MSAs are not flight altitudes, the FAA does not monitor new obstructions as critically as those which underlie flight paths.

Communications

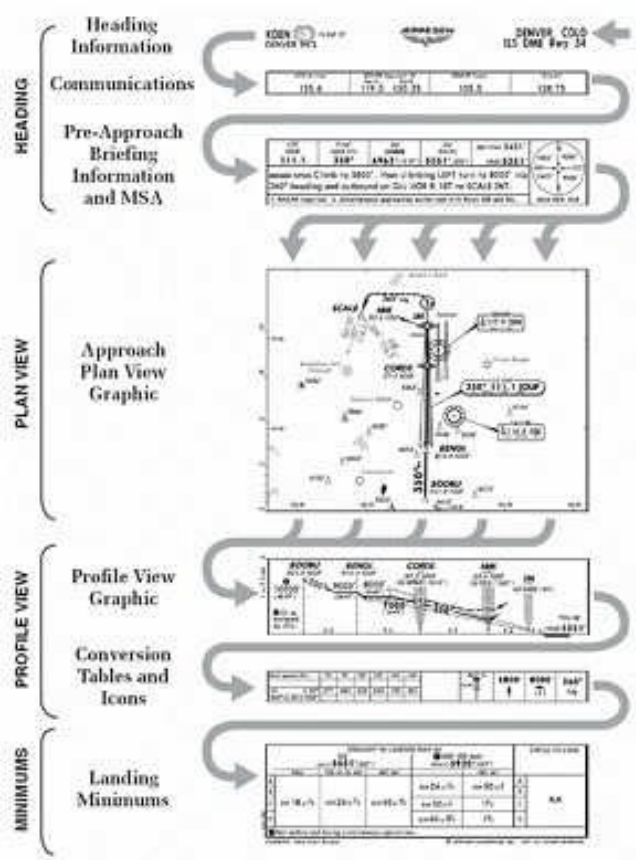
Each Jeppesen approach chart includes most IFR communication frequencies for arrivals at each airport at the top of the approach chart. Refer to the Denver, Colorado ILS Rwy 17L approach chart for a discussion of frequencies to be utilized at the international airport. The first communications box includes the ATIS frequency used for arriving at the airport. If the term “arrival” is included, it means there is a different ATIS frequency for departures and will be included on the airport diagram chart. At Denver, the letter “D” precedes ATIS since the ATIS is transmitted digitally as well as by the conventional analog voice. For cockpits so equipped, the ATIS digital signal is received and then displayed in text form on one of the panel displays. When the local weather is available from an automated system such as ASOS (Automated Surface Observation System), it is shown with the frequency. The information is often transmitted on a discrete VHF frequency, but will sometimes be transmitted on the voice portion of a local navaid.

Approach Control

When an airport is served by an approach control, the frequencies will be included after the ATIS box. A letter “R” in parentheses in the approach control box indicates the availability of radar. It is interesting to note that where the (R) *doesn’t appear*, that doesn’t mean that radar is not available, it just means that the local radar facility has not announced they will provide radar when requested. At Denver, the approach control is divided into two different areas. When arriving from the north, 119.3 MHz is the approach control frequency, and when arriving from the south, the frequency is 120.35 MHZ. Sometimes, the different areas are defined by specific degrees such 270° clockwise to 090°. The center point for the sectorization is not always known; neither can you tell from the information given whether the sector bearings are magnetic or true.

In the early 1980s, the FAA initiated a concept called the “*initial contact frequency*.” Each tower, approach, departure, and ground control facility is supposed to designate a single frequency for “initial contact.” In some cases, you will see only one approach control frequency when you know there are more. This is because of the “initial contact” concept. If you are VFR and need to contact and approach control facility and you do not know the sector frequency, the approach control facility has agreed to respond to “pop ups” on the initial contact frequency. Approach will then assign the appropriate frequency to you.

JEPPESEN APPROACH CHART "FLOW"



ZIG-ZAG BREIFING "FLOW"