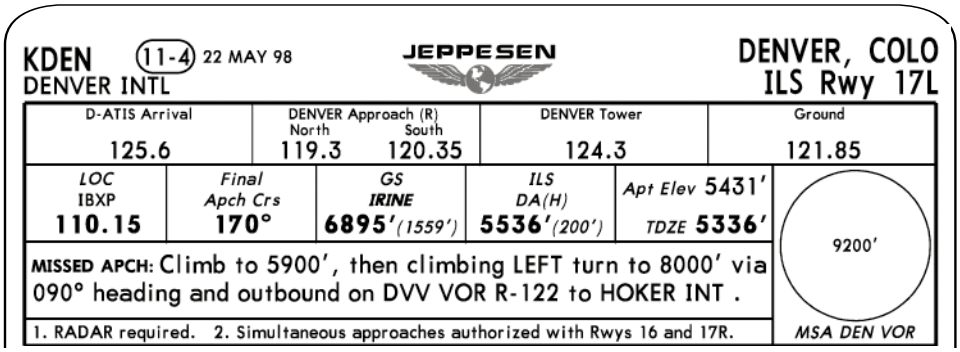
JEPP'S BRIEFING

The Chart Clinic – Fourteenth in a Series

By James E. Terpstra
Sr. Corporate Vice President, Jeppesen



Skybird 1227K: Midtown Tower, Skybird 1227K, 20 miles west, request advisories, landing.
Tower: Skybird 27K, active runway 27, wind 280 degrees at 15 knots, altimeter 30.12, enter and report left downwind.
Skybird 27K: Midtown Tower, Skybird 27K is over the smokestack west of town, wind appears to be from the east, request straight-in landing Runway 9.
Tower: 27K, if you're landing at the smokestack, land east; if you're landing at Midtown, plan Runway 27.

We all have similar stories to relate which we've heard via communications. Some of them have happened to us. Communications are our heart beat. Most of us feel, "Give me a mike and I can handle almost anything. But take that mike away, and my command capability disappears."

Some of the most important information for us is the communications frequencies — and they are at the top of every Jeppesen approach chart. These frequencies are placed in the order they are used when arriving at the airport.

Heading Data - Briefing Strip™

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.

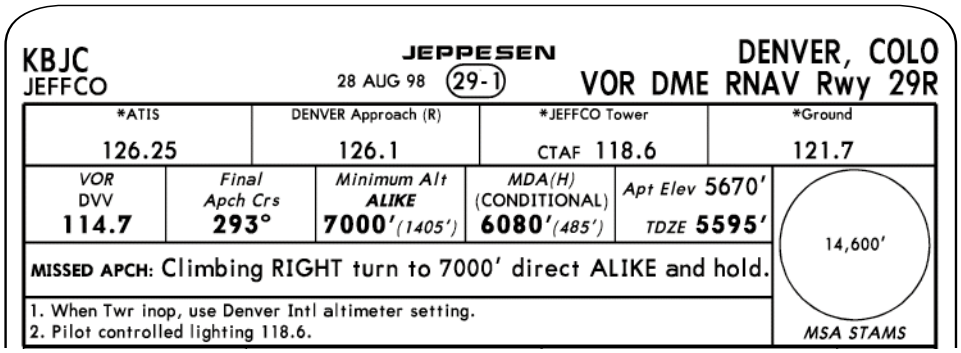
After the communications boxes, the primary facility upon which the approach is predicated is included with its identifier and frequency. Other navaids necessary for the approach are found in the plan view. The final approach course is included as part of the briefing as well as the FAF and the lowest 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 Strip™ (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 non-mountainous 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.

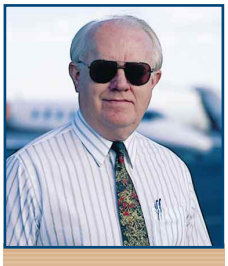
Approach Control

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.

Next Month: In the next article in this series, we will continue with the heading information and then begin analyzing the content of the approach chart plan view.



James E. Terpstra is senior corporate vice president, flight information technology at Jeppesen. His ratings include ATP, single and multi-engine, airplane and instrument flight instructor. His 6,000+ hours include 3,200 instructing. For comments, please Email: JimTerps@jeppesen.com