

JEPP'S BRIEFING



BY JAMES E. TERPSTRA
SR. CORPORATE VICE PRESIDENT, JEPPESEN

This may take a bit of imagination, but picture a very high wall running down the centerline of the final approach course from some point outside the final approach fix (FAF) to a point beyond the missed approach point (MAP). On that wall, we will paint a line representing the flight path and mark the altitudes to be flown. Additionally, let's paint some vertical symbols to represent nav aids. Since the wall is a couple of thousand feet high and quite a few miles long, obviously it won't fit into your Jeppesen manual. So, next, we'll reduce the size to make it fit the manual, apply some fancy pilot-talk name to it, and call it the "approach profile view." The only hole in the whole story? *The profile view is not drawn to scale.*

The first profile we'll look at is an excerpt from the Bozeman, Montana, ILS Rwy 12 approach. The most predominant feature which is common to all *profile views* is the heavy, solid black line which represents the flight track. The flight track is portrayed schematically (not to scale) and depicts the altitudes and magnetic courses to be flown. On the Bozeman ILS Rwy 12 profile, this flight track starts at the beginning of the procedure turn and proceeds past the missed approach point. On the final approach segment, the solid line represents the profile when using the ILS glide slope. Notice that the glide slope is intercepted just prior to reaching the LOM (locator outer marker) and proceeds inbound to the airport via the 118-degree magnetic course on the localizer, then continues to the missed approach point near the middle marker. At the missed approach point, the solid line makes a sharp upward turn indicating that a climb should be initiated immediately upon reaching the MAP if a missed approach is necessary.

The dashed line in the profile just above the glide slope represents the flight path for the non-precision approach. This flight path is flown when the glide slope is inoperative or is not utilized. When executing a non-precision approach, you would maintain the intermediate segment altitude (6,800 feet) until crossing the LOM; therefore, the dashed line does not descend until reaching the LOM in the profile view. Note that the dashed line descends until a point just prior to the middle marker, where it levels out into a straight line.

The Chart Clinic – Twenty First in a Series

This indicates the non-precision approach is flown in a descent until the MDA, then the altitude is maintained until arriving at the missed approach point. Note that the dashed line stays level until it is over the end of the runway, then begins its sharp upturn. This illustrates that the non-precision missed approach point is over the end of the runway. The large stylized letter "M" in the profile view is a further method of highlighting the MAP location.

Marker Beacons

Fan markers (OM and MM) are shown as vertical shaded areas in the profile view. This symbol is used to denote the relatively large area where the marker beacons can be heard while flying an approach. The letters "MM" for the middle marker are shown immediately above the symbol. The outer marker is collocated with the locator at Bozeman, which is indicated by the solid vertical line at the locator outer marker position. MANNI, the name of the locator is shown just above the LOM symbol.

The numbers below the name MANNI and the letters "MM" represent the altitude of the glide slope at the outer and middle markers. At the compass locator at the outer marker, the altitude of the glide slope is 6,779 feet above mean sea level. When flying this ILS approach, you will be 2,340 feet above the touchdown zone when you cross the LOM, (assuming you have a centered glide slope needle). At the middle marker, you will be 200 feet above the touchdown zone. The 200-foot altitude, when compared to the straight-in height above touchdown zone (HAT), will give you an idea of where your missed approach point is in relation to MM position. At Bozeman, the decision height is 211 feet, so you will be at the DA(H) just before you arrive at the MM.

Procedure Turn

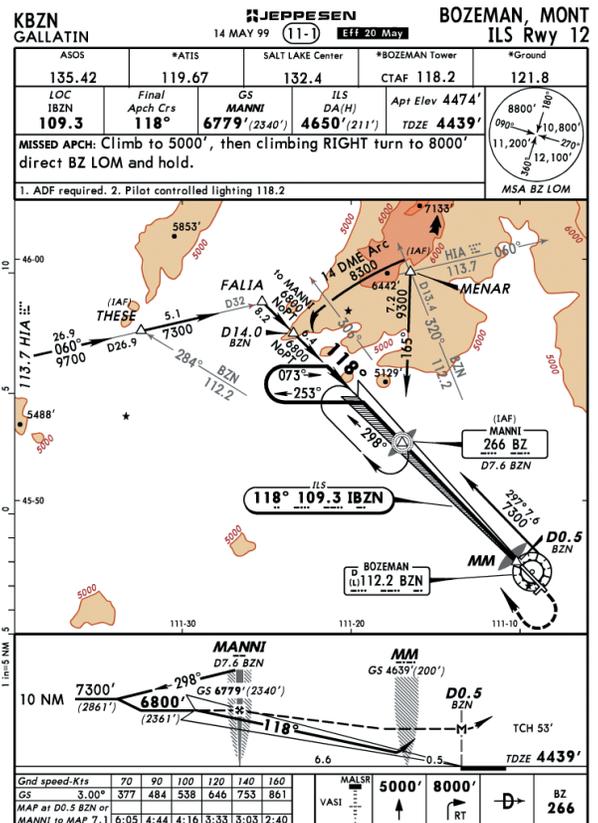
The procedure turn information is depicted to the left in the profile of this ILS approach. The "10 NM" states that the procedure turn (if flown) is to be executed within 10 nautical miles of the LOM. When flying the procedure turn, it should be flown on the west side of the inbound course. To stay at least 1,000 feet above all obstacles while performing the procedure turn, an altitude of 7,300 feet is considered a minimum. The numbers 2861 in parentheses just below the procedure turn altitude represent the altitude above the touchdown zone, *not the altitude above the ground.* Altitudes are

important for those operators who set their altimeters so they read zero upon landing, these altitudes then become the flight altitudes on the approach. It is also important to note that all the altitudes in the profile view are the *minimum altitudes* unless designated with the word "mandatory," "maximum," or "recommended."

Precision FAF

After the procedure turn is completed and you are established on the localizer inbound, a descent can be made to the intermediate segment altitude of 6,800 feet. This altitude of 6,800 feet should be maintained until intercepting the glide slope (or passing the LOM if the glide slope is not used). The intermediate segment ends and the final approach segment begins at the LOM. This is depicted by the Maltese cross at the LOM which designates the final approach fix (FAF) for the non-precision approach (when the glide slope is not used.)

A number of years ago, the FAA created a definition for the final approach fix on precision approaches. Because FAR Part 121 and 135 operators can continue the approach if the weather goes below minimums and the airplane has passed the final approach fix, it was necessary to define a precision FAF when using the glide slope.



The precision FAF is now at the intersection of the glide slope intercept altitude and the glide slope. This is indicated on Jeppesen charts at the beginning of the glide slope symbol in the profile view. It is also the point where the glide slope line begins its descent.

When straight-in landing minimums are authorized, the touchdown zone elevation (TDZE) for the straight-in landing runway is shown in the lower right corner of the profile view adjacent to the runway symbol. Both the airport elevation and the TDZE are included in the Briefing Strip™ when there are straight-in landing minimums. The touchdown zone elevation is defined as the highest elevation in the first 2,300 feet of runway beyond the landing threshold. Note that the numbers in parentheses in the profile view relate to the touchdown zone elevation. These same numbers relate to the airport elevation when only circling minimums are authorized.

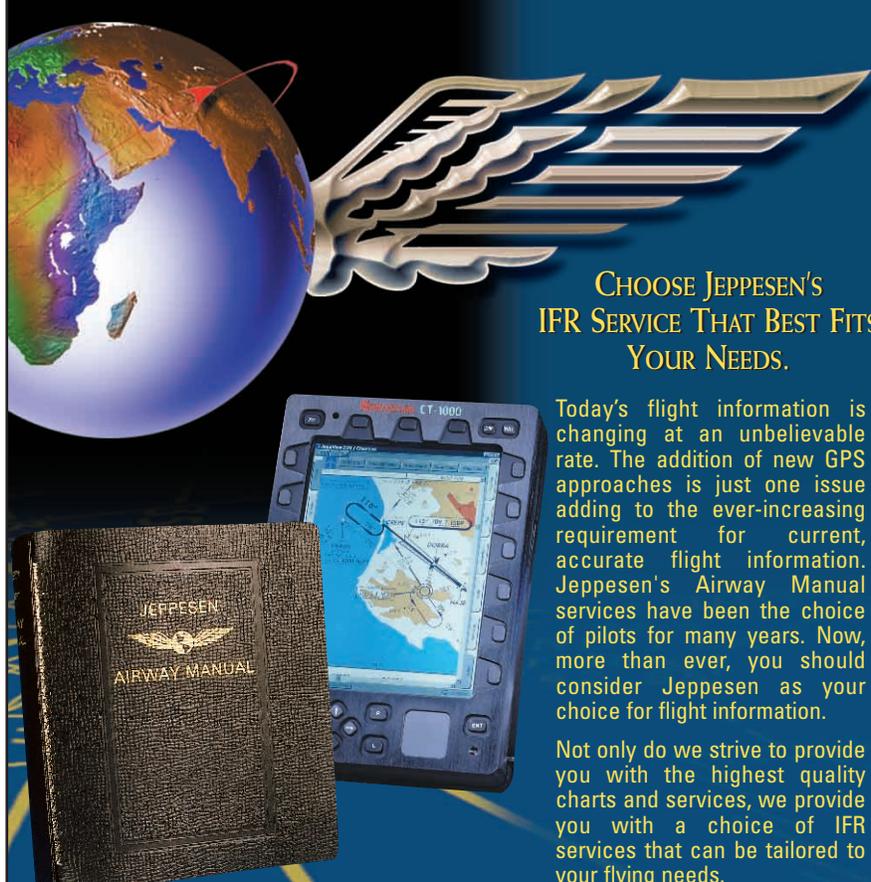
The altitude of the glide slope above the landing threshold is included in the profile view. At Bozeman, the glide slope is 53 feet above the landing threshold. This information is included above the touchdown zone elevation. As an important piece of trivia, the 53 height is actually the height of the glide slope antenna in the airplane (unless the aircraft manufacturer has applied a factor to correct for the antenna location).

Profile Distances

In most cases, two sets of distances are given near the bottom line of the profile view. The distances below the line represent the distance to the landing threshold and the numbers above the line are the distance between fixes in the profile view. At Bozeman, the location of the final approach fix can be determined by DME. When the DME reads 7.6 from the BZN VOR DME (not BZN ILS DME), you are at the non-precision FAF. The LOM is 7.1 nautical miles from the landing threshold. Since the distances of 7.6 and 7.1 could easily be confused, we decided to eliminate the distance below the line when a fix can be determined by the DME as a way of preventing the wrong number to be used to identify the fix by DME. If DME was not authorized at Bozeman, the number 7.1 would be placed below the line at the LOM location in the profile view to show the distance from the FAF to the runway threshold (or zero point). The numbers above the line are the distance between fixes in the profile view. At Bozeman, the distance from the LOM to the MM is 6.6 nautical miles.

At Bozeman, the FAA has established a DME fix at the non-precision missed approach point. In most cases, the missed approach point is determined by timing from the FAF,

THE CHOICE OF PROFESSIONALS



**CHOOSE JEPPESEN'S
IFR SERVICE THAT BEST FITS
YOUR NEEDS.**

Today's flight information is changing at an unbelievable rate. The addition of new GPS approaches is just one issue adding to the ever-increasing requirement for current, accurate flight information. Jeppesen's Airway Manual services have been the choice of pilots for many years. Now, more than ever, you should consider Jeppesen as your choice for flight information.

Not only do we strive to provide you with the highest quality charts and services, we provide you with a choice of IFR services that can be tailored to your flying needs.

Whether it be JeppView, our terminal charts on CD-ROM, or one of our many paper services, we are sure to have the charts that are right for you.

Visit your Jeppesen Dealer or call us today to find the service that best fits your needs.

Eastern Hemisphere: Jeppesen GmbH, Frankfurter Str. 233, 63263 Neu-Isenburg, Germany
Tel: +49 6102 508250 • Fax: +49 6102 508282

Western Hemisphere: Jeppesen, 55 Inverness Drive East, Englewood, CO 80112, USA
Tel: 1-800-621-5377 / 1-303-784-4274 • Fax: 1-303-784-4153

Visit us on the web: www.jeppesen.com

JEPPESEN
Making Every Mission Possible

TCL graphics technology copyright © 1999 Marinvent Corporation.
Electronic display device courtesy of Northstar.

but the FAA is gradually establishing DME fixes at the MAP as a much easier way to determine the MAP location. The DME takes all the guess work out of determining the MAP location since it wipes out the errors caused by varying airspeeds and wind speeds on the final approach.

In the next article, we will continue the discussion of the profile 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

