your passengers and never look out the window, just that you should always be scanning for factors that might affect your flight.

What's On the Frequency?

One tool is listening: what are the other pilots complaining about? Are there planes deviating around something? Why? If they're on the frequency, they're probably close enough for you to be interested. By paying attention you can often form a mental picture of significant weather, ATC delay locations and the traffic sequence into your destination.

Is a faster aircraft being vectored behind you? You can expect a "best forward speed" approach. Is another aircraft that is heading the same general direction as you getting a shortcut? Now you'll know what to ask for.

Is somebody ahead of you on the approach? You might slow it up or plan on holding. Did the pilot ahead of you on the approach go missed?

What it boils down to is making sure that you're using your available time to prepare yourself for when decisions need to be made or actions taken. When you rush, it's very easy to miss a minor detail, such as noticing during your approach briefing the need to stop at a stepdown fix rather than continue all the way down to minimums.

Staying Ahead

As a rule, you don't want to let your airplane get somewhere that your brain hasn't already been several minutes earlier. Okay, it's a cliche, but it's a good one.

Ideally, the state of the flight at any given time should be of little consequence because the pilot, like a good chess player, has already evaluated the most likely outcomes and anticipated the current state of affairs. Therefore, what's happening is no surprise.

Lee Smith, ATP/CFII, is glad he's better at instrument flying than he is at chess when flying twin Cessnas in Maryland.

TERMINAL CHART CHANGES

The FAA Terminal Procedures Publication we rely on for IFR contains some significant changes that you might have missed. Here's a capsule update.

by Fred Simonds

How long has it been since you read the fine print that precedes the Terminal Chart section of the FAA's Terminal Procedures Publication? While many of us tend to think of it as boilerplate material to be overlooked, it has a great deal of important information for our IFR operations and, to top it off, the content evolves. Here are some notable changes that may have shown up since the last time you looked.

Inoperative Components (A1)

The Inoperative Components or Visual Aids Table has been updated to reflect changes in approach technology and now incorporates references to LPV, LNAV/VNAV and LNAV approaches.

Explanation of Terms (B1)

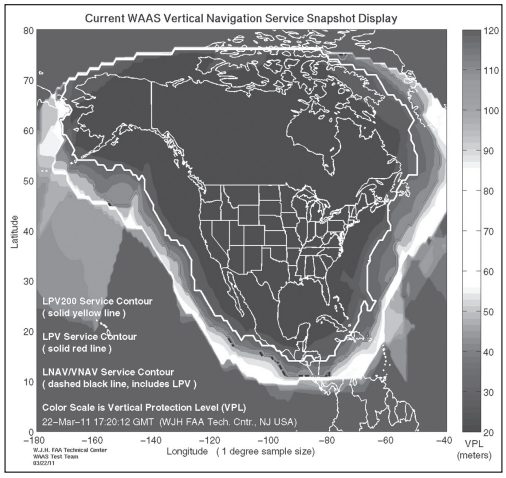
The Explanation of Terms/ Landing Minima Data on Page B1 has been changed so that RNAV (GPS) minimums are illustrated for LPV, LNAV/ VNAV and LNAV approaches.

Give special attention to the inverse white-on-black W symbol shown on some RNAV approach plates – they warn that WAAS vertical guidance may not be available, in which case only the LNAV can be flown.

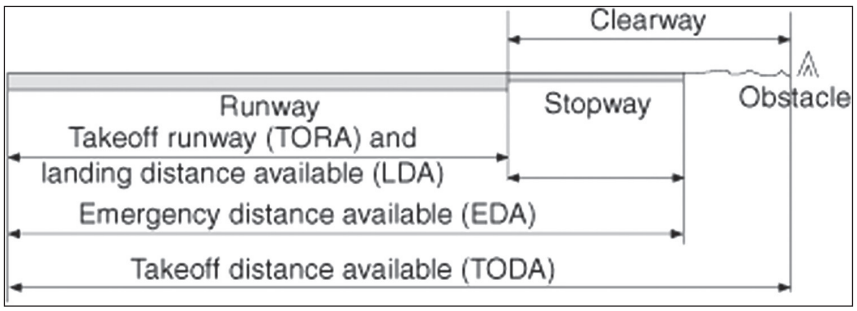
This is important because approaches so marked are **not** covered by WAAS NOTAMS, and the page advises that LNAV should be used for flight planning. However, you can fly the LPV or LNAV/VNAV if offered when you set up the approach. These notes are disappearing as WAAS coverage increases, but it is unwise to assume WAAS coverage 24/7.

For example, the FAA is currently testing future improvements to WAAS and there will be times and places where WAAS will be partially unavailable to pilots for IFR.

If you are unclear on the differences between the types of GPS approaches, brief definitions are given. The upshot is that you need WAAS for any kind of vertical guidance. Don't expect to find LNAV+V approaches listed as the +V vertical component is not validated



WAAS coverage was good on the day this screen shot was made. That's important if you need vertical guidance on a GPS approach. That is a color scale on the right and it denotes "Vertical Performance Level" in meters, lower is better.



Runway Declared Distance numbers are now published for some airports in the A/FD. You know to look there by the inverse white-on-black D in the runway diagram on the approach plate.

by field survey or TERPS criteria. (See IFRR "GPS Approaches Dissected", *IFR Refresher*, February 2010)

General Information (C1, C2)

The organization responsible for the plate is found in the center of the top margin. Most are FAA, but if the notation says FAA-O, it means that the approach was developed by a private organization but is FAA-certified.

The date of last revision for any reason is shown in Julian date format (YYDDD) in the lower left margin of each chart along with the notation Orig or Amdt number. As plates are amended, the Julian date is being moved to the top right margin of the chart and replaced with the more readable 30DEC07 format.

If you construct your own booklet of oft-used plates, you can see if they are still current by comparing them with current charts.

Plan View Symbols (E1)

This page is interesting because it illustrates how a flyover waypoint differs in depiction from a flyby waypoint. Flyover waypoints ("tag this base") have a circle around them for emphasis while flyby waypoints, where GPS turn anticipation can be used, do not.

Some plan views have a small "x" and a name. This computer navigation fix (CNF) defines a GPS navigation track that does not need to be a waypoint. I have seen CNFs used on NDB approaches even though the approach did not call for GPS. The same small "x" is used on SID and STAR plates to denote mileage breakdowns.

Profile View (F1)

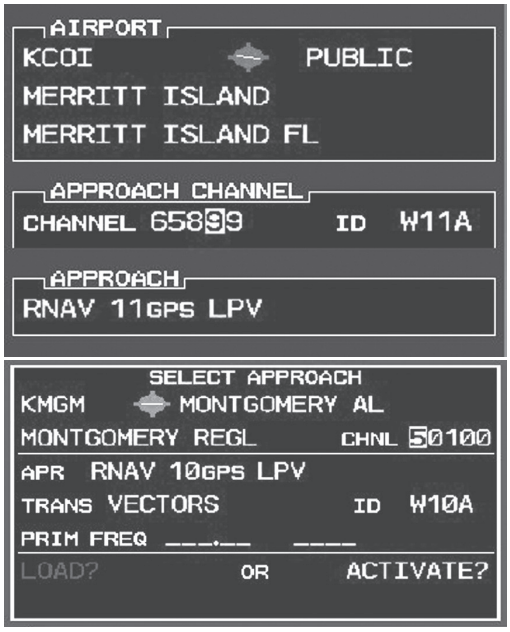
A visual descent point, marked by a heavy, bold **V** on a GPS approach profile indicates the point from MDA to the end of the runway at a three-degree angle. It precedes the missed approach point. If you go past the VDP at MDA, the angle increases until a normal descent cannot get you to the runway and a missed approach is in your future.

You have to read the fine print on this page to learn a little disconcerting news: if a shaded line extends from the **V** to the runway, there are no obstacles between it and the runway end. If there is no line, there is at least one obstacle, placing a descent in VMC from this point in the unwise category.

You can calculate your own VDP, anytime, anywhere, for any approach. Simply take the height above touchdown (that little number below your minimums) and divide it by 300. The result is distance to the runway in miles. When your GPS ticks down to that number, you're there.

Airport Diagram (H1)

There are a couple of new wrinkles here. Reflecting the FAA's ongoing campaign against runway incursions,



Entering a WAAS Channel Number on the G1000 MFD (top) and PFD (above).

hot spots are now denoted with a circle, and are itemized in text form on pages O1 and O2.

Some approach plates now include an inverse white-on-black **D** in the runway diagram box to indicate that "runway declared distance" information is available in the Airport/Facility Directory. TORA (takeoff run available), and LDA (landing distance available) are the same – the length of the runway.

Takeoff distance available or TODA adds stopway distance, if any, and clearway distance, which is the distance from the runway end to an obstacle.

Accelerate-stop distance available or ASDA is the length of runway plus stopway declared available and suitable for satisfying accelerate-stop distance requirements.

Approach Plates

Thankfully, approach plates are not just cobbled together by some invisible layout artist.

They are the product of careful human factors research by the Department of Transportation's pretty impressive brain trust at the Volpe National Transportation Systems Center in Cambridge, Massachusetts. The result is the so-called Volpe format we fly every day.

It was spurred into existence about ten years ago, after the NTSB identified nine aircraft accidents which implicated a then-cluttered and hard-to-read approach chart design as a contributing factor. Since then it has been adopted by Jeppesen, many airlines and the U.S. Air Force.

The Briefing Strip

Safety-critical information is presented first. Called the briefing strip, it includes primary navaid information, the final approach course, and landing distance/TDZE and airport elevation.

These days the navaid can be a GPS approach. If it's a WAAS approach, a largely ignored WAAS Channel number appears in bold. What can you do with it?

Using the channel number takes you directly to a WAAS approach procedure. It overrides any other airport and approach the GPS may offer. In a G1000, hit the procedure button on the PFD, then SELECT APPROACH. Cursor down to the second line, then right to the CHNL field as the figure shows.

Enter the channel number from the plate, in this case, 50100. The machine may anticipate and even beat you to the number you want. Confirm the ID number, here W10A. Hit enter and, wow, the approach comes right up! This also works if you hit PROC on the MFD, but you get a well-defined box instead.

Row two of the plate shows equipment and procedural notes all in one place, which helps pilots find what they need quickly, helps them read fine print in poor lighting, and makes sure they see notes that might get lost in a dense plan view. Interestingly, the approach lighting sketch now being used was recommended by an airline crew during a jump seat interview, and did well in field testing.

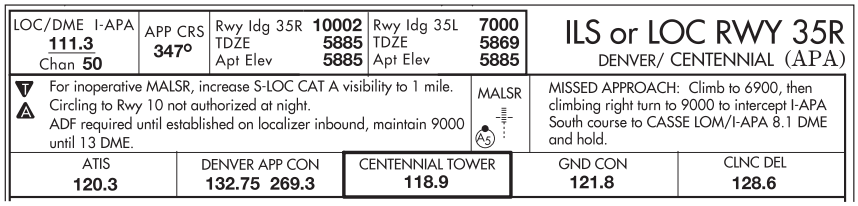
Row three offers communications frequencies. Listed in order of use. The numbers are always shown under their labels. They are placed here for verification, early radio setup or in case a comm channel gets blocked. Airline and GA pilots recommended that West and East frequencies be placed left and right respectively, so they are.

Profile View

The "up and out" portion of the missed approach is depicted in icons as opposed to text. They tell the pilot everything required to get the airplane up away from the ground and out of the area of obstructions. By its placement and presentation, it is more easily found than if it were buried in text.

The fine folks at the FAA Aeronav Products Group helped with this article. I thank them and note that they are located on Good Luck Road. Isn't that where you want *your* pubs to come from?

Fred Simonds is a Gold Seal CFII and factory-certified G1000 instructor. See his web page at www.fredonflying.com.



The briefing strip for the ILS or LOC RWY 35R at Denver Centennial Airport.