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IFR

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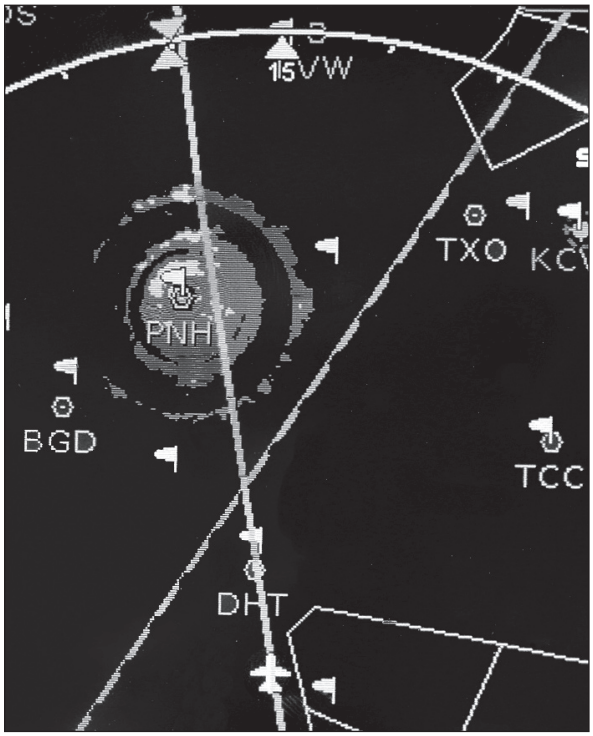
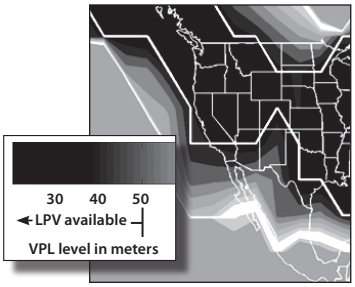
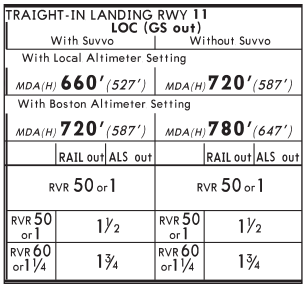


Are you really going to fly through that? ... page 9



No LPV 4 U ... page 18



TRAIGHT-IN LANDING RWY 11
LOC (GS out)

With Suvvo		Without Suvvo	
With Local Altimeter Setting			
MDA(H) 660′ (527′)		MDA(H) 720′ (587′)	
With Boston Altimeter Setting			
MDA(H) 720′ (587′)		MDA(H) 780′ (647′)	
	RAIL out ALS out		RAIL out ALS out
RVR 50 or 1		RVR 50 or 1	
RVR 50 or 1	1½	RVR 50 or 1	1½
RVR 60 or 1¼	1¾	RVR 60 or 1¼	1¾

Many minimums ... page 6

ALSO INSIDE THIS ISSUE ...

PRO PLATE BRIEFINGS

There are too many critical pieces of information on an approach plate for a haphazard brief. Here's a better way.

by Neil Singer

A key element of good single-pilot resource management (SRM) is performing safety-of-flight tasks in the same way every time. Ideally, it will be a way that maximizes efficiency.

Briefing an instrument approach procedure (IAP) is a prime candidate for a streamlined methodology that gives maximum results for minimum time and mental effort—both of which can be in limited supply single-pilot cockpits.. Too many pilots have a hit-or-miss brief, randomly taking in pieces of information until satisfied that the approach is briefed. An effective brief should include every relevant piece of information on a plate, yet be quick enough to be completed in less than a minute for all but the most complex approaches.

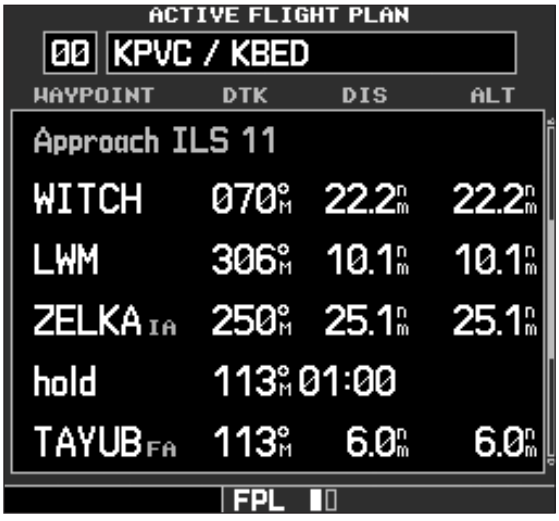
Talk to Yourself

I strongly recommend to my students that the brief be read aloud, even when alone in the cockpit. It may sound a little funny the first few times, but that verbal-aural feedback loop increases the chances of detecting an error. Somehow, saying out loud tickles the mind into asking, "Is that really what I just read?"

Brief early. Studies of human factors and errors in the approach brief have found that the brief should be conducted at least 10 minutes prior to top of descent. Workload is lower, as is the chance of interruption, which can lead to omission or errors. While we'll use a Jeppesen plate for reference, the same basic methodology will work with NACO charts.

Trust me: You'll start briefing the wrong approach plate at some time in your flying life. Get into the habit of beginning your brief with "This will be the ILS 11 to Bedford, Mass." If you're flying with another pilot who has a separate plate, brief the chart date as well: "Chart date 4th of May, 2007." It's nice to know that both pilots are flying off plates from the same Bush administration.

Next down is the communication line. No need to say these aloud; just let your eyes rest on each for a second. Pay particular attention to the Approach or Center frequency. This will nearly always be the last frequency prior to Tower or CTAF and the controller vectoring you and granting approach clearance. Remember this freq and you'll have a mental cue when things are about to get busy.



Left: *Load the approach into the GPS at the beginning of your brief and do a quick check that paper and screen show the same fixes. This is a good check that you have the right approach in both places and a heads-up if you'll need to calculate some stepdown that's not in the database.*

Continuing down the paper, we reach Jeppesen's Briefing Strip. This is some of the most important information on the approach—so important that nearly all of it can be found somewhere else, as well. We'll read aloud: "The localizer frequency is 111.15, inbound course is 113. We'll cross TAYUB at 1900 feet with a centered glideslope. Minimums are 383, which is 250 HAT. The airport elevation is 133 feet; touchdown zone is 133. We can go to 233 with the lights in sight."

Remember that if we see the approach lights, we can descend to TDZE plus 100 feet without ever having seen the airport. As is the case with the ILS 11, not all ILS approaches are to 200 feet above TDZE, so in some cases we can descend more than 100 below DA without needing to see the runway. In such a case, it's helpful to have a number in mind that represents the last legal chance to see the runway environment.

Nothing Missed

A missed approach is something that many pilots, particularly cautious pilots who set personal minimums above chart minimums, may never encounter outside the training environment. Executing a procedure we may not be expecting, and may not have practiced in a long time, calls for a thorough review and visualization of what will need to happen.

For the first go, we'll brief the entire missed approach procedure, and ensure we can visualize what the procedure expects of us. Additionally, we'll brief the two parts of a missed approach that are never explicitly spelled out on the plate: the very beginning and the very end.

By the beginning, we mean the aircraft-specific steps necessary to transition from a dirty-configured descent to a maximum performance

START AT THE TOP AND ORATE THE IMPORTANT STUFF

Ready to brief the approach to Bedford, Mass., (KBED)? Here's the scheme in the context of this plate.

Grab any plate for the airport to get the AWOS/ATIS and then pick your best approach. Read its title out loud and, if applicable, load the approach into your GPS.

You don't have to read the comm frequencies out loud, but go ahead and enter them into available radios as you go. Speak the nav frequencies and courses, and make sure you pre-tune what you can.

The best method for the comments box is to simply read every item one by one. Many of them are essentially meaningless (the transition altitude is always 18,000 feet in the lower 48), but taking them methodically extracts the wheat from the chaff. The Boston altimeter option should be a cue that your minimums may change.

Draw the entry heading right on the plate.

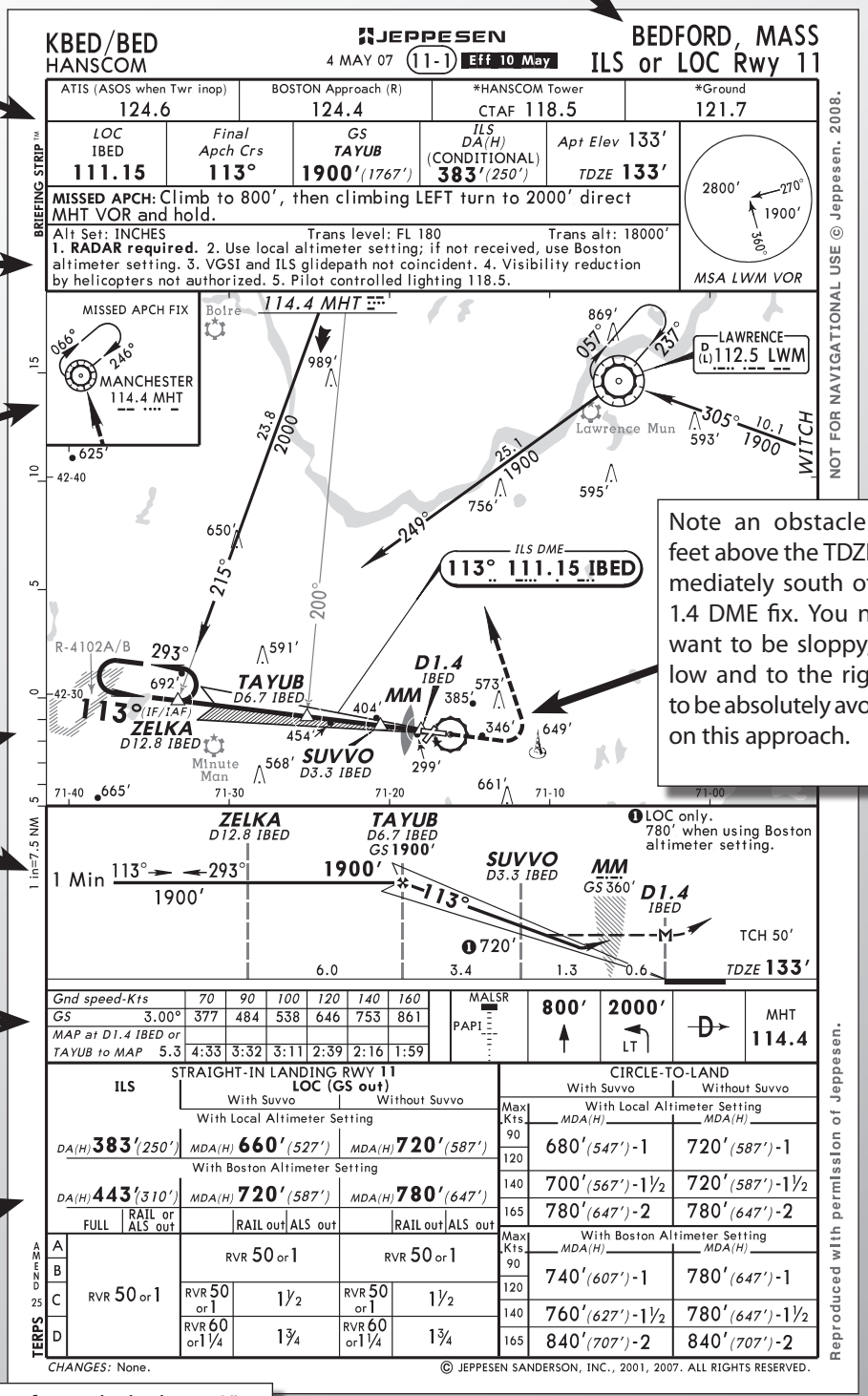
Nothing fancy. Just walk through probable courses and altitudes from where you are to where you want to go. Use both views.

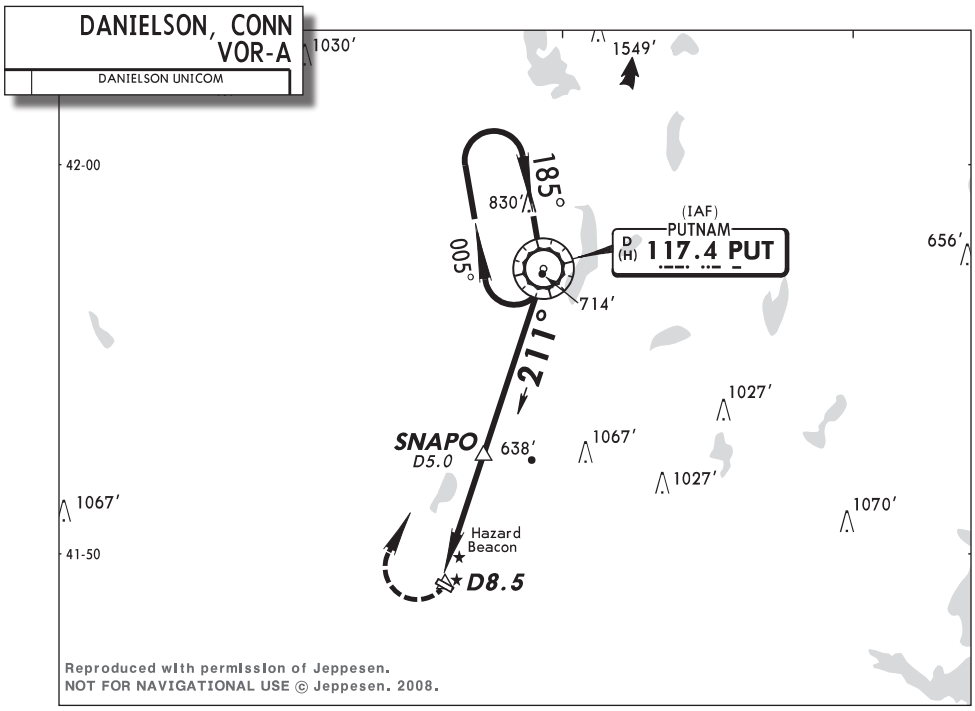
With the proliferation of point-in-space navigators, timing an approach is almost never required. Unless you have no source of distance information whatsoever (buy a handheld!) or are shooting an approach into a box canyon, don't waste mental bandwidth on the time to the MAP.

That's a lot of minimums. Best to find your number in the lot well ahead of the FAF. Also picture in your mind what lights you expect to see and which way off the nose, given the last wind report.

Note an obstacle 166 feet above the TDZE immediately south of the 1.4 DME fix. You never want to be sloppy, but low and to the right is to be absolutely avoided on this approach.

The final readback to yourself is, "How low, how far, and which way?" In this case, commit to memory "383" (which is both "how low" and "how far"), and "800 then left turn to 2000."





Left: *On the VOR-A to Danielson, Conn., (5B3), the course changes significantly crossing the Putnam VOR (PUT). About one in four pilots I've flown with miss the course change at the FAF, even if they've been warned that something's "different" about this approach.*

climb. This is something we don't do often, so expecting to just "wing it" is a recipe for a botched go-around. As for the end of the missed, while our charts give us a nice picture of the hold that caps off the missed, they don't specify how we'll enter that hold. We'll take a second, when we have that second to spare, so that if we draw the short straw today, we won't be quite so flustered. Determine both what holding pattern entry we'd like to use and to what heading we'll turn after crossing the holding fix, and write them down on the plate.

In a glass-cockpit Cirrus, the missed brief might go as follows: "In the event of a missed, we'll disconnect the autopilot, set full power, pitch to 12 [degrees], and [retract] flaps to zero. Reaching 800 feet, we'll OBS, GPS [OBS=enable waypoint sequencing to the missed; GPS=return the HSI to GPS guidance for the missed] climb left to 2000 feet and direct MHT. Crossing MHT, we'll teardrop entry by turning right to 036."

Read the Fine Print

Next is the small print in the comments box. This is easily overlooked, but can contain some property-threatening (or life-threatening) information. The first gotcha for which to be alert is any note on obtaining an altimeter setting. Many smaller airports have no source of local barometric pressure info, and require obtaining the altimeter setting from a nearby airport. That may require looking up an ASOS/AWOS frequency from another approach plate or retrieving it from a database, which is something you want to know about sooner rather than later.

Outside the FAF, I'll ask what altimeter setting we're using, and get a blank look in response.

I frequently see pilots miss the need for a remote baro setting. Outside the FAF, I'll ask what altimeter setting we're using, and get a blank look in response. MDA or DA may bring you as close as 190 feet to stationary objects. An altimeter setting from 50 miles ago can significantly cut into your safety margin.

If there's no Tower, or it's closed, make sure you can turn on the lights. Pilot-controlled lighting (PCL) is usually the same frequency as the CTAF or UNICOM, but if it isn't, that'll be in the notes. PCL activation has historically made the difference between a successful landing and a off-airport arrival with significant damage, so this is a big one to get right.

Plan and Profile

The purpose of the MSA box is to give an emergency altitude, so I'll simply brief the highest of the MSA segments. If I get so disoriented that my goal is simply to climb rapidly to a safe altitude (a TAWS warning, for example), then I'm too disoriented to know which pie slice I'm in. I'm going to the highest of the bunch.

Review the legs of the approach, including any expected transition. Note the course of every leg, ensuring the intermediate and final approach courses are the same, or noting the change, if different. Look for any obstacles close to your route, especially on the final-approach course.

Moving on to the profile view, brief stepdown by stepdown, and note how you will identify each stepdown. Here lies another common gotcha for pilots flying glass-cockpit, no-DME wonders: Not all stepdown fixes are coded into the GPS database, and will require either using a second navigator for pseudo-DME, or using along-track distance to the next named fixed to identify passing a stepdown.

The latter method does not require additional avionics programming, but will require mental math to recalibrate the numbers on the plate (based on DME) to numbers you'll see on your GPS. My historical training-pilot pool overwhelmingly

misses this until deep into the approach. Quick: balance a penny on your nose and subtract 2.5 from 6.1. I didn't think so. Do this calculation ahead of time. Write the numbers on the plate if you want.

Check the small table with time and vertical-speed info for several groundspeeds to catch a steep glideslope or to get an idea of what vertical speed will result in a stabilized descent to the TDZ for a non-precision approach.

Moving slightly right on the approach plate, review the approach-light configuration you can expect to see upon breaking out. In our case, "We have a MALSR system, with a PAPI on the left side of the runway."

Next re-brief minimums, verifying the correct number from what can be a field of DAs and MDAs. In our case, there are 18 minimums listed, combining permutations of five different variables: glideslope in service or not, local or remote altimeter setting, straight-in or circling, ability to identify the SUVVO fix, and aircraft speed.

Finally, commit to memory the items required inside the FAF: the DA or MDA, the determiner for the MAP, and the first step of the missed. In CFI speak, that's "How low, how far, and which way?" From the FAF inbound, all attention should be on the instruments, with no more reference to the plate.

Easier Done Than Said

As is the case with many things in aviation, it takes much longer to explain this process than to complete it. With practice, you should have no trouble completing a thorough briefing of an approach in under a minute. The process becomes more streamlined and automatic with practice and frees grey matter for the act of flying the approach itself, which is what it's all about.

Neil Singer is a CFI and turbine mentor pilot in the Northeast.

WEAVING RADAR MOSAICS

The NEXRAD image on your MFD combines various parts reality and best guesses. It may also omit some seriously nasty stuff.

by Scott Dennstaedt

Radar images beamed to our cockpit from satellites have become nearly indispensable. That little satellite receiver practically gives the pilot super powers. But glossing over the finer points sets you up for an unpleasant surprise someday.

We'll talk about the XM-based WxWorx radar image here. The radar image from WSI has some differences, but produces a nearly equivalent image most of the time.

Customized Radar

The weather radar product that eventually ends up on your portable or panel-mounted display is derived from NEXRAD, but it's not the same as the image you see on your favorite web site nor is it the same as the image seen by the radar operator at the local weather-forecast office. XM Satellite Radio may broadcast the image, but it's actually a radar mosaic produced by WxWorx.

Why not just pipe the raw National Weather Service (NWS) image down to your receiver? Because the image would contain many non-precipitation returns referred to collectively as ground clutter, making it difficult to interpret. The pilot wants to see only real precipitation. The raw radar data is generated by a network of NWS radars, which means you'd be required to select specific radar sites as you flew your route.

A better solution is a single, seamless image, called a radar mosaic, for the whole country. WxWorx, based in Huntsville, Ala., collects the data from 142 NWS radar sites into one continuous radar mosaic. They also attempt to improve the raw NEXRAD data by filtering out undesired radar returns, which means the raw data

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Below: *A tornado over Amarillo, perhasp? Sometimes ground clutter slips through the filters. The circular pattern shown here over the Panhandle VOR (PNH) is a perfect example of what you'll typically see. The skies were essentially clear as we flew over.*