

The Magazine for the Accomplished Pilot

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Fly in the winter and you're gonna see ice eventually. The savvy pilot has a plan A to get through it and a plan B to get out alive.

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No one can read them all, but you're responsible for knowing every one. Here's a better way.

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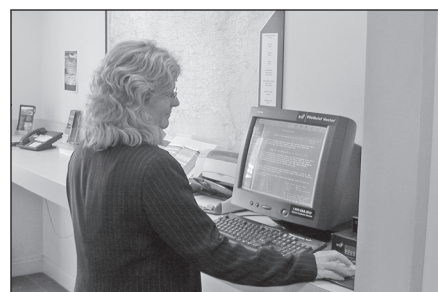
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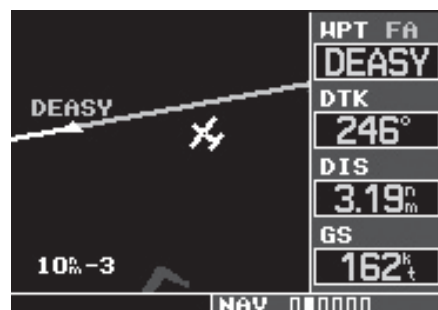
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WAYPOINTS GO AWOL

The automation built into panel-mount GPS units saves time and reduces pilot workload. That is, until they reduce things too far.

IFR Staff Report

In a radar environment, direct routings and vectors to final are blessings for both the pilot and the controller. A panel-mount IFR GPS usually makes everything easier, but occasionally these smart boxes seem to go stupid. Here are two tips for squeezing a little more utility — and a little less frustration — out of two popular Garmin boxes.

Vectors to Final

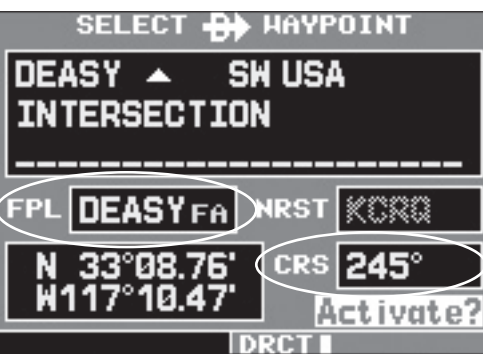
In most cases, activating vectors-to-final (VTF) on your GPS provides you with ample situational awareness for the precision or non-precision approach. Activating VTF on the Garmin GNS 400- and 500-series navigators has one nasty side effect: It may remove intermediate navigation fixes from the display that are outside of the final approach fix (FAF). When the glideslope on an ILS

is functional, this is not as much of an issue. When the glideslope is out of service, these step down fixes may be crucial to your approach.

The ILS Rwy 24 at Carlsbad, Calif., (KCRQ) uses ESCON as an intermediate fix outside the FAF. ESCON is also used as an en route fix as part of your ATC clearance when coming from the Julian VOR (JLI) east of Carlsbad. Prior to reaching JLI, SOCAL Approach may call with “Expect vectors to the ILS 24 at Carlsbad.” You load the ILS 24 approach beginning at the JLI VOR with plans to activate it crossing JLI.

West of JLI, SOCAL approach informs you that glideslope is out of service and clears you direct to ESCON at 6,000 feet. Once we are comfortably over the ridge, the next controller drops us down to 3,500 feet and adds, “Turn right, heading 280, intercept the localizer, report established.” You dutifully make a slight right turn to a heading of 280 degrees and select “Activate Vectors-To-Final” on the GNS 430. That was quick and easy.

Our first step down fix is at ESCON since the glideslope is out of service. But where is ESCON? It was there a moment ago, but Garmin’s VTF conveniently removed it from your display.



While this isn’t catastrophic, it can distract you from the task of flying the localizer or give you uncertainty where to start your descent. Scrambling around to discover the location of an important waypoint late in the approach is a bad habit.

There are many ways to identify ESCON other than with your GPS. If you have RMI or a second VOR, the ESCON fix is at the 002 degree radial off the MZB VOR, or DME 25.2 from JLI, while also established on the ICRQ localizer. It’s also 4.5 miles from DEASY along the localizer. You could bring up the nearest intersection page or zoom in until you are displaying all intersections to see it on the map. Any of these could do the trick but isn’t the point of the GPS with a moving map to make things easier?

Keeping Fixes

Instead of VTF, once you’ve received your first official vector, load and activate the full approach starting from any transition or IAF (it doesn’t matter which one). Next, go to the active flight plan page, activate the cursor and scroll down to the waypoint that has an “FA” next to it — in this case DEASY — and press “Direct To.” We are not really going direct to the FAF; we’re still on a vector and our autopilot is tracking the last ATC assigned heading and altitude.

In the lower right corner of the “Direct To” window, enter the inbound course (CRS) of 245 degrees, which is the inbound course to DEASY. Press “Enter” twice to activate and you are done. At this point you have a magenta line that extends from the final approach fix outward — identical to VTF — but leav-

Left: Fixes outside the FAF can disappear with VTF (far left, upper). To make them persist, but still see the extended final approach course (far left, lower), use direct to the FAF but on a course matching the course shown on the approach plate.

Right: When following your GNS 480 into KCRQ via direct to the airport (upper left), the approach may not appear on the map no matter how you load and activate it. Fix it by going to the flight plan and entering direct to the FAF (upper right). Now you can see the full approach or VTF (left and right middle).

ing all of the intermediate fixes in place. Once you cross the FAF, the GPS sequences to the leg that follows. Problem solved.

The only gotcha is with approaches that have a slight bend at the FAF. In this case, enter the course inbound to the FAF, not the course from the FAF to the missed approach waypoint (MAP).

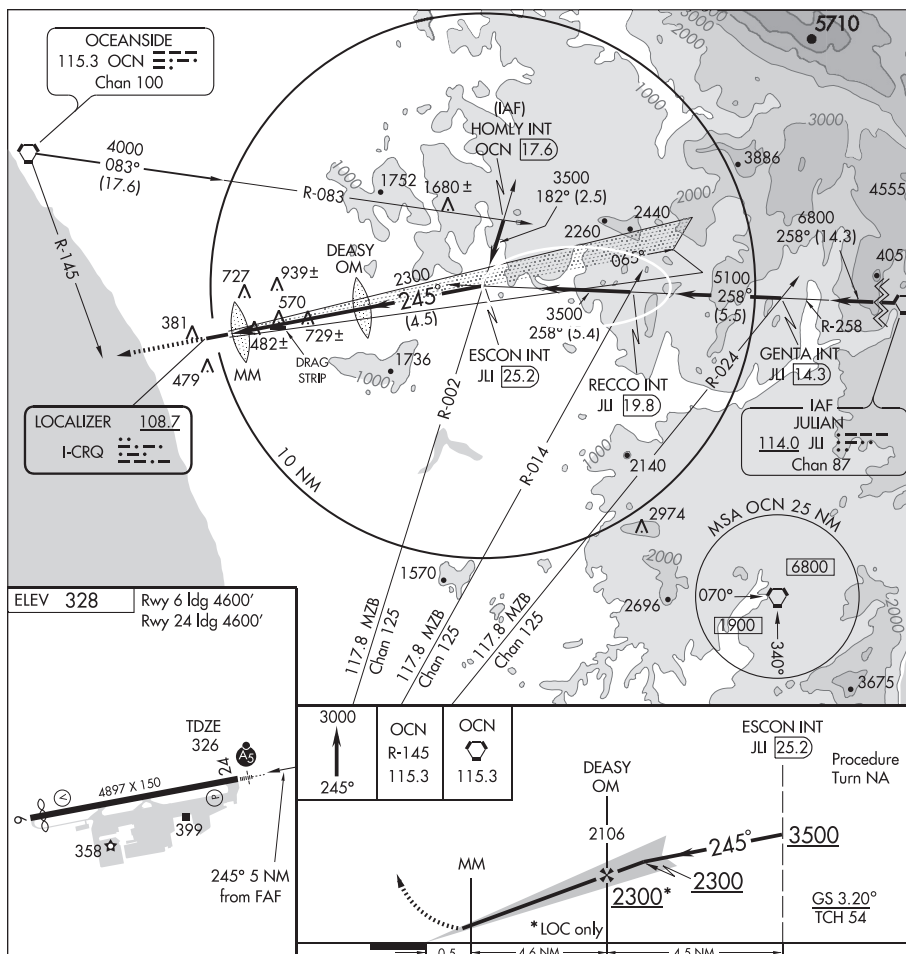
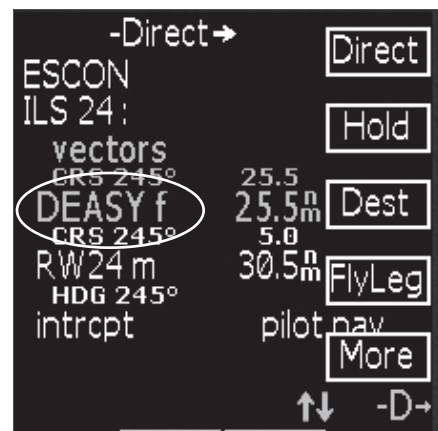
This may seem like a lot of trouble for a relatively small gain. But it's better than fumbling through nearest intersection pages one mile from a step-down fix that should normally involve just quick glance to determine your location.

The Ghost Approach

The Garmin GNS 480 doesn't declutter its screen when VTF is activated the same way the GNS 400- and 500-series units do. Activating VTF with the 480 creates the same magenta line extension from the FAF, but all the other waypoints persist — or can be quickly seen from scrolling to another map page or by calling them back from the MENU button. If the vector takes you to a flight plan/approach waypoint, the 480 will automatically sequence to the appropriate leg.

But there are cases where the 480 might leave you without an active leg. If you are VFR flying direct to the destination and discover an approach is needed when you arrive, the process is to press PROC, select the appropriate approach, and load or execute it. You might be in for a surprise, though, when you execute the full approach or VTF. Since the active waypoint is the destination airport, if the approach doesn't use

(continued on page 23)



QUIZ ANSWERS *(questions on page 19)*

1. **b.** (AC 00-45E, Aviation Weather Services - NWSPD 10-8)
2. **a.** (AIM 7-1-32, Aviation Weather Services - NWSPD 10-8)
3. **b.** TS in the primary weather group means thunderstorms are expected to roll through the terminal area. VCTS means that there is a greater than 50% chance of thunderstorms in the donut-shaped vicinity. CB (cumulonimbus) in the cloud group without a TS or VCTS is a hint from the forecaster that thunderstorms may lurk just outside the vicinity of the terminal area. (Aviation Weather Services - NWSPD 10-8)
4. **d.** This is a forecast for non-convective low-level wind shear. The winds will rapidly increase from the surface to the speed and altitude specified in the forecast. (AC 00-45E, AIM 7-1-31, Aviation Weather Services - NWSPD 10-8)
5. **d.** Light and variable winds will be shown as VRB03KT and you might see VRB35KT when thunderstorms are expected in the terminal area. (AIM 7-1-32, Aviation Weather Services - NWSPD 10-8)
6. **d.** There are no official contractions for a severe storm since the likelihood is so small. However, the forecaster will use a forecast for high winds and hail such as VRB50G65KT 1/4SM +TSRAGR OVC005CB to signify the potential for a severe storm. Note: The "+" is a modifier for the rain, not the thunderstorm. (Aviation Weather Services - NWSPD 10-8)
7. **b.** Although, d seems to be just as likely. (AIM 7-1-32, NWSPD 10-8)
8. **d.** The NWS directives prohibit PROB groups in the first nine hours of the forecast, including amended forecasts. The forecaster must use FM (from), BECMG (becoming) or TEMPO (temporary) groups for the first nine hours of the forecast. Also, only PROB30 groups are used in the U.S. (Aviation Weather Services - NWSPD 10-8)

WAYPOINTS GO AWOL

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the destination airport in the approach, the GNS 480 won't show the approach course on the Map page. The issue is that the GPS needs a waypoint or a leg that is part of the approach so that the navigator can begin sequencing.

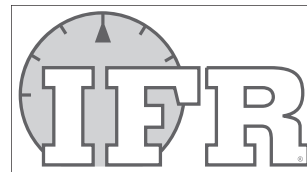
If after pressing PROC and selecting the appropriate approach you notice that there is no approach leg, press Direct and select the FAF. At that point, the final approach course will be the target and as they vector to the final approach course, the navigator will be locked and loaded, prepared for the final approach course. As the aircraft merges with

the final approach course, that leg will become the active leg and the approach can be flown. If you want the VTF extension, after activating Direct to the FAF, you can activate VTF and the VTF extension will appear.

Mastery of the Box

While no one will claim an IFR GPS is as simple to use as the dirt-simple VORs, it is true that just a basic understanding of how to use the boxes will give you a lot of utility.

The power-user of the panel-mount GPS, though, is the pilot who knows when and how to tweak the stock functions and procedures. That gets maximum utility out of the fancy box while still ensuring the pilot always has a leg to stand on.



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