

When Are You A Non-Radar Arrival?

Even though you might be on radar, there are times you're expected to fly the entire procedure.

By Wally Roberts

IT'S NORMAL TO GET RADAR VECTORS to the "final approach course." However, when faced with a non-radar transition from the en route structure to the approach, you're sometimes faced with complex and ambiguous options. Unfortunately, the FAA hasn't provided any good guidance information in this area for a very long time.

You're responsible for executing an approach in its entirety, with only the following three exceptions: a radar vector to either the final approach course, or (in unusual circumstances) to an earlier segment of the IAP; a visual approach; or, a contact approach. Unless you're vectored to the final approach course, you're a non-radar arrival for purposes of the approach procedure, even though ATC might see you on radar.

Some ATC radar facilities improvise clearances by short-cutting a required segment of an IAP, without providing radar vectors in accordance with the ATC Handbook. Since controllers aren't trained on instrument approach criteria (TERPs) and requirements, if they approve a pilot request for a "short-cut," that approval is only based on other IFR traffic, and in no way relieves the pilot from the procedural requirement (FAR 97) of flying the full approach procedure.

Where you begin

In November 1994, the FAA chief counsel issued a legal interpretation that reaffirmed the implicit intent of TERPs criteria, which requires a non-vectored instrument approach to begin at the appropriate initial approach fix (IAF), and (where appropriate to the route) that any published feeder route be used. In unusual circumstances (where an approach doesn't have an IAF), the intermediate segment must be entered directly from the airway that leads to the FAF.

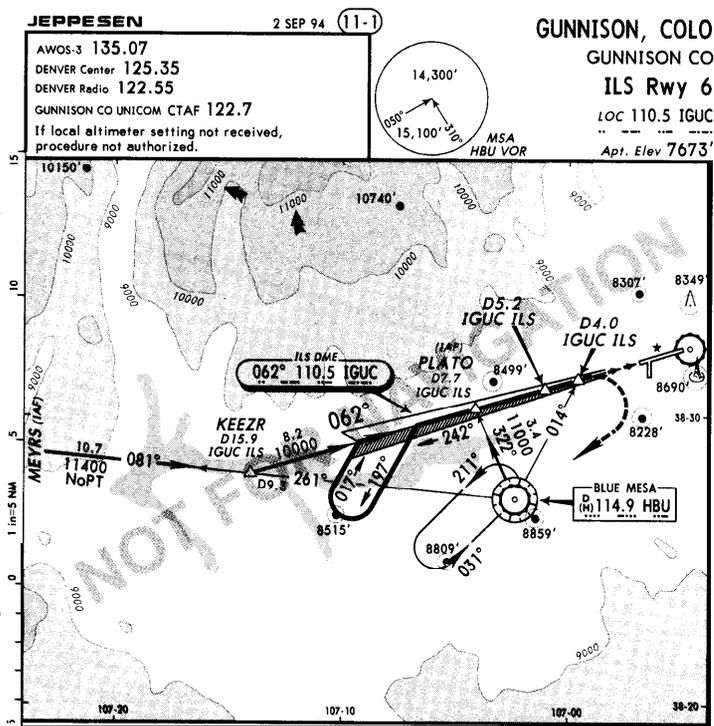
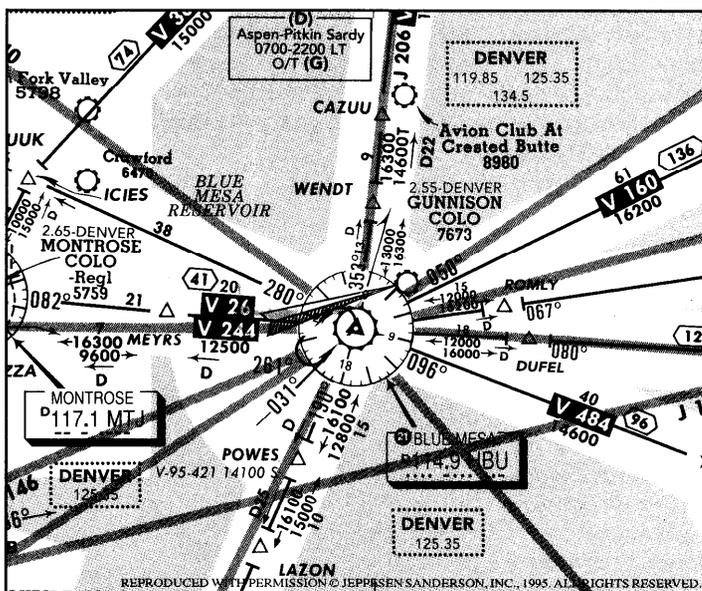
The letter further states that a course reversal must be executed, unless one of the three requirements of FAR 91.175(j) is satisfied, or, unless the IAP doesn't have a published course reversal. Finally, the letter states that a published DME arc can only be started at the published IAF for the arc (this last item has raised a lot of contro-

versy, and begs for some long overdue updating of the TERPs criteria).

The TERPs criteria serve not only to provide vertical and lateral protection from obstacles, they provide smooth blending of

the approach segments to accommodate aircraft turning and descent gradient requirements. At mountainous airports, every aspect of the IAP is critical. But, some of

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When Are You..

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the stuff seems a bit arbitrary at flat-land airports, especially where pilots have good local knowledge.

The folks who develop the IAPs must make judgment calls about local traffic flow and chart readability. There is certainly room, however, for improvements in the criteria used to develop feeder routes and initial approach segments, especially with the emergence of IFR GPS procedures. Your best policy is to conform with the transition requirements of an IAP 100 percent of the time. This ensures safety throughout the system, and could keep an inspector at bay someday.

Only the pilot can determine

There are two fundamental principles of non-radar terminal operations: *the pilot and the controller are cooperative partners for the purpose of ensuring separation between IFR aircraft, but only the pilot can determine the procedural requirements of an IAP* Second, *when there's the slightest question that a particular method of transition could compromise separation, the pilot is duty-bound to apprise the controller of the proposed course of action*. The following examples demonstrate some of the requirements and complexities of non-radar transitions.

Mandatory course reversal

Refer to the Gunnison, CO ILS Runway 6 and en route chart (page 5). This procedure has two IAFs: Meyrs (20 DME west of HBU VOR) and Plato (on the localizer). Plato is also the FAF, which makes it an IAF/FAF dual fix. When a fix is both an IAF and FAF, there is always a published course reversal, and the fix must be treated as an IAF when first overflown, unless you've flown to it via a "NoPT" route. Also, the course reversal is mandatory, unless you reach the fix via a NoPT segment. Since Meyrs requires DME, the NoPT transition from the west via V-26/244 is only available to DME-equipped aircraft. The only other way to transition to this approach is from the HBU VOR to Plato via a short feeder route (322 degrees, 3.4 miles at 11,000 feet).

An aircraft arriving from any route other than from the west on V-26/244 must transition via the HBU-Plato feeder route. Some pilots arriving over HBU from the north, east or south might be tempted to fly

out the 261-radial to Keezr, then make a right turn for a straight-in. Not only is this route not a published feeder route, it doesn't lead to an appropriate IAF. Further, ATC would likely get upset, since proceeding out the 261-radial would be operating westbound on V-26/244 without a route clearance.

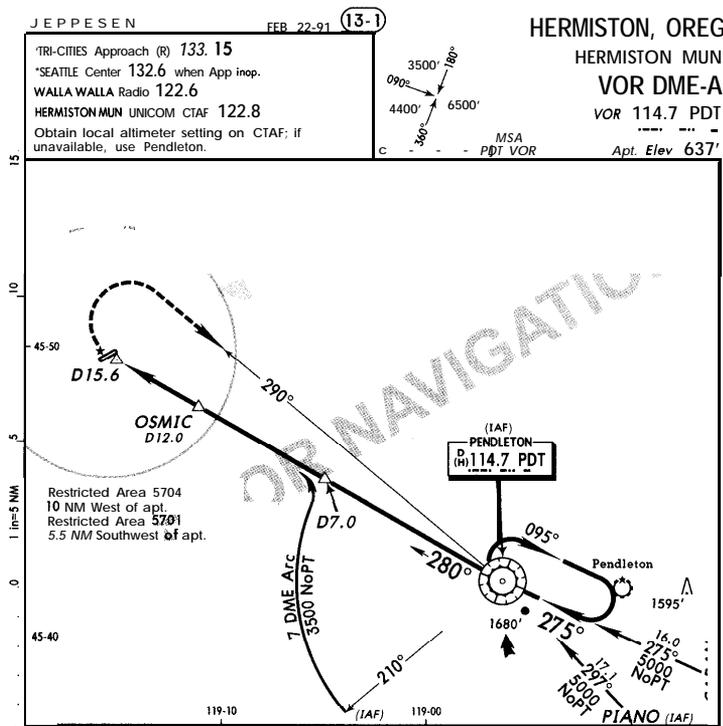
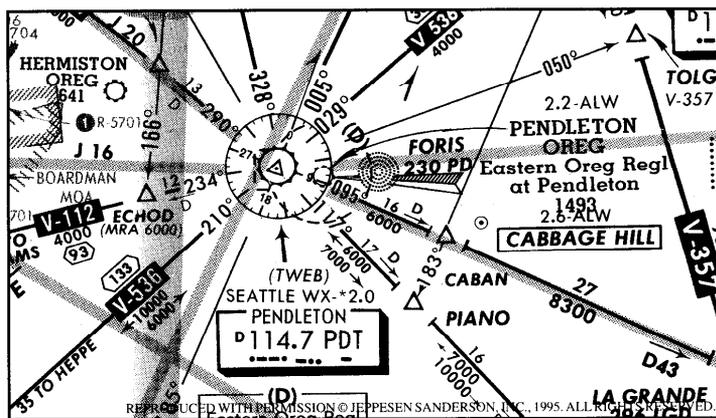
What you're cleared to do

Here are two more important principles: *An approach clearance only includes feeder routes and initial approach segments appropriate to the previous route clearance. It does not include airways beyond the last*

route clearance. A bsent any ATC clearance to the contrary, the approach should begin from the first feeder route or IA F encountered, and for which the aircraft is equipped to use. For example, a pilot arriving from the east could ask to proceed out V-26/244 to Keezr, and ATC might approve the request, based on a lack of other IFR traffic. Although that would satisfy traffic separation requirements, it still wouldn't be in compliance with the requirements of the approach procedure.

The HBU-Plato feeder route is tricky, due to its short length (3.4 nm), followed by

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Any arrival from PDT (except for arrivals from Caban or Piano) is required to execute the course reversal, since none of the other airways are NoPT feeder routes.

a large turn to capture the localizer outbound. Aircraft without DME must be especially vigilant, or you could easily pass through the localizer, and, at 11,000 feet and 322 degrees, you'd be in the rocks in less than 10 miles.

Also, contrary to some opinions, you're well advised to capture the localizer outbound, rather than paralleling it outbound on the non-turning side. A pilot arriving from the north must be alert and plan to make the turn on the HBU-Plato feeder route, followed quickly by the turn to intercept the localizer outbound. A high-speed airplane should slow to 160-180 knots prior to HBU.

Special attention must be paid to the complex MEA structure of airways in mountainous areas, such as Gunnison. If you're cleared for the approach while still on an airway, ATC has no obligation to provide you with an altitude since you're on a published route. Carefully select the applicable minimum altitude for your position on the airway, with particular caution in selecting the correct MEA for your direction of flight. You should be on speed and minimum altitude when departing the en route structure on to either a feeder route or an initial approach segment, but not at the expense of busting a minimum altitude.

DME required

Refer to the Hermiston, OR VOR/DME-A and en route chart (page 6). Arrivals from the southeast from either Caban or Piano are established on a NoPT initial approach segment, so the course reversal isn't allowed (unless specifically authorized by ATC). An aircraft arriving from the southwest on V-536 is expected to fly the 7-DME arc initial approach segment, since this is a DME-required procedure.

If DME wasn't required, and you didn't have DME, it would be wise to advise ATC that you need to start the approach from PDT. This could save a lot of misunderstanding, especially since so many aircraft have DME, and the controller might predicate non-radar separation on the expectation that the arc will be flown.

Any arrival from PDT (except for arrivals from Caban or Piano) is required to execute the course reversal, since none of the other airways are NoPT feeder routes. The maximum course change permitted for a NoPT designation at an IAF like PDT is 90 degrees, but V-536 from the southwest exceeds this limit. The airways from the north on both the 005 and 029-radials meet

the criteria for a NoPT designation, but the FAA elected not to designate those routes, probably to reduce chart clutter. This makes the course reversal necessary for arrivals along these two routes, and demonstrates lack of uniformity in procedures. At some locations like this, the FAA designs "NoPT arrival sectors," but Hermiston didn't get this obviously preferred treatment. If nothing else, this serves to demonstrate that not all IAPs are created equal.

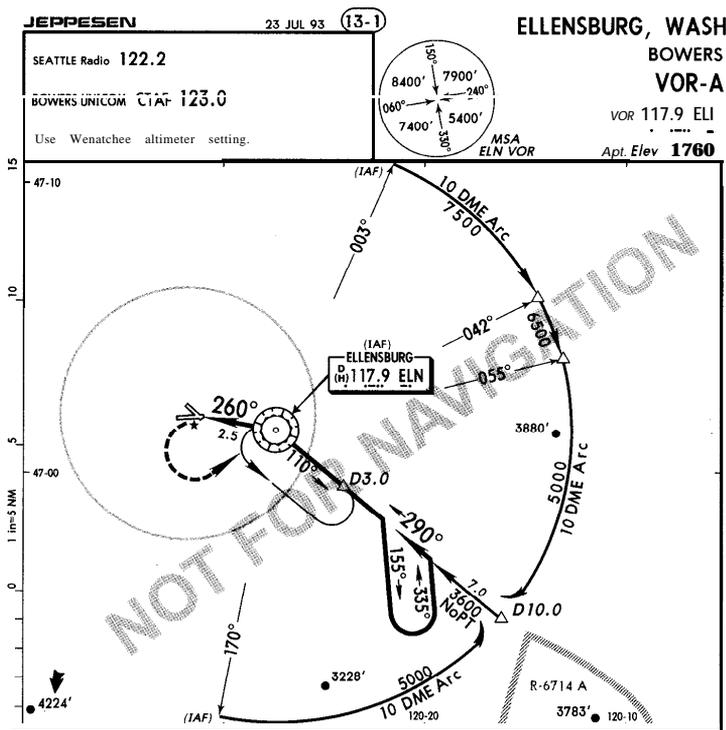
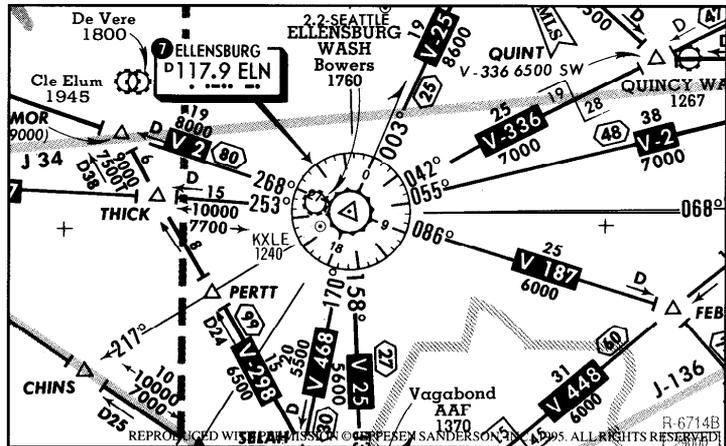
An aircraft arriving over PDT cannot proceed southwest on V-536 for the arc initial segment unless specifically cleared by ATC. This is because V-536 is an airway,

not a feeder route or initial segment for this procedure.

DME not required, but_

Refer to the Ellensburg, WA VOR-A and en route chart (below). While this procedure doesn't require DME, it's a lot easier with it. The only way to get on the NoPT intermediate segment is via the 10-DME arc. Otherwise, you must start the approach from the ELN VOR, and execute the procedure turn. The ELN VOR is both an initial approach fix for the course reversal, and the final approach fix. Unlike the previous

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The DME arc can only be entered from either V-468 from the south, or from V-25 from the north. At this location, all airways that intersect the published arc meet TERPs criteria for establishing the arc.

