Oddball Approach Charts

Instrument approach design philosophies sometimes defer to the politics of expediency.

By Wally Roberts

A STANDARD INSTRUMENT APproach procedure (SIAP), followed by a visual segment from below MDA/DH to landing, is the presumed termination of an IFR flight plan. In fact, that is exactly what FAR 91.175(a) prescribes. Sometimes, however, local airport environmental or traffic conditions dictate approach charts that can only be considered to be oddballs. Charted Visual Flight Procedures and some SIAPs with peculiar, elongated visual segments or extreme offsets fall into this oddball category.

Usual SIAPs

At most locations, SIAPs are designed to be as favorable to instrument flight operations as local terrain and environmental circumstances will permit. The preferred approach is a standard ILS, where the money is available and the approach path obstacle environment will permit the installation of a full ILS. Secondary airports must often be satisfied with less accurate approaches, based on VOR facilities some distance from the airport. GPS, of course, is in the process of rectifying navaid distance problems at secondary airports.

Verbal visual approach

Even at primary airports, IFR traffic flow can be considerably expedited during good weather conditions by "the Administrator" exercising her exception authority granted by FAR 91.175(a). The vehicle for circumventing full instrument approach procedures during good weather conditions is the visual approach. (Cancellation of IFR is quite different in that the flight is then strictly under VFR without a flight plan.) Usually, the visual approach is simply given as an ATC clearance in lieu of the charted SIAP.

At some locations, however, the visual approach is charted, thus taking on the flavor and appearance of an instrument approach procedure. A visual approach is in no way an instrument approach procedure, rather (according to the AIM), "Visual approaches are an IFR procedure conducted under IFR in visual meteorological conditions."

Once accepting a visual approach, a pilot becomes responsible for terrain and other obstacle clearance, has forfeited automatic missed approach protection, and has also forfeited the right to operate inside "clouds." The not-for-hire pilot isn't bound by the VFR clearance-from-cloud requirements

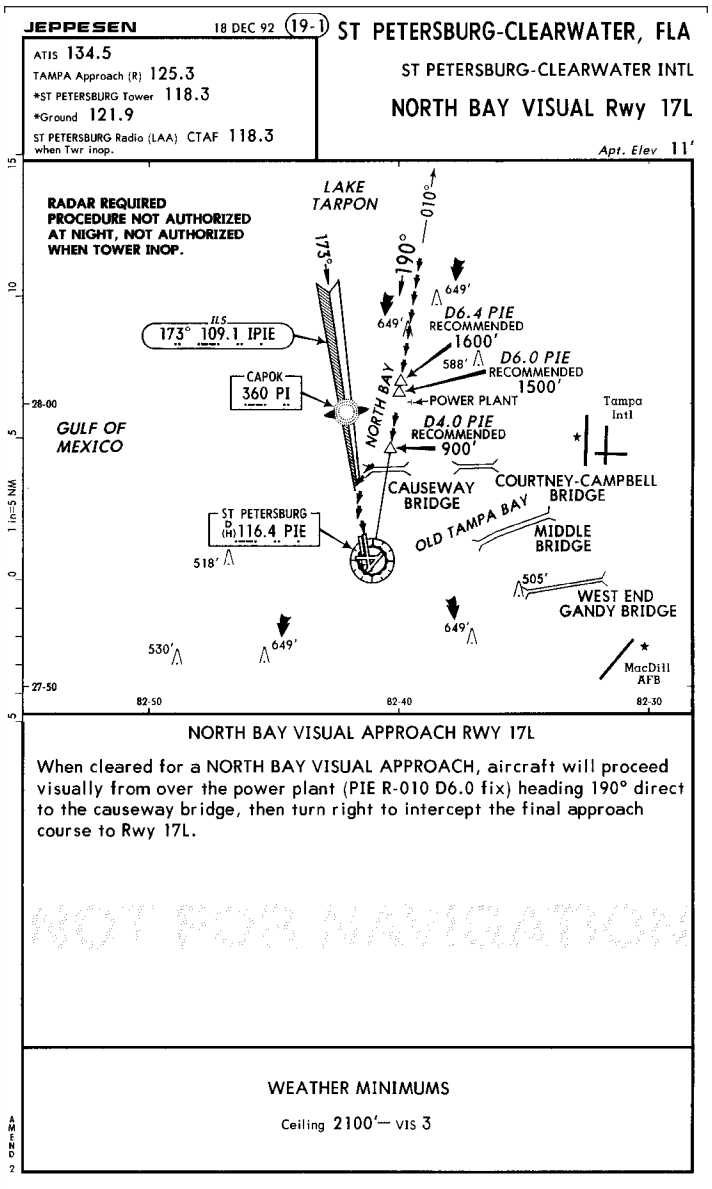

***Figure 1**. Once accepting this procedure, you're responsible for adhering to the prescribed flight track. The "recommended" altitudes should be considered mandatory.*

during a visual approach, and the legal minimum flight visibility during a "not-for-hire" visual approach has never been defined. On the other hand, the for-hire pilot usually must adhere to all VFR operating requirements applicable to the class of airspace during a visual approach.

During a visual approach, you're still being separated from IFR aircraft you haven't reported sighting. At controlled airports that are the primary airport for a radar approach control facility, ATC provides an IMC "go around" in the event you cannot maintain VMC and so report to ATC. At uncontrolled airports, ATC won't provide this IMC "go around" option, so you better be 100 percent certain you can easily maintain safe and legal VFR before accepting a visual approach at an uncontrolled airport. At controlled airports where radar coverage is dicey, the tower will provide an "appropriate advisory/clearance/instruction" that might or might not authorize further flight into IMC, depending upon local circumstances. Moral: With visual approaches, let the "buyer" beware during marginal weather conditions.

Visual weather minimums

Until jet aircraft were introduced into air carrier operations, the airlines often flew VFR on clear days, or canceled IFR well prior to the instrument approach phase of flight. However, that all changed with the advent of jet transports. Because jets must be operated IFR to gain access to Class A airspace, the advent of the jet converted airline operations to IFR, 365 days a year. Both the airlines and the FAA discouraged cancellation of IFR for arriving jet airliners.

This boggled the minds and best laid plans of air traffic managers at busy airports. As a result, the visual approach was invented as a traffic-moving option to cancellation of IFR on VFR days. At first, visual approaches were limited to radar approach controlled airports, and only when reported ceilings were at least 500 feet above the pertinent minimum vectoring altitude, and the airport's reported visibility was at least 3 miles.

Today's policy rules (not regulations) permit a visual to be authorized at any airport where the weather is reported to be at least 1,000 and 3 or, if there is no weather report, there "is a reasonable assurance" that the local weather is at least 1,000 and 3.

Charted Visual Approach

A charted visual approach is officially termed a "Charted Visual Flight Procedure (CVFP)," which was chosen to avoid the use of the word "approach" because it appears in a form normally used for instrument approach procedures. Why do we have CVFPs at all, when the verbal visual approach clearance seems to fill the bill at most places when the weather is good?

CVFPs had their inception at major airports where regimented visual flight tracks were needed for jet transport arrivals. Everyone involved with jet operations realizes the VFR minimum of a 1,000-foot ceiling is inadequate for jet operations. So, ATC managers came

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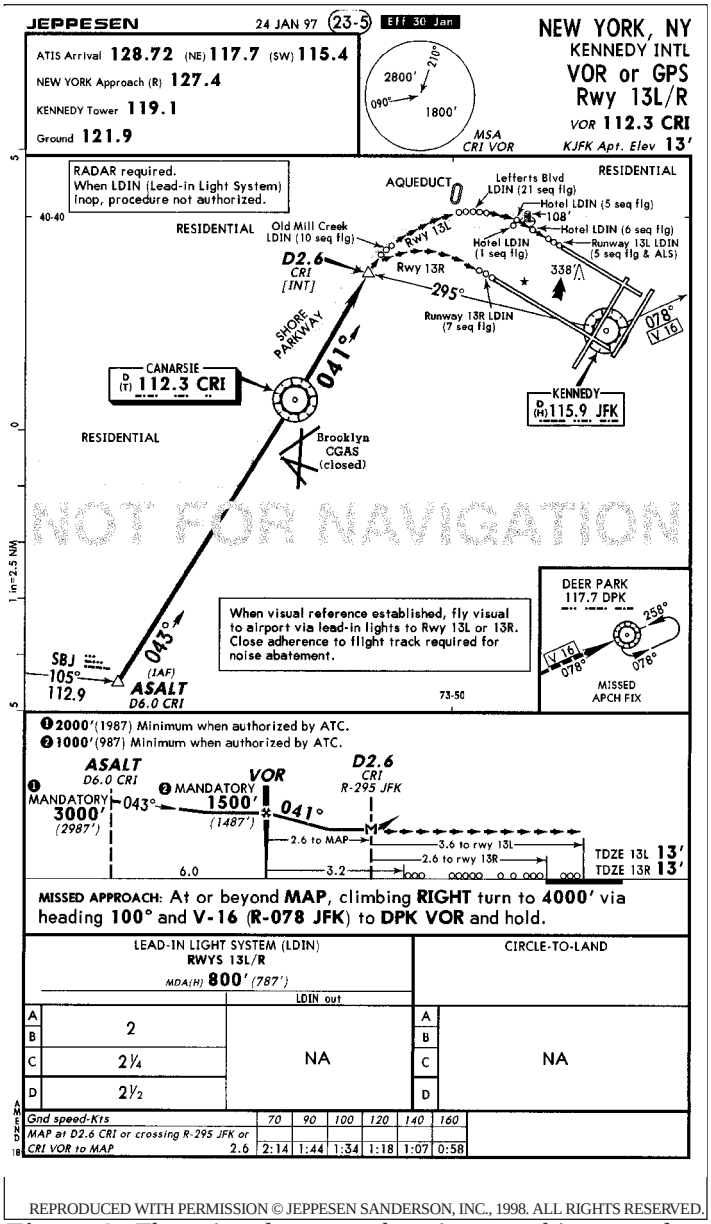

***Figure 2**. The missed approach points on this procedure are so far from the airport that the result is nothing more than a bad-weather visual approach procedure.*

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up with the CVFP concept to both chart regimented visual flight tracks, and to provide realistic weather minimums at a given airport for visual maneuvering and descent of large jet aircraft. Many CVFPs require minimum conditions of 2,000/5.

In keeping with the long-term "progressive" habit patterns of FAA ATC managers, CVFPs are no longer limited to being used primary by airline jets. Figure 1 (page 10), the North Bay Visual for Saint Petersburg (PIE), FL Runway 17L is a case in point. I suspect we'll see more of these procedures at general aviation airports that are in close proximity to major air carrier airports, especially where there's a noise problem along the normal instrument approach flight paths.

Note the PIE visual procedure requires a ceiling of 2,100 feet, and a minimum reported visibility of 3 miles. Once you accept this procedure, you're responsible for strictly adhering to the prescribed flight track. And those "recommended" altitudes should be considered mandatory, unless you know with *certainty* that isn't the intent of the local ATC facility. The only reason they aren't marked as mandatory is because the FAA legal beagles won't allow such absolute language on a charted visual procedure.

The illustrated CVFP is fairly straightforward, especially for those

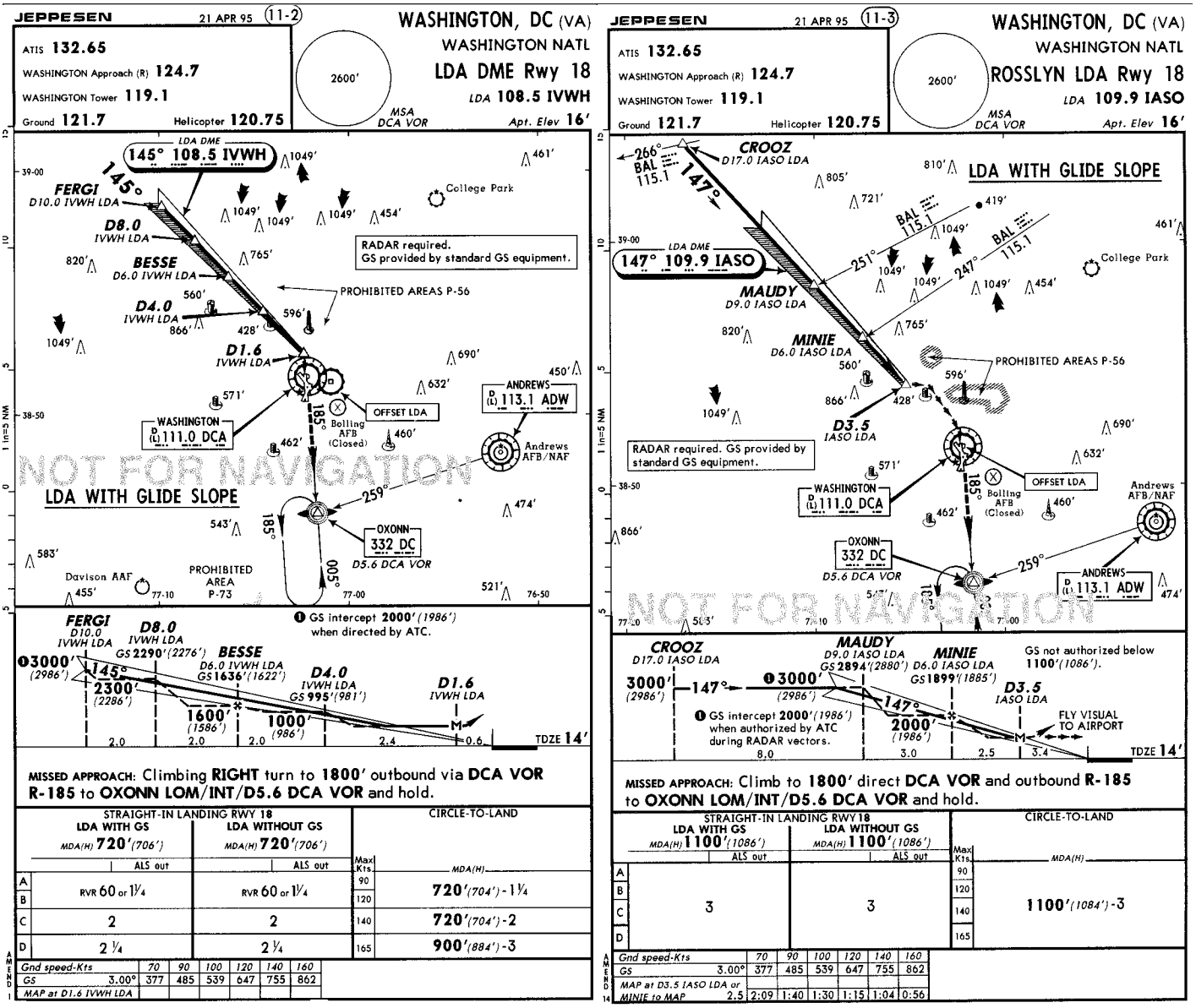

***Figure 3**. Both approaches have standard ILS glideslopes, which mean nothing for minimums because of the huge offset from runway centerline. But, the glideslope provides more positive clearance over all the buildings along the approach path than the baro altimeter staircase drill.*

pilots based at PIE. But, there are others, such as the CVFP for LAX airport that are virtually impossible to fly without reliance on the ILS equipment at the airport. This results in the undesirable melding of IFR and visual approach procedures.

Oddball IAP: JFK

Figure 2 (page 11) is the VOR (or GPS) SIAP for John F. Kennedy International and is one of the strangest so-called instrument approach procedures within FAA-land. Because of the proximity of JFK and LGA airports, JFK must try to stay aligned with LGA's IFR arrival traffic flow. Thus, the "Canarsie" approach was born 34 years ago. An additional element of this approach is a flight track designed to keep noise away from angry residential areas.

Note the missed approach points are so far from the airport that the result is nothing more than a bad-weather visual approach procedure. In order to make this all legal under FAR 91.175, the FAA has anointed a meager string of lead-in lights as constituting an approach light system, albeit one without any standards. This approach works pretty well when the weather is 1,500 and 5 or better, but as the weather wanes towards minimums, the missed approaches increase in frequency until approach control finally calls it quits. This procedure has several official waivers from TERPs standards, based on politics rather than an objective equivalent level of safety.

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The Canarsie approach is really a CVFP and should have a 1,500-foot reported ceiling and 5-mile visibility requirements. However, such a requirement would decrease capacity at both LGA and JFK, so pilots are given this "bad weather visual" to wrestle with. It's a further stretch to classify the minimums on this approach as straight-in, but that's because most of the carriers don't train for circling minimums—thus that would force the effective circling minimums to be 1,000 feet (reported ceiling) and 3 miles. On one hand, the FAA doesn't require the carriers to train their pilots to circle, on the other hand the FAA "tailors" a circling approach to make it have straight-in minimums.

Oddball IAP: DCA

The two charts in Figure 3 (page 12) at first glance look like pretty much the same offset LDA instrument approach for DCA. Further inspection, however, reveals a different localizer frequency. Also, the Rosslyn approach is really to an LDA transmitter atop a building several miles prior to Runway 18, although the DME comes from a transmitter to the left and beyond the threshold of the runway.

Standard glideslope

Both approaches have standard ILS glideslopes, which mean nothing for minimums because of the huge offset from runway centerline. But, the glideslope provides more positive clearance over all the buildings along the approach path than the baro altimeter staircase drill. The pilot must remember it's a glideslope descent to an MDA rather than to a DH—not an intuitive concept. Also, the glideslope isn't authorized below 1,100 feet.

The Rosslyn approach is used when the weather isn't good enough for the

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CVFP to Runway 18. Note this "point in space" approach to an off-airport building is slightly farther away from P-56 than the LDA-DME Runway 18 approach.

A "skillful" approach

Both these approaches exceed TERPs criteria for straight-in approach procedures. Like the Carnarsie approach at JFK, these are waivered procedures. The LDA-DME Runway 18 approach requires extraordinary skills on the part of pilots when the weather is at minimums. The "system" isn't supposed to require such skillful operations by pilots to compensate for deficient procedures.

There's really no need for straight-in minimums on the Rosslyn procedure because the circling minimums are greater than 1,000 and 3, so non-circling-qualified air carrier pilots can use these circling minimums. There is one hook, however, by having straight-in minimums—there doesn't have to be a reported ceiling of at least 1,000 feet, which would be required for non-circling-qualified air carrier pilots to use circling minimums. Oddball, to say the least!

Cardinal rules

Those of you who have followed my articles during the past three years know that I have a few cardinal rules about instrument procedures: one of them is to never fly any unfamiliar approach to an unfamiliar airport, other than a straight-in, unrestricted ILS, on a "dark and stormy" night. That "rule" especially applies to oddball approaches like the JFK and DCA examples. The CVFPs should be viewed with similar trepidation unless you know the landmarks used in the visual procedure.

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The "Racetrack Pattern" Trap

An ATC hold at a standard procedure turn fix can be dicey at high altitude.

By Wally Roberts

A FRIEND OF MINE RECENTLY flew a glass cockpit bizjet into Montrose, CO. The approach in use was the ILS DME Runway 17 (on right). The pilot wanted to take advantage of his aircraft's area navigation capabilities, so he requested direct to BRUUK from about 100 miles out.

Denver Center (which provides combined center and approach control services for MTJ) cleared him as requested, to maintain 15,000 feet. Upon arrival in the terminal area the flight was instructed to hold north of BRUUK on the localizer, right-hand turns. This would separate the arrival from other traffic ahead on the approach.

Once traffic was no longer a factor, the flight was "cleared for the ILS Runway 17 approach, maintain 13,000 until BRUUK." The pilot assumed he could substitute a racetrack pattern for the procedure turn, as per the AIM, yet he turned inbound at the one-minute holding limit computed by his flight management system. This would place him very high at BRUUK, so he requested lower. The Denver Center controller saw he was inbound in airspace that had a Center minimum instrument altitude (MIA) of 11,000 feet, so he cleared him down to 11,000.

This now placed the aircraft 700 feet too low for the procedure turn, yet too high to go straight in without a real monkey drill. What's wrong with this picture?

What isn't apparent to many pilots is the prescribed holding pattern template for a 230-knot holding pattern is larger than the airspace required for a procedure turn at 13,000 feet. Although most of the airspace for the holding pattern is within a Center MIA of 11,000 feet, a portion near the northwest edge is within a 13,000-foot MIA.

The controller was absolutely correct in using an uncharted holding pattern for traffic delay purposes. But, because of common usage in the system, the pilot's natural inclination was to fly straight in from the hold. In this case, that wasn't the correct option. The pilot should have returned to BRUUK at 13,000 feet, then proceeded outbound in the procedure turn.

The pilot could have also elected to extend the holding pattern to 10 miles, to become an AIM-approved "racetrack" pattern. The problem with extending the holding pattern at 230 knots at this location is you could get into an area of terrain that dictates the Center's MIA of 13,000 feet. The AIM "flatland" authors didn't take into account the one-size procedure turn maneuvering area becomes quite small for jet aircraft at high altitude airports.

The Center controller fully expected the pilot to depart the hold at 13,000 when over BRUUK for the procedure turn outbound. I spoke with the very knowledgeable Denver Center procedures staff about this. They suggested a better clearance might have been, "Cleared for the ILS Runway 17 approach, maintain 13,000 until procedure turn outbound at BRUUK." This would be nice, but I suspect some pilot flying a VTOL aircraft would say, "I don't need no stinking procedure turn." In the final analysis, the onus is on the pilot to figure out the procedure turn is required in such circumstances.