

Approach Transitions

Be alert when radar coverage is sparse or terrain surrounds.

The Air Line Pilot's Association (ALPA) has issued an alert bulletin to its members regarding the importance of using a published route to transition to an instrument approach when not receiving radar vectors. We have provided below the information in the bulletin because it's good advice when operating in or near mountainous areas and/or where radar coverage is sparse.

"An instrument approach procedure assures full vertical and lateral obstacle clearance when flown in its entirety, from the published enroute airway structure to the MDA(H) or DH(A). ATC, whether in the United States or elsewhere in the world, has no authority to modify or delete any segment of an instrument approach procedure with **one exception**: appropriate radar vectors to a segment of the instrument approach procedure or arrival route.

"In some cases, ATC can approve direct, non-radar routing to terminal navigation facilities, or arrival route waypoints, but you should accept this routing only with the utmost caution, especially in mountainous areas. Upon being cleared to an altitude lower than relevant MSAs (or lower than the highest MEAs of airways in the area), even the smallest doubt should be resolved in favor of remaining on published arrival routing.

"When there is any confusion about ATC-initiated descents off published routing, or there is a problem programming LNAV-type systems, **you should not commence descent until all doubts are resolved, and the intended route is centered and being tracked.** Consider a climb to a safe altitude until the confusion is resolved.

"It may be appropriate for you to query ATC about radar vectors and direct routing, with wording such as, 'Are you providing my terrain clearance with this assigned altitude and (heading/routing)?"

"Maintain a constant awareness of the minimum safe altitude for your present position and intended track.

- "ATC cannot provide shortcuts to full instrument approach procedures except when providing an appropriate radar vector.

- "Once cleared for the approach, it's your responsibility to complete the instrument approach procedure flying it exactly as published. Be alert for ATC initiated

changes or shortcuts to the procedure which might jeopardize your separation from terrain."

For further reading about arrival problems in high terrain, see "En Route Arrival Clearances" (page 5).—Ed.

Cold altimeter setting

In "Cold or Low, Look Out Below" (January *IFRR*), you're telling me that when I make my ILS Runway 23 to Brainerd, MN (BRD) next week, and it's -21° F, that if I go to a 200-foot DH, I'll be dead because of the cold causing a 1,400-foot altimeter error? How come in 30 years, I've never heard anything like this before?

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Ed: Note that our example of a 1,400-foot error was for an aircraft at an indicated altitude of 10,000 feet above the airport. Work the formula supplied in the article and you'll note that the error diminishes as you descend towards the altimeter setting source's elevation.

When it's really cold, it can even have a significant affect at MDA or DH. At BRD, (elevation 1,226) the temperature for a standard day is approximately 12.5° C. -21° F equals -29.44° C, or about 42° C below standard for BRD. At 200 feet above the altimeter setting source, the error would be $4 \times (200/1000) \times 42 = 33.6$ -foot error.

Let's say there are mountains 25 miles west of BRD airport at 7,200 feet msl, and an initial approach segment crosses the mountains at 8,500 feet. At 8,500 feet indicated, you will be too low by: $4 \times (7,274/1,000) \times 42 = 1,222$ feet, or at a **true** altitude of approximately 7,280 feet msl!

This isn't our formula. It comes from the United States Air Force instrument flight center at Randolph AFB, TX. The Air Force tried to convince the FAA to adopt this formula beginning in 1977, with efforts ongoing until 1990. After which time, the Air Force threw up its hands and published guidance for its flight crews to follow in spite of the FAA.

The Air Force got even hotter on this issue when a C-130 on vectors in Greenland in 1987 almost hit a mountain, although the aircraft's altimeters were **indicating** the assigned minimum vectoring altitude.

The issue is discussed within the FAA to
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this day, but it appears that no one there wants to do anything about it. The Canadians use these basic concepts in their airspace. Perhaps your instructors have never been exposed to this facet of cold temperature operations. Some experts suspect that some wintertime en route IFR accidents in the Rocky Mountains have been the result of such errors.

Note the last paragraph of our sidebar article. Our recommendations were directed at mountain area airports.—Ed.