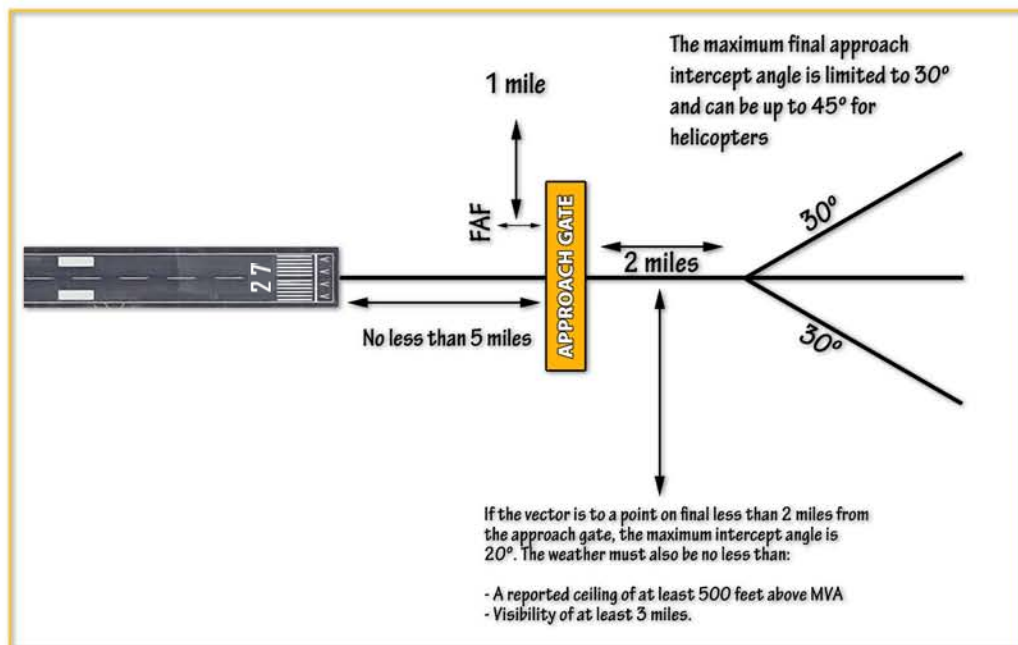


Approach Vectoring Made Easy!

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Parameters

As previously mentioned in the AIM definition above the approach-gate is located 1 mile from the final-approach-fix (FAF) on the side away from the runway and is designed in such a way that will place it no closer than 5 miles from the landing threshold. While not visible on your charts or avionics the controller's radar screen has the capability to display the approach gate and a line (solid or broken) depicting the final approach course starting at the approach gate and extending away from the airport. For a precision ILS approach this line length must extend at least the maximum range of the localizer. For non-precision approaches, the line length must extend at least 10 nautical miles outside the approach-gate.

Air traffic controllers are given explicit guidance on how to vector arriving aircraft for the purpose of intercepting the final approach course. Their specific guidance says they will vector aircraft at least 2 miles outside the approach gate. The guidance also dictates that controllers are to provide a course interception angle of NO MORE than 30 degrees. The guidance does allow controllers to provide helicopters an intercept angle of NO MORE than 45 degrees for those of us in helicopters. Presumably this increase in interception angle is due to the lower speeds commonly flown by helicopters. Although 45 degrees is permitted for helicopters in many cases it would be prudent to use the more conservative 30 degree intercept angle. It is not unheard of for Part 135 operators that fly single-pilot IFR to mandate the 30 degree intercept angle option over the 45 degree angle allowed for helicopters.

As is the case with so many things in aviation, there are exceptions to the above parameters. As an example, if the reported ceiling is at least 500

If the phrase "Approach-Gate" is new to you then you (and your CFI-I) are due for a review of an important component in understanding our IFR structure and system; especially when it comes time to begin the ever-so important approach and landing phase of an instrument approach. As you will soon learn (or at least get a review) the approach-gate itself is essentially imaginary to pilots but the understanding of the approach-gate, its location and associated role in conducting an instrument approach is paramount for safety.

Purpose

Absent on approach charts and not readily available on any pilot publications, the approach-gate is more less a concept and its purpose is to safely and efficiently get radar controlled aircraft lined-up on the final approach course.

As defined by the Aeronautical Information Manual the approach gate is: "An imaginary point used within ATC as a basis for vectoring aircraft to the final approach course. The gate will be established along the final approach course 1 mile from the final approach fix on the side away from the airport and

will be no closer than 5 miles from the landing threshold."

Remember, when getting radar vectors to final the controller isn't expecting you to conduct any sort of procedure turn, we are reminded of this in 91.175(j) that reads:

"In the case of a radar vector to a final approach course or fix, a timed approach from a holding fix, or an approach for which the procedure specifies "No PT," no pilot may make a procedure turn unless cleared to do so by ATC." Should you need to execute the procedure turn to lose altitude, get better prepared for the approach set-up, etc. you can make this request from the controller. Otherwise, executing the procedure-turn while getting radar vectors without permission from ATC is a sure way to get a growl from the controller.

Safely conducting the instrument approach via radar vectors and absent a procedure turn requires getting the aircraft on an appropriate inbound course at an adequate distance from the final approach fix (FAF). It is this "adequate distance" part of the equation of where the approach-gate comes into play.

feet above the minimum-vectoring-altitude (MVA) and the visibility is at least 3 miles controllers may vector you to intercept the final approach course closer than 2 miles outside the approach gate. If a weather report for the airport isn't available these weather conditions can also be obtained from a PIREP elicited from ATC. In instances such as these the controllers are to provide a course interception angle of NO MORE than 20 degrees.

It should be noted that the above parameters apply to the common ILS and/or Localizer approach and for reasons to be discussed in another article DO NOT apply to RNAV aircraft being vectored for a GPS or RNAV approach.

Knowing the parameters for the approach-gate is important for at least two reasons. If you are a CFI-I and are preparing applicants for their Instrument Rating flight exam your

that may exceed: the above parameters, your comfort level or the limitation of your Automated Flight Control System (AFCS) i.e. your auto-pilot then you need to seek clarification on the vector. In fact, the Aeronautical Information Manual specifically section 5-5-6 (Radar Vectors) explicitly provides us guidance on pilot responsibilities when it comes to radar vectors. The pilot is responsible to:

1. Promptly comply with headings and altitudes assigned to them by the controller.
2. Question any assigned heading or altitude believed to be incorrect.

Summary

Like so many other concepts in aviation the approach-gate, its purpose and structure is often misunderstood by students and experienced pilots alike. ATC controllers have a difficult and often underappreciated job. Like pilots they are not immune from mistakes. Knowing what a vectors-to-final course intercept should look like is paramount for the instrument pilot. 🗺️

Distance from interception point to approach gate	Maximum interception angle
Less than 2 miles	20 degrees
2 miles or more	30 degrees 45 degrees for helicopters

Another caveat with final approach course interception is that if specifically requested by the pilot the aircraft may be vectored to intercept the final approach course inside the approach gate but no closer than the final approach fix. This would be the short distance area of one mile found between the imaginary approach-gate point and the final-approach-fix (FAF) itself. Although allowed, unless weather was very adequate this option leaves the pilot very little time for "everything to line up" correctly.

applicants need to understand this concept. If you are "playing ATC" you need to provide vectors that would reasonably be expected in the "real world" and teach aspiring instrument pilots how to recognize a course intercept angle that may exceed those listed above.

Another reason for knowing these approach-gate parameters is a critical one and it is for safety. ATC controllers are human and like pilots they make mistakes. If you notice that you are getting a vector to the final approach course

