

# INSTRUMENT READINGS™

STANLEY E. PREVOST, CFII

Issue No. 8

## CONSIDERATIONS IN CHOOSING AN ALTERNATE AIRPORT

There are really two parts to this business of alternate airports: what you file, and what you fly.

FAR 91.169 specifies the conditions under which you must include an alternate airport in your IFR flight plan, and the conditions which must be satisfied at any candidate airport in order for it to be eligible as an alternate. I am going to discuss only airplanes; helicopter rules are different.

What is the purpose of an alternate airport? In instrument flying, you should always have a “Plan B”: a safe haven, and the ability to reach it. The FAA has embodied this concept in the form of a requirement that your flight planning consider the possibility that your destination airport might be unusable due to weather or other reasons, and that if there is not a fairly high confidence that the airport will be usable, you must have identified an alternate destination where conditions are projected to be suitable. Then you must carry enough fuel to fly to your primary destination, then to the filed alternate, then another 45 minutes, all at normal cruise speed.


The regulatory criteria in FAR 91.169 are clear enough. For +/- 1 hour around your estimated time of arrival (ETA) at your destination, the expected weather must be for at least 2,000 foot ceiling and at least 3 miles visibility. This is sometimes called the “1-2-3 Rule”. If those criteria are not satisfied, or if the destination airport does not have an approved instrument approach procedure, you must file an alternate airport. Now different, and more complex, rules come into play. First, if there is an approach procedure you expect to fly at the alternate, and the chart for that procedure shows that alternate airport minima apply (black triangle with “A” inside), then you must use those minima, found in Section E of the NACO TPP. If the chart shows that the airport is not authorized for filing as an alternate on the basis of that procedure (black triangle with “A” inside, followed by “NA”), then you must choose another procedure or another airport. Otherwise, you must use the standard alternate minima. If there is a precision approach available, the weather conditions must be at least a 600 foot ceiling with at least two miles visibility at your ETA. If only a nonprecision approach is available, the requirement goes up to 800 feet and two miles. If there is no

TUSCALOOSA, ALABAMA				AL-487 (FAA)	
LOC I-TCL	APP CRS	Rwy Idg TDZE	6499 159	ILS RWY 4 TUSCALOOSA REGIONAL (TCL)	
109.1	041*	Apt Elev	170		
▼	For inoperative MALSR increase S-LOC 4 visibility to 1.			MALSR	MISSED APPROACH: Climb to 2200 direct LDK VORTAC and hold.

TUSCALOOSA, ALABAMA				AL-487 (FAA)	
VORTAC IDK	APP CRS	Rwy Idg TDZE	6499 164	VOR or TACAN RWY 22 TUSCALOOSA REGIONAL (TCL)	
Chon 125	235*	Apt Elev	170		
▼				MISSED APPROACH: Climbing left turn to 2500 direct OKW VORTAC.	

<b>TUSCALOOSA, AL</b> TUSCALOOSA REGIONAL ..... ILS Rwy 4* VOR or TACAN Rwy 4 NA when control tower closed. *700-2.
---

approach available, the conditions must be such that you can descend from your enroute altitude to a landing under basic VFR. In the Tuscaloosa example, you cannot base using KTCL as an alternate on the VOR Rwy 4 approach if the tower is closed. If the tower is open, standard alternate minima of 800-2 apply. You can base it on the ILS or LOC approach, if the tower is open and the weather is 700-2. For VOR Rwy 22, standard alternate minima apply regardless of the tower status.

HUNTSVILLE, ALABAMA				AI-5924 (FAA)		VOR/DME-B
VORTAC	RGZ	APP CRS	Rwy Idg	N/A		
112.2		042°	TDZE	N/A		
Chan 59			Apr Elev	755		
HUNTSVILLE/MADISON COUNTY EXECUTIVE (MDQ)						
 A/NA						MISSED APPROACH: Climbing left turn to 3000 direct RGZ VORTAC and hold.

Those are the regulatory basics; then there are some details. The determination of expected conditions at the primary and alternate airports is to be made on the basis of “appropriate weather reports or weather forecasts, or a combination of them”. Now things are less clear. If TAFs are available for the airports under consideration, then certainly they should be used as your basis. But what if TAFs are not available for those airports? Now you need to consider combinations of weather products. Look at the Area Forecast (FA). The VFR Clouds and Weather section will give you the expected conditions, in general terms, for large areas. The Synopsis section will give you the Big Picture, telling you the weather systems that are influencing the area of concern. AIRMET SIERRA will give forecast IFR conditions within specified areas. Of course, you should always look for SIGMETS. Look at TAFs for nearby airports, look for Pilot Reports (UA). You can look at METARs and/or call the AWOS/ASOS for the airports under consideration and nearby airports. The value of current weather is for comparison with forecasts. If current conditions are not consistent with forecast conditions for the current time, then the forecasts must be considered unreliable. Some weather patterns just do not cooperate with forecasters. In the end, it is going to be a matter of judgment. Judge carefully and conservatively.


There is a sort of fringe issue to deal with before we leave the strictly regulatory part of this topic. The FAR says that the 1-2-3 rule applies to “the first airport of intended landing”. I don’t know why it says that rather than “each airport of intended landing”. If you filed for a “through” clearance, as described in FAA Order 7110.65 Section 4-2-6, you may have multiple airports of intended landing on one flight plan. The wording of the FAR seems to imply that the alternate airport rules would only apply to the first one. But to me that is nonsense and I wouldn’t recommend trying to apply it that way.

***Beyond the FARs.....***

There is more to this than the FAR requirements. The AIM says:

“(8) For TSO-C129/129A users, any required alternate airport must still have an approved instrument approach procedure other than GPS that is anticipated to be operational and available at the estimated time of arrival, and which the aircraft is equipped to fly. If the non-GPS approaches on which the pilot must rely require DME or ADF, the aircraft must be equipped with DME or ADF avionics as appropriate.

***NOTE-***

*Coincident with WAAS commissioning, the FAA will begin removing the  A/NA (Alternate Minimums Not Authorized) symbol from select RNAV (GPS) and GPS approach procedures so they may be used by approach approved WAAS receivers at*

*alternate airports. This does not change the above alternate airport requirements for users of GPS TSO-C129/129A, Airborne Supplemental Navigation Equipment Using the Global Positioning System (GPS), receivers. “*

All of our non-WAAS IFR GPS units are certified under TSO-C129A. GPS, let alone WAAS, has not made its way into the FARs yet, so the FAA has put guidance into the AIM regarding use of GPS. The AIM also goes beyond the FARs in explicitly saying that you must be equipped to fly the non-GPS approach upon which you are basing your choice of alternate airport to file, and also that the approach must not be NOTAMed as Not Authorized and that any ground equipment required to fly the approach is not NOTAMed Out Of Service. While you might say that the AIM is not regulatory, I think you will find that the Airplane Flight Manual Supplement for your IFR GPS is regulatory, and that it will prohibit use of the non-WAAS-GPS for flying an approach at an alternate airport when there is no other type of approach available.

The FARs and the AIM fall silent after specifying the requirements for *filing* an alternate airport. Nothing requires you to actually fly the alternate airport that you filed; you can change your mind at any point in the flight, even after going missed. You can actually file an alternate that you have no intention of flying; you could *file* a legal alternate when you actually intend to *fly* to a GPS-only airport. I am not advocating that you flout the regulations, they exist for good reasons. I am just dissecting the regulations and guidance so we can understand them as completely as possible. Nevertheless, there might be good reasons why you might intend from the outset to use an alternate airport that is not the one you filed; I'll go into this later.

Filing alternate airports is a FAR flight planning requirement on pilots; it is not an ATC requirement. ATC has no idea what your filed alternate is. ATC does not see your full flight plan, unless they go digging in their computers to find it and pull it up, which they probably won't ever do unless you unexpectedly disappear from their radar scope. They operate on the basis of flight progress strips or electronic equivalents, and much of the flight plan information is not included. For example, the strips do not include alternate airport, aircraft color, pilot's name/address/phone number, number on board, and fuel on board. So if you go missed at your destination and tell ATC that you want to go to your alternate, they won't have any idea what you are talking about. They will just say "Say Intentions." That means to tell them where you want to go, and they don't know or care whether it's what you filed or not.

All GPS approach charts are annotated with alternate minimums not authorized, meaning that the approach cannot be used as a basis for filing the airport as an alternate. Well, at least they were, until WAAS came along. The AIM excerpt quoted above recognizes that WAAS-certified GPS units can be used as sole means of navigation and are certified to a "safety of life" standard. The "NA" is being removed from "select" GPS and RNAV (GPS) approaches, after which, according to the AIM, they can be used as a basis for filing an alternate if you are equipped with a TSO-C145/146 WAAS/GPS unit. That's about all it says. It doesn't explain what "select" means. We can make a reasonable guess, but that's all it is. One of the criteria for all the approaches to an airport being marked Alternate Minimums NA is a lack of weather reporting at the airport. I suppose that the "select" approaches will be those to airports with weather reporting. So then the approach will not be marked as Not Authorized, but will still not be authorized as a basis for filing an alternate airport for non-WAAS/GPS-equipped aircraft. Don't get fooled, it's still your PIC responsibility to know. Approaches still marked Alternate Minimums NA may not be the basis for filing an alternate airport even with a WAAS/GPS. It will not be possible to distinguish

between one that cannot be a filing basis with WAAS/GPS for a good reason and one that just has not been updated to remove the prohibition. If it is marked NA, don't file based on it no matter what kind of GPS you have.

### ***Beyond the Rules and Guidance....***

There is more to choosing an alternate airport than the rules. Remember, when you get to your alternate, you really, really need to be able to land on the first try. You will be facing possible fuel shortage and fatigue. There is no way to tell in advance how much delay you will encounter enroute, due to winds, diversions around weather, and ATC holds. Preplanning and in-flight vigilance are all you have going for you. So when you plan an alternate, try to make it a sure thing.

You can't just look at the approaches at an airport, to see whether they are marked Alternate Minimums Not Authorized, and determine whether the airport is a suitable alternate. I mean suitable to really use, not just to legally file. You have to also look at NOTAMs for the airport to see if there are any runway closures, and for any required VORs or NDBs to see if the required nav aids are operational, including those required for the missed approach segment. You need to look at the approach lighting system and VGSI and any NOTAMs pertaining thereto. If the weather is bad (ceiling near approach minimums, visibility at a mile or less), you really need a good approach lighting system. An ALSF-2 would be great; you might want to consider your minimum for tough conditions to be a MALSR/MALSF/SSALF. ODALS is barely useful, as is the medium intensity ALS without sequenced flashing lights. A VASI or PAPI is a valuable aid in transitioning to the visual segment of the approach. Operational HIRL or MIRL is necessary.

Weather is the usual reason for needing an alternate. Choosing an alternate airport that is subject to the same weather as the primary airport probably doesn't do much for you. Consider that you are flying to Madison County Executive Airport, Huntsville, AL (KMDQ), which has two nonprecision approaches, and you filed nearby Huntsville International Airport (KHSV) as your alternate, because it has four ILS approaches. You undertook the flight only because KMDQ was forecast to be above approach minima, yet when you got there, you couldn't see any sign of the airport. The weather behaved unexpectedly, and you may find that even the ILS at nearby KHSV is unusable as well. Choosing an airport with an ILS is a good plan, but it needs to be outside the weather system affecting your primary airport. Filing KHSV as alternate is fine, but you also need to have a backup plan (including fuel) to get to KBHM, KBNA, or KCHA. Those airports also have ILSs and good lighting systems. One of them is likely to be outside the immediate weather pattern. If not, you probably ought to stay home, because you have no safe haven. If you are going to plan for one of those other airports, you might as well file it, and then go to the nearer airport (KHSV) if it is usable. This is what I meant earlier when I said there may be good reason to file an alternate that you don't intend to use. You file your alternate as, say, KCHA, but your real plan is to try KHSV if you go missed at KMDQ and ATC says people are getting into KHSV. Your backup plan is to go to KCHA if you can't get into KHSV. Your planning would include the fuel to try KMDQ, make a try at KHSV, then go to KCHA, then 45 minutes more of cruise. Why not KMSL, which is closer and has an ILS? No approach lighting system nor good facilities. Plus, it is west of KHSV, and the weather systems tend to move in from the west, so if KHSV has bad weather, it is likely that KMSL has bad weather. Always plan your safe haven at the bigger airports, and head for it when in trouble. Better facilities and more help are available there.

Regardless of what you planned and what you filed, during the flight you should keep up with what is happening at your destination and alternate. If you have in-cockpit weather, that's a good way. Otherwise, talk with Flight Watch. The plan prepared before the flight might not remain a good plan as things actually develop. If the weather at your primary and alternates is changing in an unexpected way, becoming worse than expected, begin developing a new plan as soon as possible. You may not have to use it, but if you do, you probably won't have a whole lot of time when the necessity becomes apparent. If your destination is going down the tubes, bail out as soon as possible. Return to your departure airport, go to your alternate if it still looks OK, or land at the closest suitable airport and wait for better conditions. If you continue pressing on, in the desperate hope that things will get better, you are just burning fuel and reducing your options.

At the risk of being overly repetitious, I want to encourage you to plan for a no-brainer sure-thing, in terms of an airport with good weather, good approaches, good lighting, fuel, no adverse NOTAMS, food, transportation, and lodging. Usually that is an airport in Class C or Class B airspace. Plan for it, have fuel for it (plus 45 minutes) and file it. If there are closer alternatives that *might* be OK, keep them in mind and track conditions there during your flight; you can go there for your alternate if conditions are good enough when the time comes. But know which alternate you are going to use before making your approach to your primary destination, don't waste fuel and fatigue yourself further after your missed approach, stuck in a hold somewhere trying to figure out what to do, and don't fly to one and then to the other. Plan the flight and fly the plan.

*The author invites discussion and constructive comments. [stan@sprevost.net](mailto:stan@sprevost.net)*