Alternates

How many times have you gone flying and got back to earth safely because you had a Plan B? It may be carrying some food, water and survival gear if you're flying over a remote area, having a lifejacket on if you're flying to Rotto, or keeping your NVFR rating current in case you find yourself still in the sky when the sun is not.

One type of Plan B that is required by the rules in certain circumstances is, of course, an alternate. Here's a refresher on some of those circumstances. They're all in Air ENR 1.1 Paragraph 11.7.

The first one that's relevant, and which I often find people are unaware of, is this one: *When an aerodrome forecast is not available or is "provisional", the pilot in command must make provision for a suitable alternate that has a firm forecast.*

An aerodrome forecast is never available for Northam – it doesn't get TAF's. And anyone who's flown on winter mornings in Northam knows that it's an excellent example of why you can't rely on the area forecast to determine your aerodrome weather. How often does the area forecast say the fog will clear by 0900, but because Northam is in a hole, the fog sits there until 1100.

So in short, according to the rules, you must have fuel to get to a suitable alternate every time you fly from Northam. Thankfully, the nearest aerodrome that gets a TAF is only 28 miles east.

Other than that rule, which applies to all flights, the rules about alternates can be broken into three parts: weather, navigation aids and lighting.

Weather

If you're flying day VFR within 50 nm of the departure point, you can ignore this bit. Otherwise, please read on.

The conditions that require an alternate are:

- More than SCT cloud below 1500 ft AGL;
- Visibility less than 8 km;
- Percentage probability of anything that reduces visibility below 8 km, such as fog or mist;
- Crosswind above the aircraft limit (or, more practically, the pilot's limit).

So BKN015 is okay, SCT012 is okay, but BKN012 requires an alternate.

Also, cloud amounts below 1500 ft are cumulative. FEW plus SCT equals BKN, and SCT plus SCT is BKN, so FEW010 SCT014 means BKN014, and you need an alternate.

The rest of the rules about weather and alternates are about when you need that extra fuel.

Firstly, if the weather is below alternate minima, but is forecast to improve at a certain time, you don't need an alternate if you carry enough fuel to hold until the FM time plus 30 minutes (or 30 minutes after the end of a BECMG period). The 30-minute buffer is because a FM in a forecast is to the nearest hour. So if the forecast says "32020KT 5000 SHRA BKN012 *FM0400* CAVOK", you expect the improvement will come sometime between 0330 and 0430. Since pessimistic pilots live longer, you plan for it to get better at 0430. (As a smart private pilot, you would of course just delay your departure so you don't arrive before 0430.)

If the FM scenario is the other way around – good weather followed by bad – you assume the bad weather will come half an hour early, and plan accordingly. "CAVOK *FM0600* 5000 SHRA BKN010" means you expect it to turn bad at 0530, so you plan an alternate if you're arriving after that time.

If the forecast includes and INTER or a TEMPO, there will be something in the INTER or TEMPO that is below the VFR alternate minima, so you know you'll need an alternate or, more practically, holding fuel. The holding fuel requirements are 30 minutes for an INTER and 60 minutes for a TEMPO and, like the requirements when there's a FM or BECMG, they apply from 30 minutes before until 30 minutes after the INTER or TEMPO period.

TAF AMD YCUN 030844Z 0308/0318
02014G25KT 9999 -SHRA BKN080
BECMG 0310/0312 VRB05KT CAVOK
TEMPO 0308/0312 VRB25G50KT 1000 TSRAGR BKN010 SCT080CB

The TEMPO has everything: wind, (lack of) visibility, cloud, and thunderstorms. You'd need an hour's holding fuel, and the requirement applies if your ETA is between 0730 and 1230 (unless your ETA is, say, 1215, in which case you'd carry 15 minutes fuel to see you through to the end of the holding fuel requirement at 1230, or you'd just delay your flight by 15 minutes).

Navigation aids

For a NVFR flight, the alternate requirements due to navaids are pretty easy. You need either:

- An NDB or VOR at the aerodrome, and an ADF or VOR on board, or
- Since NDB and VOR are increasingly rare entities, a GNSS receiver suitable for NVFR, meaning it must meet the specifications of one of the appropriate US Technical Standard Orders (TSO), which are listed in the table in AIP GEN 1.5 Section 2.

Lighting

In 12 years teaching aviation theory, I found no topic as poorly understood or articulated as the alternate requirements due to lighting. The reason was invariably pilots trying to deal with two questions at once – about PAL and standby power – instead of one at a time. The three questions you need to deal with are:

- Question 1: Is the lighting portable? If so, you need an alternate unless you have a responsible person at the aerodrome. Pretty logical: portable lights can't wheel themselves out to the runway and they can't turn themselves on. In most cases, this question is irrelevant since we prefer to fly at night to aerodromes that have fixed lighting.
- Question 2: Is it PAL? If so, your VHF might fail to turn it on, so you need an alternate or someone there to turn it on for you.
- Question 3: Does it have standby power? If not, the power supply may fail and leave you in the dark, so you need an alternate unless you have backup portable lights and someone there to turn them on.

It's easy to get confused if you try to answer Questions 2 and 3 in the same breath. If you have PAL but no one in attendance, your aerodrome "fails" the test and you need an alternate. You don't even need to go on to Question 3. But if you have someone there to turn the lights on manually, then you can move on to Question 3 and worry about (lack of) standby power.

The other little rule about lighting and alternates that people often get confused about is the little rule about 2 VHF's or VHF and HF and 30 minutes holding. If your aerodrome has PAL and no one

there, you need an alternate. 2 VHF's or VHF and HF and 30 minutes holding doesn't exempt you. What this little rule applies to is your choice of alternate.

One of the basic rules for nominating an alternate is that your choice can't require an alternate itself. Having 2 VHF's or VHF, HF and 30 minutes holding fuel gives you an exemption from that rule. So if you're going to Cunderdin, which has PAL, and you don't have anyone available to turn the lights on manually, you need an alternate. But Cunderdin, despite needing an alternate, can be suitable as an alternate if you have 2 VHF's or VHF and HF and 30 minutes holding.

But of course, if you have any doubt, order blue skies for the entire day, load as much fuel as you can, and if it's a daytime flight, plan to get to Point B well before last light.