

UFO AT 3-O'CLOCK, SAME ALTITUDE, 100 FEET

Plane & Pilot

FOUR-SEATER ROUNDUP

UPDATED
FAVORITES
TO THE
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EDGE

LOOPING A CUB...
Gets Way Out Of Hand

KEEP YOUR BEARINGS
When GPS Goes Away



2019 Cessna
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IFR: WHEN TO DESCEND?
New Tools Might Help



AUGUST 2019



RISK

By Jason Blair

How To Keep Your Bearings When A GPS Outage Hits

Remember: You need to have a backup plan for when that magenta line disappears.

A GPS NOTAM in Nevada? Okay. I can probably ignore that since I'm flying in California, right? Nope.

In a recent example of a GPS testing NOTAM, a pilot might have read the following:

5/209 (A0107/19) - NAV GPS (KRL130 GPS 19-06) (INCLUDING WAAS, GBAS, AND ADS-B) MAY NOT BE AVBL WI A 314NM RADIUS CENTERED AT 345951N1062903W (ABQ091017) FL400-UNL, 261NM RADIUS AT FL250, 177NM RADIUS AT 10000FT, 165NM RADIUS AT 4000FT AGL, 154NM RADIUS AT 50FT AGL. DLY 1100-1500. 27 MAY 11:00 2019 UNTIL 31 MAY 15:00 2019. CREATED: 23 MAY 18:25 2019

I know. Confusing, right?

The good news is a picture helps, and you can get that from the FAA (https://www.faa.gov/spans/notices_public.aspx). With a little digging there, you can find the graph shown on the next page (page 31).

Once you see that, you start to get the picture that the affected areas of a NOTAM for GPS testing might go beyond a small area, and they might pose a risk to your flight operations, even a state or two away.

These GPS-testing NOTAMs have varied altitudes and distance ranges where they affect flight operations. At high altitudes, they certainly extend significant distances. But even at moderate altitudes, such as 4,000 feet MSL, the range even extends well over 200 miles from the center point. The total affected areas of these NOTAMs are significant and would require a pilot to fly far out of the way to go around them in some cases.

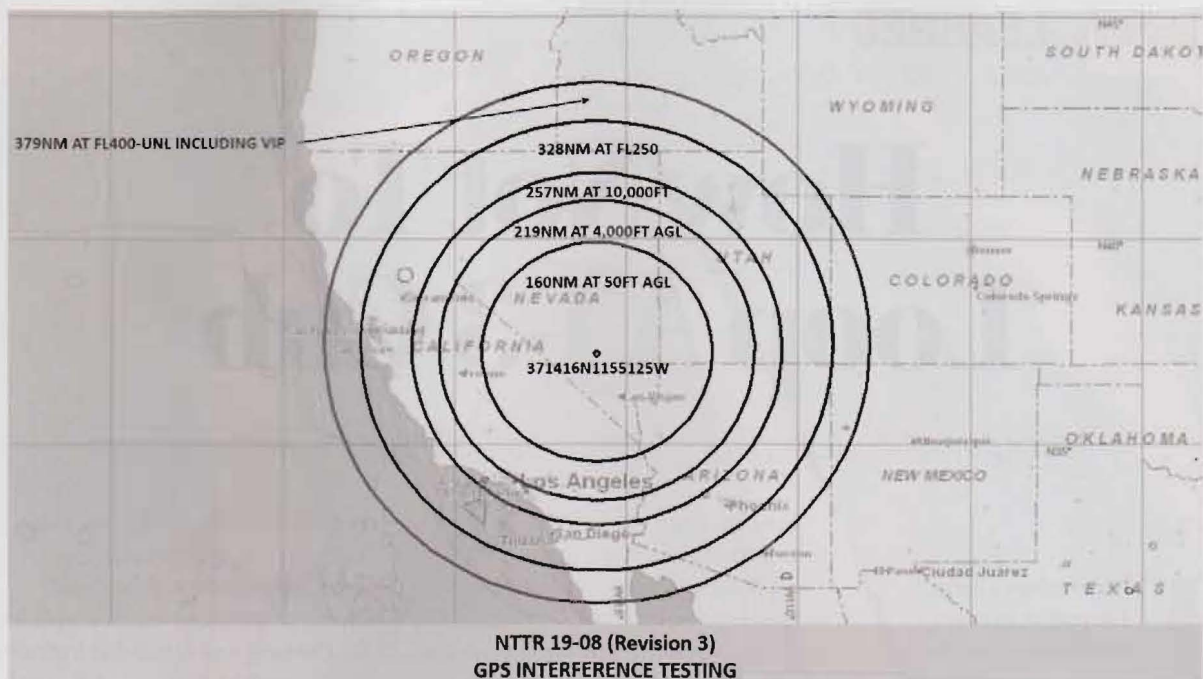
NOTAMs about the testing of GPS signals have been on the rise over the past few years as the government

works to test its capabilities to operate defense equipment in the event of GPS jamming or outages. It's certainly a good thing for our military to be prepared, but a consequence is that civil aviation activities may experience reduced ability to rely on GPS-based navigation during these testing activities.

So, what are the realistic risks of flying in an area where GPS signal interference may be possible? The obvious is that you may not be able to rely on your GPS signal. If you plan on navigating using GPS direct, that may not be an option in areas affected. Time to brush up those VFR skills, maybe do a little old-school route planning with a map, or do it on your favorite tablet-based flight-planning app.

If your flight is going to happen under IFR conditions, your navigation options and your ability to fly approaches will likely be affected. Approaches that are non-GPS based, such as an ILS or a VOR, may also be affected in some cases when things like holds for a missed approach or course-defining waypoints require GPS. This is becoming more common on non-GPS approaches, as many VOR facilities are decommissioned or out of service for long periods of time. Don't just assume you'll be able to fully comply with the requirements of approaches that are non-GPS based. Do your homework before you plan on using them and really look at all the requirements on the specific approach plate.

Another lesser-identified risk is that ATC may not be able to authorize or assign GPS-based approaches in the affected areas. Since a NOTAM is in place that specifically identifies unreliable navigation capacity, ATC won't assign or vector pilots for GPS approaches in affected areas. Technically, this doesn't "prohibit" a pilot from flying an approach requiring GPS systems "on their own" if they think they're receiving a reliable signal, but it certainly presents added risk to the reliability of your approach procedure. It's a risk most conservative



NTTR 19-08 (Revision 3) GPS INTERFERENCE TESTING

The notices for GPS interference testing aren't always easy to find, though there are some places where they're all too common. Be ready for them.

pilots would advise against.

I've personally experienced this when I was flying through an area where a GPS-testing NOTAM had been issued. This included a less-than-reliable autopilot ability to fly a GPS course. In fact, I actually ended up reverting to using heading mode to get a non-wandering path. I was also unable to use the intended GPS approach to the destination airport. Fortunately for me, it wasn't a hard IFR day, and there was a VOR approach from which I could circle to the runway where I landed.

But it won't always be that way. Many destination airports are now only served by GPS approaches. During a period of time in which a GPS testing is taking place, it could effectively make that facility a VFR-only airport. That can limit your options to getting to your intended destination if weather conditions are present.

If do you find yourself flying in an area affected by a GPS NOTAM, especially in IFR conditions, prepare by having alternate options

for navigation. These shouldn't require the use of GPS systems either for primary navigation or even to identify route-defining points as required identification points on any approaches you might need to use. It also means thinking about these factors if you need an alternate airport. In unlucky situations, this may even require you to plan for alternate airports that are further away—potentially outside of the affected GPS outage or testing areas.

NOTAMs are easy to disregard when they don't look like they directly affect the airport or an approach you plan to use, but they really can have an effect. As GPS outage and testing NOTAMs get larger and more frequent, it's just one more risk all of us in civil aviation need to pay attention to and mitigate in our flight operations.

Of course, one last way to mitigate this potential risk might just be to go VFR and have a more scenic flight at the same time!

Want to learn more about the concerns around GPS testing? The

Radio Technical Commission for Aeronautics (RTCA) wrote a full whitepaper about it in March 2018 entitled "Operational Impacts of Intentional GPS Interference." Find it at https://www.rtca.org/sites/default/files/intentional_gps_interference_approved.pdf. **PP**

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