

# FLYING



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NAVIGATION:

# FLYING THE MON

*A preview of what the minimum operational  
VOR network will look like.*

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Approaches such as the LOC Rwy 11 into Olney take on new meaning with the implementation of the MON.

Somewhere a little south of the halfway point between St. Louis and Indianapolis is Olney, Illinois. You might be asking, what makes this a relevant point for flying? Honestly, it has nothing to do with the town. Instead, it's all about the airport's instrument approach options and how you would know about them as an IFR pilot.

You can fly at least one approach at this airport without the use of GPS, or even DME. And you don't have to be psychic or sift through every airport and all the approaches they have to know this. You can tell by the note on the IFR enroute low altitude chart denoting "MON," or minimum operational network, over the airport information box.

## TRANSITION TO MON VORS

The FAA is decommissioning a significant number of VORs as we transition our national airspace system to rely upon performance-based navigation and area navigation systems. Most of us are familiar with these systems in the form of GPS.

There remains a potential for a GPS outage, signal blocking, or a failure of GPS systems onboard

an aircraft. In each of these cases, a pilot should have a backup plan that doesn't rely on GPS to get safely to the ground.

One of these options lies in the designation of MON-serviced airports. These airports are called out as a part of the FAA's decommissioning of 30 percent of the VOR network by 2025.

## WHAT 'MON' MEANS ON A CHART

MON airports are a relatively recent addition to IFR charts, indicating the airport offers an approach a pilot could complete without assistance from ATC, GPS, or DME systems. MON designations on low altitude enroute charts are the FAA's method of indicating to a pilot that the airport has at least one approach not requiring GPS or DME systems.

These airports will ensure that a pilot will always be within 100 nm of an airport with an instrument

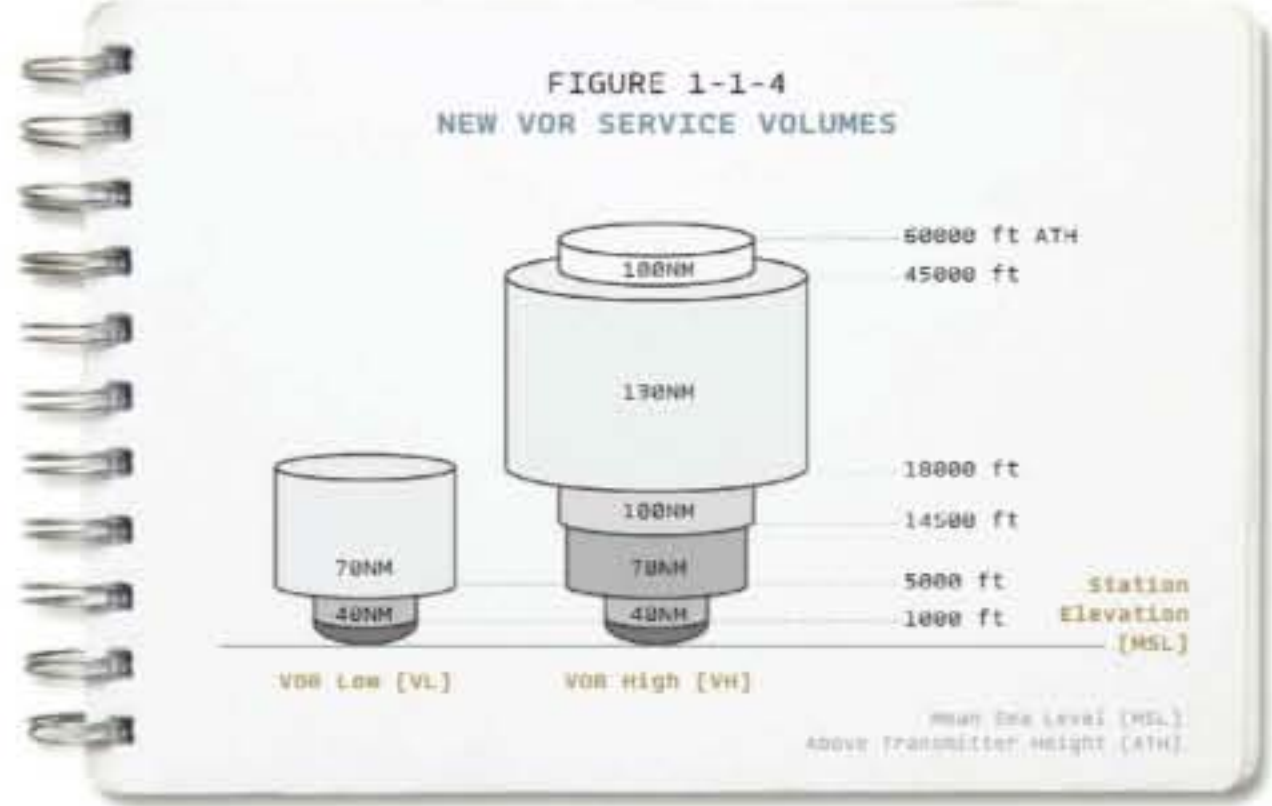
approach not dependent on GPS or DME. The VOR MON is designed to be a reversionary service maintained by the FAA for use by aircraft unable to navigate using RNAV-based services during GPS outages. This is not to say all approaches at such an airport will be possible without using GPS or DME, but at least one approach will be available. The FAA's goal is to ensure airports throughout the national airspace system are available in the event of a GPS outage.

## MON APPROACH OPTIONS

The approach(es) not requiring GPS or DME might include straight-in and/or circling approach options. There is no guarantee that an available approach will be a precision one, however.

These airports may include an ILS approach to provide a glideslope option for lower approach minimums, or one without a glideslope, such as LOC-

only or VOR-only approaches. In each of these cases, a pilot can get down to the lowest possible height above the ground in an emergency when one of these approaches becomes critically needed. With these options, the pilot will likely start the approach with a transition from the enroute environment to an approach utilizing a VOR as a transition point.



The VOR service volumes typically vary based on the area they are intended to serve—increasing with the MON.

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## LONGER DISTANCES

A key part of making this transition possible has been the expansion of the ranges of use for remaining VOR stations. As the FAA has decommissioned some VORs, it has enhanced the service volumes of those that comprise the MON network.

The FAA included the new service volumes for VORs in the 2022 issue of the *Aeronautical Information*

*Manual*. Most notable is that a pilot flying above 5,000 feet agl can expect the VOR service volume to be reliable for 70 nm from the station, an expansion from the previous 40 nm—which is still applicable when flying below 5,000 feet agl. This enhanced volume allows a pilot to transition to a VOR and onto an approach at greater distances than in the past.

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## ABOUT ALTERNATES

When we plan for alternate airports as IFR pilots, we most commonly think about weather requirement considerations. It might also be a good idea to research what navigation services an alternate airport might have.

Using a MON airport as an alternate allows a pilot to use a different navigation system if a transition to an alternate becomes necessary after a missed approach. Making MON part of your alternate selection process could become part of your best practices when filing

IFR flight plans. Giving yourself all possible options isn't a bad thing. While a MON airport might be slightly further away than another potential alternate, it does guarantee more navigation options.

A word of caution: It is always a good idea to make sure no NOTAMs are in effect that might affect your smooth transition to an alternate airport. Just because an airport is printed on the chart doesn't mean it is always an option.

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## NON-WAAS GPS AIRCRAFT

Some aircraft may be required to use airports that meet MON status. It may depend on the navigation systems and limitations of that particular aircraft.

For aircraft with GPS but not WAAS-capable systems, the benefit of filing alternate airports with approaches that do not require the use of GPS is still

applicable. While many aircraft are equipped with WAAS-capable GPS navigators, some have not been upgraded.

In these cases, a pilot seeking to file an alternate airport that doesn't require GPS might find that MON airports are suitable—and handy—options.

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## NOT ALWAYS THE BIGGEST—OR BUSIEST

I have noticed that airports designated as MON are not always the biggest or busiest. I suspect this is by design. If we experienced a period when a large number of aircraft needed to transition to a backup plan, we might not want them all going to airports with large traffic volumes. Also, the MON airports won't always have runways long enough for larger aircraft.

Making the transition to considering MON airports and what that means for an IFR pilot may seem confusing at the outset, but through clear identification on enroute charts, pilots can quickly make planning decisions about alternates. Potentially more critically, a pilot can identify the best option to get on the ground during an in-flight loss of GPS service. Learning a little about MON airports might give you

the information to safely manage a change of available navigation system service in flight. The LOC Runway 11 at Olney-Noble Airport (KOLY) in Illinois, with an approach you can fly without GPS or DME systems, might not be a location you planned to visit—but it might be where you end up if things didn't go as planned at your original destination.

This approach can be established and flown without the help of ATC. An example of an approach critical to the MON system, it allows a pilot to get down safely in the event of a GPS outage. This approach is a critical part of the infrastructure of backup options and an example of many around the country in place to give pilots an option if they cannot complete an approach that requires DME or GPS services.



*Study of the low-altitude enroute charts prior to an IFR flight is critical to review MON-based alternates.*

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## ESTABLISHING ONTO THE APPROACH

A “full approach” is something most pilots don't have to do often, instead taking advantage of air traffic control vectoring services to establish onto the final approach path of most procedures. But if ATC is unavailable or unable to offer those services, a pilot might need to get themselves established. On the LOC Runway 11 approach at KOLY, this could be done by flying to either the Bible Grove (BIB) or Centralia (ENL) VORs that serve as initial approach fixes (IAFs). From either of these points, a pilot could travel inbound on feeder routes to intercept the localizer course of 110 degrees using the 110.5 localizer frequency.

### LOC Only

This approach offers localizer (LOC) only services, therefore it does not include glide slope options. The approach is technically non-precision, but certainly more accurate laterally than just a VOR approach, and it guides a pilot along the 110-degree inbound course to the airport.

### DME Available, but Not Required

While it is helpful if an aircraft is equipped with either an IFR-capable GPS or DME, it is not required for this particular approach. A pilot might choose to identify the ALAKE or LYMON waypoints using DME, but the final approach fix at LYMON could also be identified using a cross radial on the localizer with the BIB VOR on the 134-degree radial. This could identify the LYMON FAF from which the pilot could continue the descent to either the appropriate straight-in localizer minimums, or the circling minimums suited for their approach speed if they were circling to another runway for landing.

### Timing Might Become Critical

Using a timer on this approach might be required and is a commonly overlooked item for many pilots when transitioning beyond the FAF. In the absence of DME or a GPS to help identify when to go missed, a pilot on this approach needs to rely on timing.

A pilot starting a timer at the LYMON FAF needs to estimate their ground speed and use the table on the chart to determine when they would reach the missed approach point. A pilot flying the approach at 120 knots would fly for two minutes and 18 seconds while descending to their minimum descent altitude, and go missed if they had not seen the runway environment. This skill can easily get rusty for pilots who rely on GPS to tell them when to go missed. Practice the move in case you need it on an approach such as this.

### Missed Via Radials

Even if the pilot goes missed, the DME (or substituted GPS) would not be required for flying the climbing right turn to 2,400 feet on a 290-degree heading, intercepting the BIB VOR R-172, and then holding at the ALAKE intersection where the BIB VOR and LOC have a holding pattern depicted. This might require a pilot to shake some rust off their cross-radial skills, but the process remains valid and potentially critical for use if GPS systems become unavailable.

A more traditional approach like those many old school pilots (a label I am identifying with more and more as years go by) flew as the standard still has strong validity in our current system. Keep your skills sharp for approaches such as this in case you ever need to use them. ●