

Document Change Proposal/Briefing Sheet

FINAL DISPOSITION

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Change: 3
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1. Paragraph Number and Title:

1-1-3. VHF OMNI-DIRECTIONAL RANGE (VOR)

2. **Background:** Introduction of the VOR Minimum Operating Network (MON) will result in the elimination of select VORs throughout the NAS.

3. **Explanation of Change:** This change is necessary to increase Pilot and controller awareness about the VOR Minimum Operating Network (MON).

4. Change:

Old

New

1-1-3. VHF Omni-directional Range (VOR)

1-1-3. VHF Omni-directional Range (VOR)

Title thru e. 2. (a)

No Change

ADD

f. The VOR Minimum Operating Network (MON) VOR MON. As flight procedures and route structure based on VORs are gradually being replaced with Performance Based Navigation (PBN) procedures, the FAA is removing selected VORs from service. PBN procedures are primarily enabled by GPS and its augmentation systems, collectively referred to as Global Navigation Satellite System (GNSS). Aircraft that carry DME/DME equipment can also use RNAV which provides a backup to continue flying PBN during a GNSS disruption. For those aircraft that do not carry DME/DME, the FAA is retaining a limited network of VORs, called the VOR Minimum Operating Network (MON), to provide a basic conventional navigation service for operators to use if GNSS becomes unavailable. During a GNSS disruption, the MON will enable aircraft to navigate through the affected area or to a safe landing at a MON airport without reliance on GNSS. Navigation using the MON will not be as efficient as the new PBN route structure, but use of the MON will provide nearly continuous VOR signal coverage at 5,000 feet AGL across the NAS, outside of the Western US Mountainous Area

(WUSMA). (There is no plan to change the NAVAID and route structure in the WUSMA.)

The VOR MON has been retained principally for IFR aircraft that are not equipped with DME/DME avionics. However, VFR aircraft may use the MON as desired. Aircraft equipped with DME/DME navigation systems would, in most cases, use DME/DME to continue flight using RNAV to their destination. However, these aircraft may, of course, use the MON.

1. Distance to a MON airport. Within the contiguous United States (CONUS), the VOR MON is designed to ensure that an airport that has an instrument approach that is not dependent on GPS, ADF, DME or radar is within 100 nautical miles of any location. These airports are referred to as “MON airports” and will have an ILS approach or a VOR approach if an ILS is not available. VORs to support these approaches will be retained in the VOR MON. MON airports are charted on low-altitude enroute charts and are contained in the Chart Supplement and other appropriate publications.

It is important to note that any suitable airport can be used to land in the event of a VOR outage. For example, an airport with a DME-required ILS approach may be available and could be used by aircraft that are equipped with DME. The intent of the MON airport is to provide an approach that can be used by aircraft without ADF or DME when radar may not be available.

2. Navigating to an airport. The VOR MON will retain sufficient VORs and increase VOR service volume to ensure that pilots will have nearly continuous signal reception of a VOR when flying at 5,000 feet AGL. A key concept of the MON is to ensure that an aircraft will always be within 100 NM of airport with an instrument approach that is not dependent on GPS. (See 1-1-8.) If the pilot encounters a GPS outage, the pilot will be able to proceed via VOR-to-VOR navigation at 5,000 feet AGL through the GPS outage area or to a safe landing at a MON airport or another suitable airport, as appropriate. Nearly all VORs inside of the US Western Mountainous Area (WUSMA) and outside the CONUS are being retained. In these areas, pilots may use the existing (i.e., Victor and Jet) route structure and VORs to proceed through a GPS outage or to a landing.

3. Using the VOR MON. In the case of a planned GPS outage (e.g., contained in a published

NOTAM), pilots may plan to fly through the outage using the MON as appropriate and as cleared by ATC. Similarly, aircraft not equipped with GPS may plan to fly and land using the MON, as appropriate and as cleared by ATC. Note that, in many cases, flying using the MON may involve a more circuitous route than flying GPS-enabled RNAV.

In the case of an unscheduled GPS outage, pilots and ATC will need to coordinate the best outcome for all aircraft. It is possible that a GPS outage could be disruptive, causing high workload and demand for ATC service. Generally, the VOR MON concept will enable pilots to navigate through the GPS outage or land at a MON airport or at another airport that may have an appropriate approach or may be in visual conditions.

The VOR MON is a reversionary service provided by the FAA for use by aircraft that are unable to continue RNAV during a GPS disruption. The FAA has not mandated that preflight or inflight planning include provisions for GPS-or WAAS-equipped aircraft to carry sufficient fuel to proceed to a MON airport in case of an unforeseen GPS outage. Specifically, flying to a MON airport as a filed alternate will not be explicitly required. Of course, consideration for the possibility of a GPS outage is prudent during flight planning as is maintaining proficiency with VOR navigation.

Also, in case of a GPS outage, pilots may coordinate with ATC and elect to continue though the outage or land. The VOR MON is designed to ensure that an aircraft is within 100 nautical miles of an airport, but pilots may decide to proceed to any appropriate airport where a safe landing can be made. WAAS users flying under Part 91 are not required to carry VOR avionics. These users do not have the ability or requirement to use the VOR MON. Prudent flight planning by these WAAS-only aircraft should consider the possibility of a GPS outage.

The FAA recognizes that non-GPS-based approaches will be reduced as VORs are eliminated and that most airports with an instrument approach may only have GPS- or WAAS-based approaches. Pilots flying GPS or WAAS-equipped aircraft that also have VOR/ILS avionics should be diligent to maintain proficiency in VOR and ILS approaches in the event of a GPS outage.

5. Index Changes:

6. Reference Changes:

7. Graphics:

8. Genot/Notice:

9. Safety Risk Management: (Check appropriate box).

- ☐ **Safety Finding With Hazards.** In this scenario, a NAS change or existing safety issue is assessed by an SRM panel, and the panel perceives or determines that hazards could be introduced or that safety risk could increase. (Refer to SMS Manual, Section 5.4.3)
- ☐ **Safety Finding Without Hazards.** An SRM panel uses an SRM document to reflect a safety analysis that was performed but did not reveal new hazards or any perceived or calculated increase in safety risk. (Refer to SMS Manual, Section 5.4.3).
- ☐ **No Safety Documentation Required.** The proposed change does not meet the requirements for performing a Safety Analysis as highlighted in the ATO Safety Management System Manual, Paragraph 3.2.1. Note that editorial and administrative changes (i.e., any changes that do not affect the substantive elements of a procedure or system) do not require SRM.

10. ICAO Differences: Yes ☐ No ☐



Date:

9-29-14

ICAO DIFFERENCES IDENTIFICATION FORM

AJV-8 SME:

DATE:

ATO DCP #:

ICAO DIFFERENCE SARP/PANS

SPECIFIC US REGULATION AND REFERENCE	PANS ATM, ANNEX PROVISION	DESCRIPTION OF DIFFERENCE	REMARKS
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DIFFERENCE CATEGORY:

DETERMINATION OF DIFFERENCE: YES ☐ NO ☐

VALIDATOR NAME:

VALIDATOR PHONE: () -