

Very High Frequency Omni-directional Range (VOR) Minimum Operational Network (MON) Implementation Program

Program Status

Presented to: Aeronautical Charting Forum (ACF)

By: Leonixa Salcedo, VOR MON Program Manager
Navigation Programs, AJM-324

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Federal Aviation
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Agenda

- **VOR MON Program Overview**
- **Target VOR MON Discontinuance List**
- **VOR MON Program Timeline**
- **Program Accomplishments**
- **VOR MON Program Status and Next Steps**
- **VOR MON Summary Charting Approach**
- **VOR MON Charting Issues**
- **VOR MON Charting Recommendations**



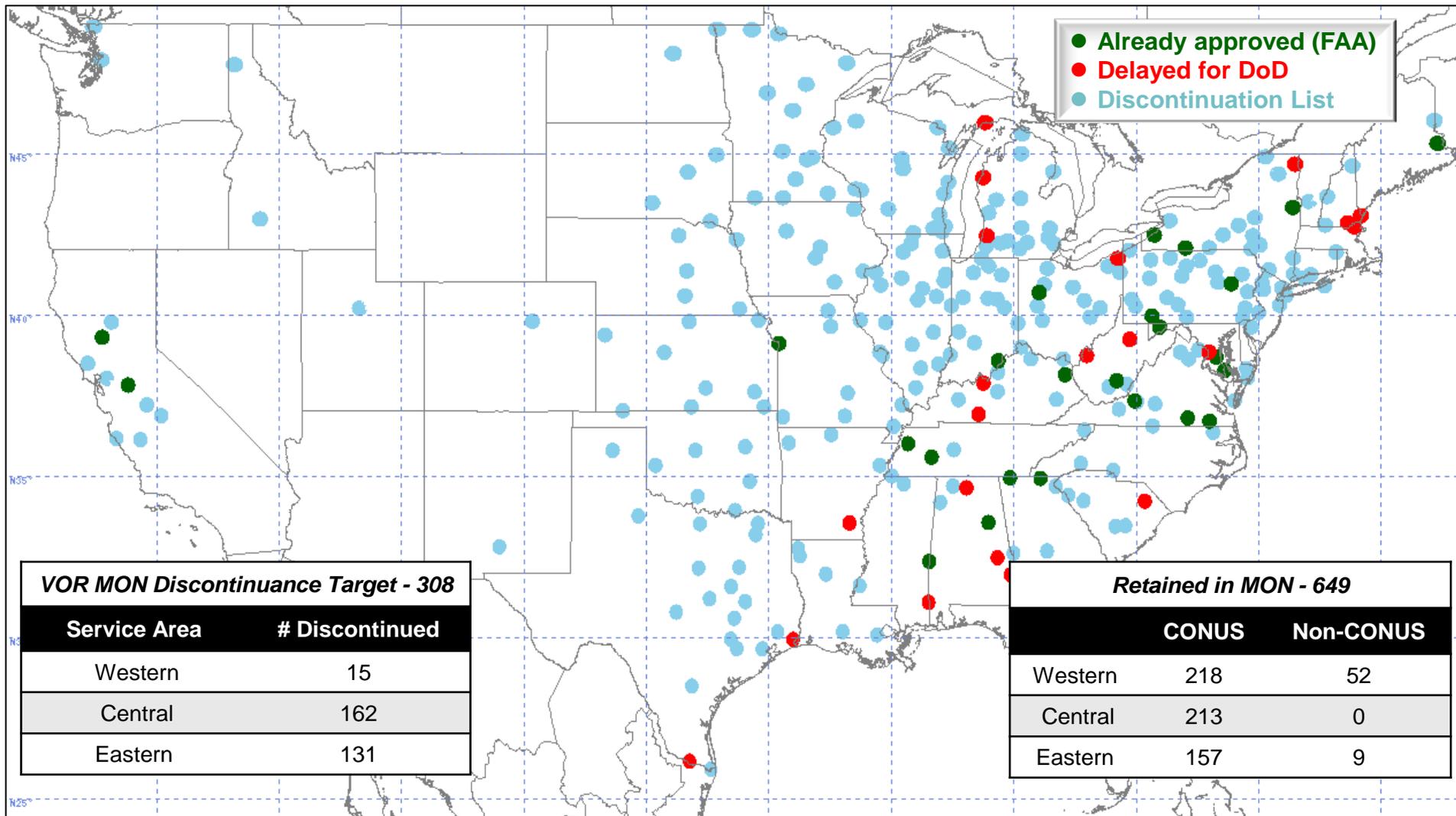
VOR MON Program Overview

- The VOR MON program supports the NAS transition from the current VOR airways to more efficient Performance Based Navigation (PBN) consistent with NextGen goals and the NAS Efficient Streamlined Services Initiative (NESS).
- The VOR MON Program will discontinue VORs that don't meet the VOR MON criteria to enable pilots to:
 - Revert from PBN to conventional navigation in the event of a GPS outage
 - Tune and identify a VOR within 77 miles at a minimum altitude of 5,000 feet above ground level;
 - Navigate using VOR procedures clear of a GPS outage area;
 - Navigate using VOR procedures to a MON airport within 100 miles to fly an ILS or VOR instrument approach without distance measuring equipment (DME);
 - Navigate along VOR Airways especially in mountainous terrain where surveillance services are not available; and
 - Navigate to an area where radar surveillance services are provided.
- **Approximately 30% (308) of VORs are potential candidates for discontinuance**
 - Actual discontinuance will be accomplished according to JO 7400.2 and established policies.

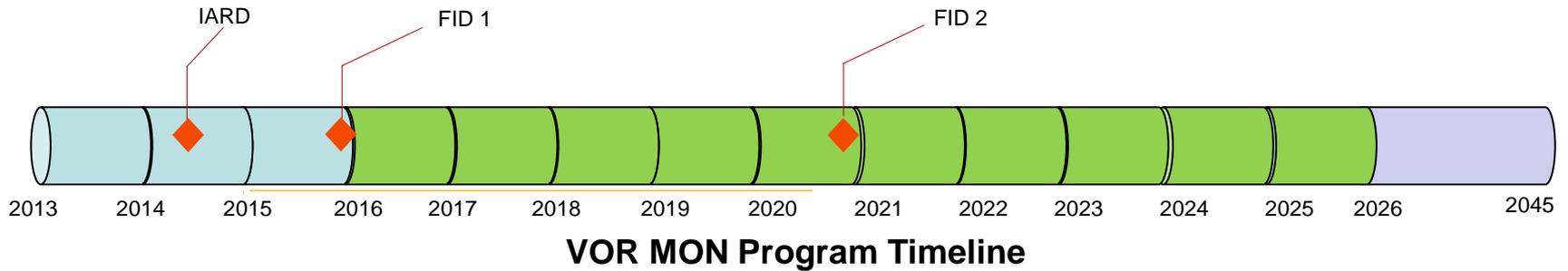
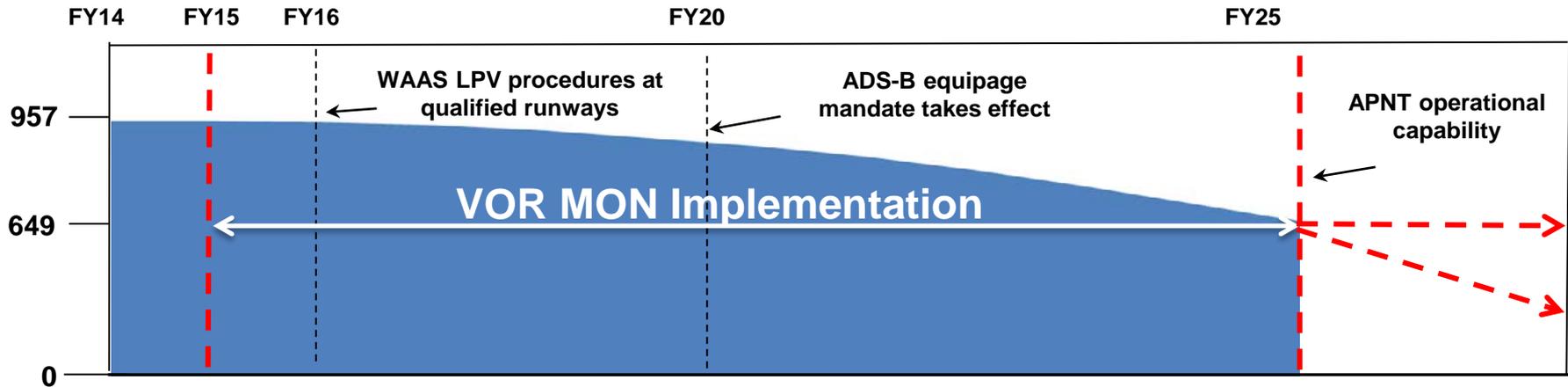


Target VOR MON Discontinuance List

(As of March 2015)



VOR MON Program Timeline



Program Accomplishments

2011 - 2012 Accomplishments

- ✓ Proposed Policy FRN Released for public comment (Volume 76, Number 241) – *December 15, 2011*
- ✓ Final Proposed Policy FRN completed (Volume 77, Number 162) – *August 21, 2012*

2013 - 2014 Accomplishments

- ✓ Concept of Operations – *January 2014*
- ✓ Investment Analysis Readiness Decision (IARD) – *March 2014*
- ✓ Program Charter Signed – *April 2014*

2015 Accomplishments

- ✓ DoD/DHS Retention List Received – *January 2015*
- ✓ Standard Service Volume (SSV) Flight Testing Started – *March 2015*
- ✓ MON and Discontinuance Lists Baselined – *April 2015*
- ✓ RTCA Tactical Operation Committee (TOC) Coordination Completed – *April 2015*
 - **Task 1** Review and validate selection criteria
 - **Task 2** Review and validate draft MON list
 - **Task 3** Recommendations to waterfall schedule
 - **Task 4** Recommendations on education and outreach

VOR MON Program Status

Current Activities

- **Final Investment Decision (FID) Artifacts** – working to complete the following FID Artifacts by April 2015: Enterprise Infrastructure Services (EIS), Post Implementation Review (PIR), Enterprise Architecture (EA) Products, and the Integrated Logistics and Support Plan (ILSP)
- **MON VOR Standard Service Volume (SSV) Testing** - preparing to deliver the first phase Limits-of-Coverage test report and to conduct the second phase by April 2015.
- **VOR MON Discontinuance List** – Begin coordination with Service Area leads to prioritize the phase 1 target list and develop cost and schedule estimates.

Next Steps

- **FID Artifacts** – Continue to work on the completion of the final Program Requirements Document (fPRD) – *May 2015*
- **MON VOR SSV Testing** – deliver the second phase Limits-of-Coverage test report and conduct Co-Channel test – *May 2015*.
- **VOR MON National Planning Meeting** – *May 12-14, 2015*

VOR MON Charting Recommendations

- Charting DME-only Facilities
 - Recommendation 14-02-284 – Dale Courtney
- Charting MON Airports (former “Safe Landing” Airports)
 - New Recommendation





Questions



VOR MON Selection Criteria

General Criteria

- Retain sufficient ILSs, LOCs, and VORs to support “safe-landing” at a suitable destination with a GPS-independent approach (ILS, LOC or VOR) within 100 NM of any location within CONUS
 - Without a requirement for DME at the “Safe Landing Airports”
- Retain most VORs in western designated mountainous area and outside of CONUS
- Retain VORs to support international arrival airways from the Atlantic, Pacific, the Caribbean, and at the Core 30 airports
- Provide seamless coverage at and above 5000 ft AGL
 - Note: Substantial coverage will exist below 5000 ft AGL

VOR MON Selection Criteria

Other Considerations:

- **Only FAA owned/operated VORs will be considered**
- **DMEs and TACANS will generally be retained (and/or enhanced)**
 - DME/TACAN service would, in general, be retained if VOR service is removed
- **Support for VOR-to-VOR navigation capability**
 - VOR standard service volume (SSV) will become 77 NM radius at 5000 ft AGL
 - Conventional navigation VOR-to-VOR direct without airways
 - Retain existing VORs and airways in the western mountain area

Notional VOR MON Airports

190 Airports provide an ILS, LOC, or VOR approach within 100 NM of any location in CONUS

Legend

 ILS or LOC approach Airports (140)

 VOR approach Airports (50)

VOR MON Implementation Program

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