



**Approved by the Tactical Operations
Committee November 2013**

VOR MON Prioritization

*Interim Report of VOR MON Selection Criteria in Response to Tasking from
The Federal Aviation Administration*

October 2013

VOR MON Prioritization

Contents

Background/Introduction	3
Executive Summary.....	3
Assumptions.....	4
Guiding Principles	5
Review of FAA Objectives and Criteria	7
Overall Program Objectives	7
General Criteria.....	8
Coverage for Approaches and Landings	9
Enroute Coverage	9
Recommendations	10
Appendix A: Members of the VOR MON Task Group	12
Appendix B: FAA Tasking Letter	13
Appendix C: VOR MON Federal Register Notice.....	18

Background/Introduction

In order to transition from the use of a very high frequency (VHF) Omni-directional Range (VOR) based route structure to that of a Performance-Based Navigation (PBN), the VOR Minimum Operational Network (VOR MON) Implementation Program was established by the FAA. It is one of a myriad of activities required to shift resources and operations from the legacy National Airspace System (NAS) in to NextGen. The VOR MON Task Group (TG) was tasked by the RTCA Tactical Operations Committee (TOC) in July 2013 to provide recommendations to the FAA on the MON Implementation Program¹ so as to meet the target date of January 1, 2020.

While the work of the Task Group was broken into four parts, this report outlines the completion of Task One, “to review and validate the VOR MON selection criteria and assumptions and make additional recommendations as needed.”

The VOR MON Task Group limited its review of criteria for the decommissioning of domestic, FAA-owned VORs. Prior to the Task Group forming, the FAA developed initial draft VOR MON criteria and published them in the Federal Register for comment in December 2011 and addressed in a subsequent notice in August of 2012². Efforts separate from the VOR MON are ongoing to identify Alternative Position, Navigation, and Timing (APNT) solutions that will provide a full-scale backup system to GPS. In addition, TACAN and DME are not considered by the VOR MON program.

Finally, the Task Group limited its efforts to establishing and validating criteria only for operators flying IFR.

Executive Summary

The VOR MON Task Group made several high-level assumptions including that overall high equipage rates of GPS is significantly reducing reliance on VORs for navigation in IFR flight and that there are pockets of users that will be slower in transitioning away from reliance of VORs due to cost or operational consideration. As a result, mixed equipage will be a reality during the transition period. Finally, the Task Group assumed that parallel efforts to modify operational procedures will be necessary to fully benefit from the MON Implementation.

During the Task Group deliberations several themes arose as emphasis items or concerns. These items were either addressed or deferred for inclusion in future components of the Tasking.

- Outreach and communications to the various user communities is essential and will be an ongoing effort. This includes the rationale for the MON in general and explanation of mitigations for users most heavily impacted by decommissioning of specific VORs. The TG felt that transparency into the selection process will help ensure a successful MON implementation.
- Defining "adequate" VOR coverage proved to be very difficult. The TG concluded that, in fact, the definition varied considerably by each user community, largely driven by current equipage. For instance, the DoD highlighted that while they have highly accurate GPS installations, many are not

¹ Letter from Elizabeth L. Ray (Vice President, Mission Support Services) to Margaret Jenny (RTCA President) dated July 10, 2013.

² Federal Register notice, August 21, 2012

designed to support IFR navigation, especially during the approach phase. As a result, the TG concluded that a defined transition period should be established that allows a reasonable ability to equip, but that the MON Implementation Plan can't wait for a trigger equipage rate in all user communities prior to initiation of VOR decommissioning.

- The *timing* of the start of VOR decommissioning must balance the need to allow time for user equipage with GPS while also allowing as much benefit accrual as possible from lower operational costs of a smaller VOR network.
- The *process* for implementing navigation and non-navigation mitigations e.g. GPS Instrument Approach Procedures (IAP) and movement of communication services must be standardized throughout the NAS.
- There needs to be a well-defined process for vetting of public input related to specific VORs. This effort need to be transparent and robust but not overly burdensome to the FAA team tasked with executing the VOR MON Implementation Plan. The TG deferred further discussion on this item until Task 4.
- Finally there was considerable discussion about the desirability of lowering the floor of VOR coverage from 5,000' AGL by expansion of the VOR service volumes. The TG felt that this would enhance safety and improve user acceptance.

The Task Group came up with several specific recommendations about implementation of the VOR MON. The FAA should be very standardized in transitioning all navigation and non-navigation services e.g. Standard Terminal Arrival Routes (STARs), Standard Instrument Departures (SIDs), engine-out departure procedures, IAPs, Obstacle Departure Procedures (ODP), communications functions and Geographical Position Descriptions. To help ease the impact of decommissioning select VORs, the FAA should allow local entities to assume ownership and maintenance responsibilities for the VOR. Finally, the Task Group recommends that the service volume of VORs be expanded to 62 NM at 3,000' AGL and 70 NM at 4,000' AGL so as to generally provide coverage at and above 3,000' AGL.

The VOR MON Task Group agreed with the general criteria presented by the FAA in the Tasking that will allow the network of VORs to decrease from 967 to approximately 500. It also agrees that the MON should provide coverage in known areas of frequent GPS jamming, mountainous terrain in the Western US and non-GPS, IFR navigation to any destination within 100 NM of the intended point of landing in the contiguous US.

Assumptions

The VOR MON Task Group made the following assumptions as a basis for its work:

Reliance on VORs

- Reliance on VORs continues to decrease since civil aircraft GPS equipage is replacing the need for VORs.³
- DoD is and will continue to be reliant on VORs for:
 - flight training in specific geographic areas

³ The following GPS equipage rates (but not necessarily WAAS capable) were derived based on an analysis of IFR flight plan data from November 2012 to March 2013: 86% of the air transport fleet; 88% of the General Aviation fleet; and 95% foreign carriers.

- Enroute, terminal, and instrument approach procedures for VOR (non-TACAN) equipped aircraft that are not certified for RNAV operations.
- Flight training continues to use VORs for initial and recurrent training requirements.

Equipage Considerations

- Mixed equipage will continue to be a factor in the transition to a PBN system.
- VORs are required for the use of non-WAAS IFR GPS receivers (such as, TSO-C129).
- VORs are required for use of Part 121/135 dispatch of certain aircraft and in specific circumstances.

Operational and Funding Considerations

- Current operators will have to expect changes in the way they operate in the NAS from VORs in the transition to PBN technology (efficiency, increased reliance on GPS, flight planning changes including fuel minimums, etc.).
- PBN equipped aircraft will not be operating uniformly across the NAS.
- DME/DME IRU aircraft would continue to operate and continue to dispatch in the event of a GPS outage.
- Once the VOR MON is fully implemented, it will provide for basic and less efficient terminal and Enroute operations for VOR-only operators and for GPS-equipped operators in the event of a GPS outage.
- VOR MON is not dependent on air traffic control surveillance technology.⁴
- Funding will be available to maintain the VOR MON until it is operationally removed from service.

Guiding Principles

The Task Group established the following principles to provide the FAA with consensus issues related to the VOR MON:

Need for communications and stakeholder outreach

- Opportunities for participation/input by all stakeholders in the process of determining the future VOR MON is necessary
- It is important that a robust communications initiative be undertaken to explain clearly the changes taking place that affect aircraft operations as a result of the VOR MON (training, charting, flight planning under a VOR MON scenario, etc)

Current VOR services

- Navigation services provided by VORs – terminal/Enroute/Instrument Approach/Missed Approach Procedures, STARS, SIDS, engine inoperative departure procedures, airway structure (High/Low)

⁴ While the ADS-B equipage requirement includes a GPS capability, it is not related to navigation.

- Geographic Position Determination -- references to intersections and waypoints that define SAA, NOTAM, LOA, Sigmet/Airmet, PIREPS, airspace classifications, TFRs
- Non-navigation services provided by VORs are – communications (FSS, HIWAS, ATIS).

Need for evaluation of current VORs for inclusion in the MON

- It is essential a thorough evaluation of the navigation and non-navigation services be made regarding the impacts that a VOR discontinuance would have on the NAS, and to ensure there is a standardized approach undertaken by the FAA similar to that used for nav aid decommissioning (this could include a “checklist”).⁵
- Based on the outcome of the evaluation, an appropriate plan for addressing/mitigating these impacts is developed and implemented prior to shutdown.
- A cost/benefit analysis should be conducted to evaluate the continuation/decommissioning of the VOR and the proposed substitution/mitigation to include costs/inefficiencies incurred by the operator.

VOR MON Basic Capability and End-state definition

- Safety is essential – the VOR MON should meet the target level of safety.
- The VOR MON should provide a backup basic navigational capability for GPS users for navigation and transition to safe landing in the event of GPS outage.
- The VOR MON should provide an adequate navigation capability for VOR users while transitioning to PBN.
- The VOR MON should provide an adequate infrastructure to enable training of civil and military pilots.
- It is important that adequate VOR availability be retained in areas where GPS is intentionally unavailable (jamming).
- As much as possible, international accessibility/utilization should not be adversely affected by the VOR MON.
- Priority shall be given to maintain the availability of the VOR MON and the associated landing facilities (equipment).
- FAA should continue making investments for the utilization of PBN procedures and policies a high priority.

Considerations for transition to the VOR MON

- There is recognition of the need to migrate in a phased approach from conventional VOR ground based navigation to a PBN based system that would provide adequate time for transition to the MON.
- As much as practical, the timing of VOR decommissioning should take into consideration the local users rate of transition to PBN.

⁵ The Task Group has identified the issue of both technical analysis and public notice of VOR decommissioning as an important issue for future consideration by the Task Group.

- As the VOR MON is being implemented, FAA's (ATO/AVS) policies, orders and requirements shall be revised accordingly

Review of FAA Objectives and Criteria

The VOR MON Task Group reached consensus on the following responses and recommendations to the FAA's VOR MON program objectives and criteria.

Overall Program Objectives

The VOR MON Implementation Program works collaboratively to provide management oversight, strategic implementation guidance and tactical implementation guidance

FAA: Focuses on safety and coordination across organizational lines of business

Task Group Response: Implementing the VOR MON will require close coordination between ATO-AVS (AIR/AFS) organizations within the FAA. Close coordination with the user community is also critical.

FAA: Transitions from a legacy network of 967 VORs to a MON of approximately 500 VORs by a target date of January 1, 2020

Task Group Response: The scope of the effort is very significant. The date seems aggressive in consideration of work to be done in rulemaking, policies and procedures. Because this date is aggressive, perhaps an alternative date that is in-line with other related NextGen implementation may be appropriate and should be based on the rate of transition to GPS based equipage. Another consideration, and an example of challenges associated with the date, is the FAA's ability to upgrade existing VORs – recapitalization of VORs.

The starting date of FY2014 is viable, but the ability to modify procedures is crucial to completing the implementation as is the opportunity for public comment on the discontinuance of VORs and procedures. Decommissioning of VORs in areas with a high percentage of PBN capable aircraft could commence in the early years, as the number of PBN procedures in these areas and hence GPS equipage is significant

Budget/funding availability is crucial for full implementation of VOR MON – the timing could be affected by sequestration or other budget considerations.

FAA: This is one of a myriad of complex activities required to shift resources from the legacy NAS into NextGen.

Task Group Response: While implementation of a VOR MON is not necessary to implement PBN – it does provide:

- Cost avoidance measures for the FAA
- Investment of resources to implement PBN

An educated and informed decision process needs to be put in place to validate the proposed list of VORs to be de-commissioned as part of the VOR MON implementation. Currently, for a normal de-commissioning of any NAVAID in the NAS, the FAA uses a standardized set of criteria to evaluate the

cost/benefit of the proposed shutdown. Currently, the de-commissioning of individual NAVAIDs does not take into consideration the VOR MON end state and this may result of decommissioning of NAVAIDs necessary from a whole NAS perspective.

Task Group Recommendation:

1. The following should be considered as criteria for inclusion in the MON:
 - The proximity to areas of routine GPS interference and the necessity to maintain sufficient VOR infrastructure to continue efficient operations when GPS is unavailable in these locations.
 - The necessity of the VOR to enable adequate navigation for non-RNAV capable aircraft.
 - The necessity of the VOR for training.

2. The Task Group recommends the FAA use the process outlined below to evaluate the VORs for de-commissioning as part of the VOR MON.

For each VOR proposed to be de-commissioned the following functions should be dispositioned by the FAA:

- All STARS, SIDS, IAPs (to include Missed Approaches and One Engine Inoperative procedures⁶) that have the targeted VOR as part of the procedure.
- All Obstacle Departure Procedures (ODP) and take off minima that are dependent on the targeted VOR.
- All Holding Patterns, Pref Routes, Fixes, Airways (high/low) and VOR CHKPs dependent on the targeted VOR.
- Non-navigation services provided by the targeted VORs – communications (FSS, HIWAS, ATIS), references to intersections and waypoints that define SAA, NOTAM, LOA, Sigmet/Airmets, PIREPS, airspace classifications, TFRs and intra-/inter-facility letters of agreement and MOUs.
- All AeroNav Chart products that depict the VOR.

For each item identified above, the FAA needs to decide and document, in coordination with the user community (a) no mitigation or replacement is necessary, and the rationale or (b) a mitigation or replacement is needed, a description of the mitigation/replacement and the effective date. Both (a) and (b) will include a cost/benefit analysis to include user costs/impacts. To the maximum extent possible, no VOR shall be decommissioned prior to implementing the mitigation or publishing the replacement procedure.

General Criteria

FAA: Retain VORs outside of CONUS and most VORs in designated mountainous areas

Task Group Recommendation: The Task Group strongly supports retaining the VORs outside of the CONUS and in “western mountainous areas.”

⁶ The FAA should coordinate with operators to determine the effect of VOR disestablishment on specific OEI procedures for specific operators.

FAA: Only FAA owned/operated VORs will be considered

Task Group Recommendation: The VOR MON TASK GROUP recommends the FAA allow a local entity, state or municipality to assume ownership and maintenance of a VOR. As evidenced by coverage gaps filled through the inclusion of current non-federal VORs, NAS users could benefit from the continuation or possible expansion of coverage offered by non-federal VORs.

FAA: DMEs and TACANS will generally be retained (and/or enhanced) - If VOR service is removed from a site, any DME or TACAN at the site would, in general, be retained

Task Group Response: This is supported by the Task Group.

Coverage for Approaches and Landings

FAA: Retain sufficient VOR ground stations to enable aircraft to proceed safely to another VOR or to a suitable destination with a GPS-independent approach (ILS, LOC or VOR) within 100 NM of any location within CONUS

Task Group Recommendation: The Task Group recommends the FAA consider the following perspectives to measure the adequacy of the VOR MON in meeting the needs of the various NAS stakeholders. These include but aren't limited to:

- Supporting mixed equipage such as users with primarily GPS-only systems, mixed GPS and legacy systems, FMS/DME-DME systems and VOR-only systems.
- The capability to navigate by VOR to an alternate airport within 100 NM (great circle) of an IFR airport within the CONUS. NOTE: see appendix for list of anticipated policy and procedural changes to support the transition to the VOR MON.
- The need for specific stakeholders to maintain mission capability in select sub-fleets as they transition to GPS equipage e.g. Army helicopters to fulfill training mission requirements.
- Ensuring there remains an ability to navigate in known GPS "jamming" locations. For instance, the DOD has several known areas throughout the country where routine GPS jamming is conducted.

FAA: Retain VORs to support international arrival airways from the Atlantic, Pacific, the Caribbean, and at the Core 30 airports

Task Group Response: Ensure that the VOR MON provides sufficient coverage to the "Core 30" airports and associated Metroplex.

Enroute Coverage

FAA: Provide coverage at and above 5000ft AGL

Task Group Recommendation: The current proposal envisions the FAA creating a new service volume of 77 NM at 5000' AGL or above. The task group recommends that the service volume be expanded to 70 NM at 4000' AGL and 62 NM at 3000 ft AGL in order to provide additional capability for aircraft that may not be able to climb to 5000' AGL.

The idea of allowing coverage down to 3000/4000 feet allows for aircraft to remain out of icing during inclement weather or to remain clear of overhead traffic (segregate mixed traffic) in the

Metroplex environment where arrivals and departures operate at lower altitudes. The Washington, DC area is an example where overhead stream of traffic into IAD operates between 4000-6000 feet. The coast of Oregon is an example of areas where lower altitudes need to be available to avoid icing. Based on the coverage and preliminary spectrum analysis, lowering the enroute coverage to 3000 feet and out to 62 NM should be a reasonable consideration.

FAA: Support VOR-to-VOR navigation capability (VOR service volume remains the same below 5000ft at 40 NM, under the VOR MON, Enroute becomes 77 NM radius at 5000' ft AGL

Task Group Response: The current proposal envisions the FAA creating a new service volume of 77 NM at 5000' AGL or above. The task group recommends that the service volume be expanded to 70 NM at 4000' AGL and 62 NM at 3000 ft AGL in order to provide additional capability for aircraft that may not be able to climb to 5000' AGL.

Recommendations

The Task Group is in general agreement with the FAA's initial VOR MON plans and makes the following specific additional recommendations.

1. In addition to the general criteria we recommended that these also be considered as criteria for inclusion in the MON:
 - The proximity to areas of GPS interference and the necessity to maintain sufficient VOR infrastructure to continue efficient operations when GPS is unavailable in these locations.
 - The necessity of the VOR to enable adequate navigation for non-RNAV capable aircraft.
 - The necessity of the VOR for training.
2. The Task Group recommends the FAA use the process outlined below to evaluate the VORs for de-commissioning as part of the VOR MON.

For each VOR proposed to be de-commissioned the following functions should be dispositioned by the FAA:

- All STARS, SIDS, IAPs (to include Missed Approaches and One Engine Inoperative procedures⁷) that have the targeted VOR as part of the procedure.
- All Obstacle Departure Procedures (ODP) and take off minima that are dependent on the targeted VOR.
- All Holding Patterns, Pref Routes, Fixes, Airways (high/low) and VOR CHKPs dependent on the targeted VOR.
- Non-navigation services provided by the targeted VORs – communications (FSS, HIWAS, ATIS), references to intersections and waypoints that define SAA, NOTAM, LOA, Sigmet/Airmets, PIREPS, airspace classifications, TFRs and intra-/inter-facility letters of agreement and MOUs.

⁷ The FAA should coordinate with operators to determine the effect of VOR disestablishment on specific OEI procedures for specific operators.

- All AeroNav Chart products that depict the VOR.

For each item identified above, the FAA needs to decide and document, in coordination with the user community (a) no mitigation or replacement is necessary, and the rationale or (b) a mitigation or replacement is needed, a description of the mitigation/replacement and the effective date. Both (a) and (b) will include a cost/benefit analysis to include user costs/impacts. To the maximum extent possible, no VOR shall be decommissioned prior to implementing the mitigation or publishing the replacement procedure.

3. The Task Group supports retaining the VORs outside of the CONUS and in “western mountainous area.”
4. The VOR MON Task Group recommends the FAA allow a local entity, state or municipality to assume ownership and maintenance of a VOR. As evidenced by coverage gaps filled through the inclusion of current non-federal VORs, NAS users could benefit from the continuation or possible expansion of coverage offered by non-federal VORs.
5. The Task Group recommends the FAA consider the following perspectives to measure the adequacy of the VOR MON in meeting the needs of the various NAS stakeholders. These include but aren’t limited to:
 - Supporting mixed equipage such as users with primarily GPS-only systems, mixed GPS and legacy systems, FMS/DME-DME systems and VOR-only systems.
 - The capability to navigate by VOR to an alternate airport within 100 NM (great circle) of an IFR airport within the CONUS. NOTE: see appendix for list of anticipated policy and procedural changes to support the transition to the VOR MON.
 - The need for specific stakeholders to maintain mission capability in select sub-fleets as they transition to GPS equipage e.g. Army helicopters to fulfill training mission requirements.
 - Ensuring there remains an ability to navigate in known GPS “jamming” locations. For instance, the DOD has several known areas throughout the country where routine GPS jamming is conducted.
6. The current proposal envisions the FAA creating a new service volume of 77 NM at 5000' AGL or above. The task group recommends that the service volume be expanded to 70 NM at 4000' AGL and 62 NM at 3000' AGL in order to provide additional capability for aircraft that may not be able to climb to 5000' AGL.

Appendix A: Members of the VOR MON Task Group

Members of the VOR MON Task Group

Phillip Basso	DoD Policy Board on Federal Aviation
Mark Boquski	Thales ATM US
Rich Boll	National Business Aviation Association
Andy Cebula	RTCA, Inc.
Dale Courtney	Federal Aviation Administration (SME)
Donald Dillman	Airlines for America (Co-Chair)
Bob Ferguson	NetJets Association of Shared Aircraft Pilots
Jens Hennig	General Aviation Manufacturers Association
Mark Hopkins	Delta Air Lines, Inc.
Bob Lamond	National Business Aviation Association
Deborah Lawrence	Federal Aviation Administration (SME)
David Manville	U.S. Army
Vince Massissimini	The MITRE Corporation
Don McClure	Air Line Pilots Association
Rick Niles	The MITRE Corporation
Paul Railsback	Airlines for America
Matthew Ross	Real NewEnergy
Edwin Solley	Southwest Airlines
Stephen Sorkness	SkyWest Airlines
Greg Tennille	The MITRE Corporation
Robert Utley	National Air Traffic Controllers Association
David Vogt	Delta Air Lines, Inc.
Heidi Williams	Aircraft Owners and Pilots Association (Co-Chair)

Appendix B: FAA Tasking Letter



U.S. Department
of Transportation
**Federal Aviation
Administration**

Mission Support Services
800 Independence Avenue, SW.
Washington, DC 20591

JUL 10 2013

Ms. Margaret T. Jenny
President
RTCA, Inc.
1150 15th Street, NW
Suite 910
Washington, DC 20036

Dear Ms. Jenny:

In order to provide navigation services in a more efficient and cost effective manner and meet the goals of the Next Generation Air Transportation System (NextGen), a transition from the use of a very high frequency Omni-directional Range (VOR) based route structure to that of a Performance-Based Navigation (PBN) based route structure is necessary and underway. To meet the goals of NextGen, current processes for defining airways, routes, and developing procedures using VORs must give way to routes and procedures with improved accuracy, availability, integrity, and continuity using PBN. The VOR Minimum Operational Network (VOR MON) Implementation Program has been established and is one of a myriad of activities required to shift resources and operations from the legacy National Airspace System (NAS) into NextGen. The VOR MON Program is designed to be a collaborative effort, which includes various lines of business (LOBs) within the Federal Aviation Administration (FAA) as well as numerous aviation stakeholder groups, to provide the tactical and strategic planning and implementation guidance to safely and systematically transition from a legacy network of 967 VORs to a MON of approximately 500 VORs by January 1, 2020.

The timing of the VOR MON Program is critical. Our current operating system of Federal Airways is based on 546 VOR/tactical air navigation (TACAN)s and 421 VOR/distance measuring equipment (DME)s. All of these VORs are beyond their economic service life. By 2020, the FAA projects the widespread availability of PBN procedures and the mandate of Automatic Dependent Surveillance-Broadcast (ADS-B) Out will result in most operators having a global positioning system (GPS) or wide area augmentation system (WAAS) and flying both PBN and conventional procedures using PBN avionics. This transition to PBN as the primary means of navigation will result in a significant decrease in the reliance on VORs. The remaining VORs will serve as a backup navigation service to non-DME/DME/Inertial Reference Unit equipped aircraft but PBN functionality will be limited. The VOR MON will provide backup navigation services to non-GPS and non-WAAS equipped aircraft but it will not be as efficient.

The VOR MON is envisioned to allow an aircraft to safely navigate VOR to VOR to land at an airport with a GPS independent approach within 100 nautical miles (nm) of any location within the Continental United States (CONUS). Efforts are ongoing to identify Alternative

Position, Navigation, and Timing solutions that will provide a full-scale backup system to GPS and are separate from the VOR MON effort. The FAA developed the initial draft VOR MON criteria and published them in the Federal Register for comment in December 2011. Based on comments, the criteria were clarified and a draft candidate list was established. Based on the draft candidate list, the VOR MON Program Office worked with the Service Areas and various FAA Headquarters organizations and identified some preliminary implementation issues. We also held some early discussions with the Department of Defense (DoD) to facilitate future coordination and to assess any impacts to DoD CONUS operations. TACAN and DME are not considered by the VOR MON program. Several other stakeholder groups have also been briefed about the program but we are requesting the assistance of the Tactical Operations Committee (TOC), to provide recommendations in three key areas:

Task One – Review and validate the VOR MON selection criteria and assumptions and make additional recommendations as needed.

Task Two – Review and validate the draft candidate VOR MON list, based on the above criteria.

Task Three – Review implementation planning to date and make recommendations to the preliminary waterfall schedule developed by the FAA.

Task Four – Provide recommendations to the FAA on outreach and education that should be accomplished to prepare the industry for the VOR MON reduction. More detail on each task follows.

Task 1: Review and validate the VOR MON selection criteria and assumptions

We plan to transition from VOR defined route structures as the primary means of navigation to PBN using Area Navigation (RNAV) and Required Navigation Performance (RNP) by January 1, 2020. Since VORs do not enable advanced RNAV, RNP, or ADS-B operations, FAA will reduce operating costs by reducing the number of FAA-provided VORs and associated conventional procedures and routes. Reductions in VORs will be limited to the CONUS. Most VORs in the western mountains and all FAA- owned VORs outside CONUS will be retained. Remaining VORs will form the VOR MON and will accomplish the following:

- Provide navigation coverage above 5000 feet above ground level.
- Allow an aircraft in the CONUS to fly safely VOR to VOR or to a safe landing site with a GPS-independent approach within 100 nm of any location in CONUS.
- Support international arrival routes and operations at the Core 30 airports.
- Support Hazardous In-Flight Weather Advisory and Flight Service Station voice services.

We request the TOC:

- Review and validate the basic program assumptions made to date concerning the selection criteria. We will ensure the TOC has complete information on studies and analysis done to date as well as access to subject matter experts within the FAA.
- If amendments are recommended, please provide specific details with the recommendations to include the range of options and/or alternatives discussed.

We request this tasking be complete by January 2014 with an interim report in October 2013.

Task 2: Review and validate the draft candidate VOR MON list

Based on the criteria noted above, we have developed a preliminary candidate list for the VOR MON. Those VORs not on the list would be slated for discontinuance. FAA Service Areas have reviewed the lists and commented based on the criteria above. We request the TOC:

- Review and validate the candidate VOR MON list based on the criteria and, if the TOC recommends amending the criteria, update the candidate list based on the amendments as appropriate. If specific options were considered but not adopted via consensus, please provide the range of options and/or alternatives considered.
- Advise the FAA from a stakeholder perspective on why, how, and whether exceptions should be made to valid criteria. Again, please provide specific details to include the range of options and/or alternatives discussed.

We request this tasking be complete by April 2014 with an interim report in January 2014.

Task 3: Review implementation planning to date and make recommendations to the preliminary waterfall schedule developed by the FAA

We have identified the need to develop a waterfall schedule taking into account instrument procedures cancellation activities, Optimization of Airspace and Procedures in the Metropolises, and the development of high altitude (Q) and low altitude (T) area navigation routes. Clearly the effort has to be carefully coordinated with other activities which result in the development and charting of instrument flight procedures and routes in the NAS. Each VOR not on the candidate MON will likely have numerous conventional procedures or routes associated with the VOR. These procedures and routes will either need to be replaced or canceled. The order or timing of VOR cancellations must not reduce safety in the NAS. For example, Victor 3 extends from Maine to Florida and has 14 VORs identified for discontinuance/decommissioning. Should we implement based on an entire route like this?

Should we transition the entire route to a PBN based route structure first and retain end to end flight planning capability and minimize automation issues? We request the TOC:

- Examine and analyze the PBN Route Strategy in light of the VOR MON Program and recommend up to three possible implementation/waterfall scenarios. Advise the FAA of the pros and cons of each. If incremental actions are needed in any of the scenarios, please identify those with specificity. Please include the range of options and/or alternatives discussed in the documentation. We will provide the TOC with a draft copy of the PBN Route Strategy.
- Provide recommendations on which victor and jet routes should be retained in the 2013-2020 timeframe and why. Please include the range of options and/or alternatives discussed in the documentation.
- Provide high level industry perspective on the feasibility and actions needed to completely retire the legacy route structure after 2020.

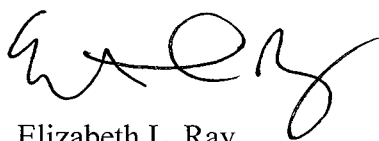
We request this tasking be complete by July 2014 with an interim report in April 2014.

Task 4: Provide recommendations to the FAA on outreach and education that should be accomplished to prepare stakeholders for the VOR MON reduction

- Advise the FAA, from an external stakeholder perspective, of what existing policies, processes, procedures or training will need to be modified to successfully implement the VOR MON.
- Advise the FAA on an outreach strategy to include modes of outreach, timelines, etc. and provide recommendations on how the industry can assist the FAA in outreach efforts.

We request this tasking be complete by July 2014 with an interim report in April 2014.

Sincerely,



Elizabeth L. Ray
Vice President, Mission Support Services
Air Traffic Organization

Appendix C: VOR MON Federal Register Notice

This proposal will be subject to an environmental analysis in accordance with FAA Order 1050.1E, "Environmental Impacts: Policies and Procedures" prior to any FAA final regulatory action.

List of Subjects in 14 CFR Part 71

Airspace, Incorporation by reference, Navigation (air).

The Proposed Amendment

Accordingly, pursuant to the authority delegated to me, the Federal Aviation Administration proposes to amend 14 CFR Part 71 as follows:

PART 71—DESIGNATION OF CLASS A, B, C, D AND E AIRSPACE AREAS; AIR TRAFFIC SERVICE ROUTES; AND REPORTING POINTS

1. The authority citation for 14 CFR Part 71 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40103, 40113, 40120; E.O. 10854, 24 FR 9565, 3 CFR, 1959–1963 Comp., p. 389.

§ 71.1 [Amended]

2. The incorporation by reference in 14 CFR 71.1 of the Federal Aviation Administration Order 7400.9V, Airspace Designations and Reporting Points, dated August 9, 2011, and effective September 15, 2011 is amended as follows:

Paragraph 6002 Class E Airspace Designated as Surface Areas.

* * * * *

ANM WA E2 Pullman, WA [Modified]

Pullman/Moscow Regional Airport, WA
(Lat. 46°44'38" N., long. 117°06'35" W.)

Within a 4-mile radius of Pullman/Moscow Regional Airport, and within 1.7 miles each side of the Pullman/Moscow Regional Airport 046° bearing extending from the 4-mile radius to 8 miles northeast of the airport, and within 1.7 miles each side of the Pullman/Moscow Regional Airport 227° bearing extending from the 4-mile radius to 6 miles southwest of the airport. This Class E airspace area is effective during the specific dates and times established in advance by a Notice to Airmen. The effective date and time will thereafter be continuously published in the Airport/Facility Directory.

Paragraph 6005 Class E Airspace Areas Extending Upward From 700 Feet or More Above the Surface of the Earth.

* * * * *

ANM WA E5 Pullman, WA [Modified]

Pullman/Moscow Regional Airport, WA
(Lat. 46°44'38" N., long. 117°06'35" W.)

That airspace extending upward from 700 feet above the surface within a 10-mile radius of the Pullman/Moscow Regional Airport, and within 1.7 miles each side of the Pullman/Moscow Regional Airport 229° bearing extending from the 10-mile radius to

13 miles southwest of the airport, and that airspace bounded by a line beginning at the intersection of the 10-mile radius of the airport and the Pullman/Moscow Regional Airport 307° bearing to the intersection of the 23-mile radius of the airport and the Pullman/Moscow Regional Airport 328° bearing extending clockwise within a 23-mile radius of the Pullman/Moscow Regional Airport; thence to the intersection of the 23-mile radius of the airport and the Pullman/Moscow Regional Airport 064° bearing of the airport to the intersection of the 10-mile radius of the airport and the Pullman/Moscow Regional Airport 066° bearing of the airport; thence to the point of origin. That airspace extending upward from 1,200 feet above the surface bounded by a line beginning at lat. 46°46'00" N., long. 117°51'00" W.; to lat. 47°06'00" N., long. 117°29'00" W.; to lat. 47°10'00" N., long. 117°13'00" W.; to lat. 47°07'00" N., long. 116°50'00" W.; to lat. 46°57'00" N., long. 116°28'00" W.; to lat. 46°38'00" N., long. 116°41'00" W.; to lat. 46°31'00" N., long. 116°23'00" W.; to lat. 46°12'00" N., long. 116°25'00" W.; to lat. 46°19'00" N., long. 116°57'00" W.; to lat. 46°24'00" N., long. 117°30'00" W.; thence to the point of origin.

Issued in Seattle, Washington, on August 14, 2012.

John Warner,

Manager, Operations Support Group, Western Service Center.

[FR Doc. 2012–20543 Filed 8–20–12; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Parts 91, 97, 121, 125, 129, and 135

[Docket No. FAA–2011–1082]

Proposed Provision of Navigation Services for the Next Generation Air Transportation System (NextGen) Transition to Performance-Based Navigation (PBN); Disposition of Comments

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed policy; disposition of comments.

SUMMARY: On December 15, 2011, the FAA published a **Federal Register** Notice (76 FR 77939) requesting comments on the FAA's plans for providing PBN services, and particularly the transition from the current Very High Frequency Omnidirectional Ranges (VOR) and other legacy navigation aids (NAVAIDS) to Area Navigation (RNAV)-based airspace and procedures. This action responds to the public comments the FAA received.

ADDRESSES: You may review the public docket for this notice (Docket No. FAA–2011–1082) at the Docket Management Facility at DOT Headquarters in Room W12–140 of the West Building Ground Floor at 1200 New Jersey Avenue SE., Washington, DC 20590–0001 between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. You may also review the public docket on the Internet at <http://www.regulations.gov>.

FOR FURTHER INFORMATION CONTACT: Mr. Greg Joyner, AJM–324, Program Management Organization, Navigation Program Engineering, Federal Aviation Administration, 800 Independence Avenue SW., Washington DC 20591; telephone 202–493–5721.

SUPPLEMENTARY INFORMATION:

Summary of the December 15, 2011 FRN

The FAA sought comments on the proposed transition of the U.S. National Airspace System (NAS) navigation infrastructure to enable PBN as part of the NextGen. The FAA plans to transition from defining airways, routes and procedures using VOR and other legacy NAVAIDS, to a NAS based on RNAV everywhere and Required Navigation Performance (RNP) where beneficial. RNAV and RNP capabilities will primarily be enabled by the Global Positioning System (GPS) and the Wide Area Augmentation System (WAAS). The FAA plans to retain an optimized network of Distance Measuring Equipment (DME) facilities and a Minimum Operational Network (MON) of VOR facilities to ensure safety and support continued operations in high and low altitude en route airspace over the Conterminous United States (CONUS) and in terminal airspace at the Core 30 airports. The FAA is also conducting research on non-GPS based Alternate Positioning, Navigation and Timing (APNT) solutions that would enable further reduction of VORs below that of the MON.

In addition, the FAA plans to satisfy any new requirements for Category I (CAT I) instrument landing operations with WAAS Localizer Performance with Vertical guidance (LPV) procedures. A network of existing Instrument Landing Systems (ILSs) will be sustained to provide alternative approach and landing capabilities to support continued recovery and dispatch of aircraft during GPS outages.

This transition is consistent with the FAA's NextGen Implementation Plan (NGIP), NAS Enterprise Architecture (NASEA), and other documentation. More information is available on the

FAA's NextGen Web site at <http://www.faa.gov/nextgen> and the NASEA Web site at <https://nasea.faa.gov>.

Discussion of Comments Received

Summary

The FAA received 330 comments on the FRN. Commenters include aircraft manufacturers, airline operators, individuals, and associations representing users, airports and several federal, state and local government organizations. Most comments were supportive of the evolution of the NAS to an RNAV based system, but a significant number of commenters were concerned about reliance on GPS and WAAS related to possible impacts of interference or disruption, as well as the requirements and costs of avionics. A number of commenters were concerned about loss of approach services at specific airports in the event of discontinuation of service from specific VOR facilities. A substantial number of the comments (185) received were from individuals concerned about noise and environmental impact in the New York metropolitan area. Some reflected concerns about aircraft emissions and flight paths used by helicopters. These comments have been forwarded to the FAA Eastern Region for action.

Discussion

The FAA has reviewed all the comments received in response to the FRN and plans to proceed with the strategy as outlined in the FRN. The FAA is developing an initial VOR MON Plan, which will be publicly available when it is sufficiently matured. Development of this Plan will harmonize with development of a national Concept of Operations (CONOPS) supporting navigation and positioning in the NAS as it evolves from conventional navigation to PBN. When completed, this CONOPS will also be publicly available.

As part of the coordination process, the FAA plans to develop a schedule showing the requisite activities associated with the discontinuance of VOR services. These activities will include timely notification for individual facilities and airspace and procedure redesign.

Comment #1: Several commenters (International Air Traffic Association (IATA), Boeing Commercial Airplanes, National Association of State Aviation Officials (NASAO), Aircraft Owners and Pilots Association (AOPA), Department of Defense (DoD), and Airlines For America (A4A)) expressed interest in being included in the working group that the FRN indicated would be formed

to complete the details of VOR discontinuance. Some airlines commented that they would like to be consulted on the policy.

FAA Response: The FAA will convene a working group that will engage aviation industry stakeholders and other members of the public for input once the Program has reached a sufficient level of maturity conducive to working group.

Comment #2: NASAO commented that planning the transition to NextGen PBN well in advance would be beneficial to the FAA and the state government aviation agencies.

FAA Response: The FAA's VOR MON plan is proceeding to support transition to NextGen PBN in accordance with the NASEA. The NGIP, FRN and NASEA, all publicly available via FAA Web sites, are integral to the transition of the NAS to PBN operations.

Comment #3: The Nebraska Department of Aviation (DoA) recommended that VORs remain available as a viable means for air navigation while the services to support NextGen PBN be provided for users that can obtain benefits from them during a transition.

FAA Response: The VOR MON will remain in place during the PBN transition.

Comment #4: Nebraska state-owned VORs, similar to the FAA inventory of Second Generation VORs, are maintained by the State, who reports there have been no problems with support cost or availability of parts.

FAA Response: VOR facilities not owned or operated by the FAA are not being considered for discontinuance.

Comment #5: Operators that fly outside the United States desired clarification on the GNSS reference to be used.

FAA Response: The FRN used the terms GPS and WAAS, the specific U.S. implementations of the GNSS and Space Based Augmentation System (SBAS) described in ICAO Annex 10. Other countries have, or are building systems that implement these standards, such as Europe's GNSS (Galileo) and SBAS (European Geostationary Navigation Overlay Service (EGNOS)). Since the U.S. does not make regulatory determinations on navigation systems allowed in other countries, the U.S. cannot authorize use of GPS in other countries. The FAA is responsible for determining which services are adequate for operations in the U.S. NAS, and has, to date, only approved the use of the U.S. GPS and WAAS, and Russia's Globalnaya Navigatsionnaya Sputnikovaya Sistema (GLONASS) on a supplemental basis. The U.S. is working

with other GNSS providers to assure that their signals may be used to improve performance in the U.S. when those signals become available. Plans for navigation services will continue to use specific references (e.g., GPS and WAAS) and policies will be updated as additional constellations are approved for use in the U.S. The ability of avionics to use different GNSS constellations and services depends both on the authorized equipment available for specific aircraft and the type of systems the operators decided with which to equip their aircrafts. It also depends on what avionics manufacturers decide to develop. FAA's plans for navigation services will continue to use the "GPS" and "WAAS" terms so that it is clear that the U.S. is referring to U.S. systems/services for the U.S. NAS. Text describing this reasoning will be included in future documents to help ensure clarity.

Comment #6: Some users stated that they either will not equip with GPS avionics or will not be flying in airspace that requires ADS-B. The Nebraska DoA stated that many pilots and users do not plan to equip aircraft with GPS and that instructors will still require students to learn VOR navigation.

FAA Response: Pilots may continue to use VORs that remain in the MON or fly under Visual Flight Rules (VFR) in non-ADS-B airspace. Instructors will still teach VOR navigation.

Comment #7: Operators and some aircraft and equipment manufacturers stated that they did not intend to equip with WAAS because (1) WAAS service is not provided in many parts of the world outside the United States, and (2) many air carrier aircraft are equipped with avionics that allow at least RNAV, if not some level of RNP, and they do not believe WAAS provides benefits commensurate with the added complexity and cost involved with equipage.

FAA Response: WAAS avionics (Technical Standard Order (TSO)-C145/146) with suitable other avionics, such as Flight Management Systems (FMS) support LPV and Lateral Navigation/Vertical Navigation (LNAV/VNAV) terminal procedures and lower minima instrument approaches that are not available to users equipped with non-augmented GPS (TSO-C129 and C196) avionics. Pilots may continue to use non-augmented GPS or other RNAV capabilities as described in FAA advisory circulars AC 90-100, AC 90-101, AC 90-105, AC 90-107 and other directives.

Comment #8: Federal Express stated that the FRN described implementation of PBN based on GPS and WAAS

backed up by a minimum network of VORs and DMEs, which it stated would require equipage of aircraft with avionics that is not offered by major airline airframe manufacturers.

FAA Response: While the FAA intends to reduce the VOR infrastructure to a MON, it will maintain an optimized DME network to support RNAV operations throughout the NAS. In the NextGen timeframe, an optimized DME network could be used to support APNT.

Comment #9: The DoD was concerned about discontinuation of service from all types of ground based navigation aids. The concept and planning described in the FRN does not contemplate discontinuation of service from all ground based navigation aids. It describes the considerations for determining the discontinuation of service by VOR ground based navigation aids. Where the VOR functionality is collocated with DME or DME and UHF azimuth equipment (which is the Tactical Air Navigation or TACAN), the FRN only addresses the VOR service and not these other services.

FAA Response: The MON described in the FRN is a network of VORs only, and does not include TACAN. Retention of DMEs and the DME function provided via TACAN is desirable because of the large proportion of the air carrier fleet that uses DME/DME or DME/DME/Inertial Reference Unit (IRU) for RNAV. Any national discontinuation of DME or TACAN service is separate from the VOR MON, not a part of this activity, and not contemplated in the near future.

Comment #10: Some organizations (IATA, United Air Lines, FedEx, Honeywell, Thales, and A4A) expressed concern about the future of ILSs and other vertically guided approaches, in particular at 14 CFR Part 139 airports serving air carriers.

FAA Response: The FAA has no current plans to remove ILSs, but most new vertically guided approach requirements using Facilities and Equipment funding will be fulfilled with LPV approaches. ILS can continue to be approved under Airport Improvement Program (AIP) funding. While LPVs will receive increasing emphasis for projects funded under the AIP, the needs of users for ILS equipment will be considered in the determination of the types of approach navigation installed under the AIP. It is envisioned that many air carrier runways at major airports will continue to be supported by ILS (in addition to LPV). Additionally, the FAA plans to continue to develop LNAV/VNAV approaches, which can be flown by

GPS-equipped aircraft with barometric vertical navigation and by WAAS-equipped aircraft to qualified runways used by air carrier aircraft. RNP approaches will be developed where beneficial, and GLS approaches will be developed as appropriate at airports with access to GBAS equipment.

APNT

The FAA's NextGen Alternate PNT (APNT) program ensures that alternate PNT services will be available to support flight operations, maintain safety, minimize economic impacts from GPS outages within the NAS and support air transportation's timing needs. APNT will be an alternative for all users. Avionics equipage is a major consideration. APNT requirements will be met with the optimum use of existing avionics. The current plan is for APNT equipage to be optional.

Comment #11: The airline industry voiced support for an increase in DME to provide additional coverage for DME-DME navigation provided by modern Flight Management Systems (FMS).

FAA Response: The FAA concurs. Current planning is for implementation of the new DME sites beginning in 2014. The FAA goal is to have complete DME-DME coverage enroute at FL 180 and above throughout CONUS and in the terminal area of large airports in the CONUS.

Comment #12: The airline industry was concerned about a statement in the FRN that seemed to indicate that WAAS was required for ADS-B.

FAA Response: WAAS is not required for ADS-B. Other methods of meeting the performance requirements are being investigated. ADS-B implementation in international operations will require use of regionally or globally available services.

Comment #13: IATA stated implementation of any new technology should be driven by coordinated operational requirements of stakeholders. The International Civil Aviation Organization PBN Manual (Document 9613) was cited by IATA in describing the steps that must be followed in implementing PBN, and states the FAA may not have followed the described process. IATA then related the plan described in the FRN to the ADS-B Out regulations at 14 CFR 91.225 and 91.227 and the implied SBAS mandate and provides comments on the implementation and the requirements that it states are very different from European requirements to obtain the same performance with simpler equipage. IATA states they do not support use of any SBAS systems such as WAAS and desires to be

consulted on revision of the VOR MON and alternate positioning, navigation and timing and systems, such as eLORAN, Galileo and others. IATA does not support the use of LPV approaches as a universal solution and requires an adequate number of precision approaches be maintained to provide capacity without GNSS. IATA states GBAS and Baro VNAV approaches should be published to complement LPV approaches at airports used by international carriers. IATA does not want PBN levels to be specified that require augmentation unless they are operationally required.

FAA Response: FAA will engage stakeholders via the working group in implementing the MON. PBN transition strategy is currently being developed within the FAA. The FAA will not mandate WAAS. PBN can be achieved by multiple means, such as DME/DME and ILS. GBAS is currently in the Research & Development phase.

Comment #14: Boeing Commercial Airplanes was concerned about the interpretation text for the operational requirements for two independent systems (reference 14 CFR 121.349, 125.203, 129.17 and 135.165). Specifically, they questioned the statement that the requirements for a second navigation system apply to the entire set of equipment needed to achieve the navigation capability, not just the individual components. They are concerned that this statement could be interpreted as requiring dual independent navigation computers. Additionally, they state that existing, certified multi-sensor navigation systems under AC 20-130A can meet the proposed policy requirements.

FAA Response: The text does not imply the need for dual independent navigation computers. The text instead emphasizes the need for independence of the navigation systems and their components to ensure that there will be no potential single point of failure or event that could cause the loss of the ability to navigate along the intended route or proceed safely to a suitable diversion airport. The interpretation of this requirement as applied to an aircraft approved for multi-sensor navigation and equipped with a single FMS is that the aircraft must maintain an ability to navigate or proceed safely in the event that any one component of the navigation system fails, including the FMS. Retaining an FMS-independent VOR capability would satisfy the requirement, even as the NAS is transitioned to the MON. This interpretation corresponds to the advisory wording in AC 20-130A.

Comment #15: The Maryland Aviation Administration (MAA) expressed concern about current GPS equipage rates.

FAA Response: Though approximately 19 percent of all general aviation aircraft are equipped with aviation-qualified GPS, most aircraft that actually file IFR flight plans are typically equipped with GPS. Specifically, more than 72% of aircraft that filed at least two IFR flight plans in 2011 filed with an equipment code indicating they had IFR GPS receivers on board. Of aircraft that filed more than 100 IFR flight plans in a year the rate was above 97%. While it may be the case that a significant number of aircraft flying VFR are not equipped with GPS, the purpose of the VOR system is to provide navigation for aircraft flying IFR, not VFR. VFR traffic is permitted to use hand-held and non-IFR certified GPS equipment for situational awareness as an aid to navigation and often use pilotage and dead reckoning navigation. While the VORs retained in the MON will support VFR aircraft operations, their purpose is clearly to support those aircraft operating under IFR.

Comment #16: Two commenters (the Nebraska DoA and Thales) were concerned over the impact that a reduction in VORs would have on training and training requirements.

FAA Response: The current training standards for the FAA emphasize VORs as the primary navigation source. The transition to NextGen will require that the FAA shift emphasis from VOR navigation to satellite-based navigation by changing training syllabi and the PTS. However, some emphasis will need to remain on VOR and ILS to ensure that pilots can navigate using these systems in the event of a GPS outage. These considerations will be included in the FAA's plan for discontinuance of VORs. Additionally, transfer of FAA-owned VORs not selected to be in the MON to operation under non-Federal ownership for training may be considered on a case-by-case basis.

Comment #17: The Nebraska DoA and Thales were also concerned with airport infrastructure requirements resulting from development of RNAV or RNP approaches.

FAA Response: FAA airport infrastructure requirements resulting from instrument approaches are published in FAA Advisory Circular 150/5300-13. Because airport infrastructure upgrades may be required for the attainment of lowest instrument approach minima, collaboration with local and state officials will be

accomplished during the approach development process. For example, development of an LPV approach could not be accomplished if the required runway length were not available. However, if a decision was made in collaboration with local and state officials, to extend the runway, then an LPV could be reconsidered.

Comment #18: United Air Lines and GE Aviation expressed concern on the use of GPS approach capability by air carriers at alternate airports.

FAA Response: Current FAA policy allows operators of aircraft equipped with WAAS to plan for RNAV (GPS) approaches to the LNAV line of minima at their alternate. Furthermore, the FAA is currently investigating what requirements will be necessary to allow un-augmented GPS (TSO-C129/-C129a, TSO-C196/-C196a) equipped aircraft to plan for RNAV (GPS) or RNAV (RNP) approaches at alternate airports.

Comment #19: Several commenters expressed concern that the navigation transition strategy as outlined in the FRN is indirectly requiring certain types of equipage, specifically GPS or WAAS equipage.

FAA Response: The FAA is committed to the use of performance-based operations in the NAS. They remain the optimal way to both enable technological advances while maintaining safety, efficiency and consistency. Therefore, it is not the intention of the FAA to limit operational approvals to specific technologies or to force retrofit navigation solutions on current operators with legacy equipment. VOR navigation will continue to be a viable option for airspace users for the near future. Once the FAA completes implementation of the VOR MON, VOR navigation will still serve the NAS, albeit in a less robust fashion than today. Early publication of transition considerations and planning will allow users to consider long-term equipage strategies for their aircraft. Operators are encouraged to continue to seek approvals for the use of navigation equipment that was emphasized in the FRN, e.g. DME/DME/IRU, GPS, and WAAS. The FAA will continue to work with industry to advance new technologies not yet matured, e.g., GBAS and APNT. Additionally, the FAA will continue to work with our international partners on global strategies for multi-constellation/multi-frequency GNSS solutions.

Comment #20: AOPA and the National Business Aviation Association (NBAA) both expressed support for direct routing and avoiding excessive

implementation of additional T and Q routes.

FAA Response: In the NextGen environment, T and Q routes increase capacity and efficiency while maintaining safety by minimizing impact to air traffic control. T and Q routes allow controllers to safely manage air traffic during peak periods and to ensure predictable transitions between busy traffic areas. T and Q routes overlaid on existing airways defined by VORs could mitigate potential impacts to the discontinuance of VOR navigation services.

Comment #21: Comments from military and general aviation expressed interest in participating in VOR discontinuation planning.

FAA Response: As stated in the FRN, "The FAA will convene a working group that will develop a candidate list of VORs for discontinuance using relevant operational, safety, cost and economic criteria. As part of the process, this working group will engage aviation industry stakeholders and other members of the public for input." Detailed planning for the implementation of the MON is still under development. As the program planning process is further developed, the FAA will solicit input from government and industry stakeholders before the VORs selected for the MON are finalized.

Comment #22: Several commenters (MAA, Boeing Commercial Airplanes, United Air Lines, AOPA, Thales and DoD) indicated that an overall plan is necessary and requested more detail on the MON. MAA commented that without a national plan for discontinuation, the removal of specific VORs from service might be premature. They believed that several VORs in Maryland are currently planned for discontinuance and they suggested that the discontinuation of specific facilities should be considered on both a regional and national level using analysis to identify costs and benefits in a more holistic manner to make the consideration of facilities objective and consistent.

FAA Response: The FAA has not developed a final list of VORs that will be included in the MON. The FAA is developing objective criteria, which will be applied consistently both nationally and regionally to help identify those VOR facilities that will remain operational. A specific overall national CONOPS and discontinuance plan are being developed to support this effort. The draft CONOPS and draft discontinuance plan will be presented to stakeholders, and the FAA will

engage stakeholders in the discontinuance process.

Comment #23: Military and airline industry commenters expressed concern with the FAA plan to establish the VOR MON by January 1, 2020.

FAA Response: This date coincides with the January 1, 2020 mandate for ADS-B equipage. Once aircraft are equipped with ADS-B, it is assumed that they will be equipped with GPS as well, since currently GPS is the only known position source that can satisfy the NIC/NAC/SIL requirements of ADS-B. At that time, the VOR MON will serve as the required GPS backup for non DME-DME equipped aircraft in the event of a GPS outage. By January 1, 2020, the VOR MON will provide sufficient VOR coverage to enable aircraft to fly VOR-to-VOR either through the GPS outage or to a safe landing.

Comment #24: A number of operators, service providers and equipment manufacturers were concerned about the level of reliance on GPS expressed in the FRN in light of possible interference with the GPS service. Interference on a regular basis from government testing and training was specifically identified, as was possible widespread interference from licensed operators as well as unintentional interference from a variety of human and natural sources. There remains a concern among users that GPS is susceptible to interference and VORs should remain as a cost effective reliable means of navigation.

FAA Response: U.S. National policy recognizes the vulnerability of GPS signals, from both human and natural sources, and requires operations reliant on GPS position, navigation, and timing (PNT) for safety, security, or significant economic benefit to have sufficient backups in place. The FAA has operated and will continue to operate GPS-independent systems to fulfill this requirement, such as ILS, DME, and VOR. As the NAS transitions to NextGen, there is also a requirement to move from conventional facility based navigation to point-to-point navigation using PBN, a role that the airways supported by VORs cannot support. The FAA will continue to operate a subset of the current VOR facilities in a MON to support those aircraft not equipped with GPS-independent RNAV capability, while developing an RNAV-capable APNT system to fulfill this role in the future. DoD Interference with GPS: The FAA recognizes the need for DoD elements as part of their mission to operate and conduct training in a GPS-denied environment. Both the FAA and DoD are committed to working together

to ensure that the DoD mission will not impact the FAA's mission to operate a safe and efficient NAS. DoD GPS interference testing is fully coordinated with the FAA and prior to testing, the FAA issues a Notice to Airmen (NOTAM) that describes the potential extent of interference and the timeframe in which it might occur. During testing the FAA maintains direct communications with DoD at all times and can have tests suspended in the event of any impact to NAS operations. Today, aircraft with non-GPS RNAV avionics are not impacted by this interference, and in the future, all APNT-equipped aircraft will similarly be unaffected.

Comment #25: Comments were received relative to several specific VORs with reasons for their specific retention. In the case of the Wichita, KS VOR (ICT), it was stated that the facility is needed for testing and airworthiness demonstration of new manufactured aircraft by a number of companies in the area.

FAA Response: While a VOR signal is necessary for this activity, it is not necessary that the service be provided by a FAA owned VOR, whose purpose under the MON will be to ensure safe operations in the event of a GPS outage. A non-Federal VOR, owned by an airport authority, state instrumentality or private entity could also perform this function. In cases where individuals/organizations have an interest in maintaining a specific VOR service, the VOR could be transferred to and operated under agreement with the FAA as a non-federal facility.

Comment #26: Thales expressed a concern over how the VOR MON will support non-GPS aircraft and GPS aircraft during GPS interference if a key MON VOR is down for maintenance.

FAA Response: In determining the VORs that will make up the MON, consideration will be given to the availability and continuity of navigation service expected from each facility. The VOR MON's purpose, a non-PBN backup in the event of a GPS outage, will be considered in making this determination. An element of this consideration will be the availability of non-GPS dependent surveillance services that would allow air traffic to provide services in the event of both a GPS and individual VOR service outage. Additionally, the equipage rate of IFR traffic with IFR GPS is significant and expected to be near 100% as we approach the year 2020 ADS-B mandate. While possible to fly IFR using the VOR MON, the increased distance of the VOR-only route as compared to using RNAV navigation will likely be

highly undesirable. This will further drive GPS equipage.

Comment #27: The DoD stated concern on the cost of transition versus benefits for their fleet of aircraft.

FAA Response: The NAS' transition to NextGen is a national priority, in which the FAA plays an important role in concert with other Federal agencies and the aviation community. The transition to PBN as enabling capability for NextGen is a key part of the NGIP. Additionally, the considerations of the military in transitioning a 14,600 aircraft fleet and operating practices to RNAV/RNP stated in comments to the public docket appear to include the notion that TACAN services from VORTAC facilities will be terminated when VOR service is discontinued. This is not the case. The military also desires the FAA to retain VOR and TACAN service for specific enroute and terminal locations and procedures as the military aircraft fleet equipage and operating procedures evolve.

The FAA notes that there is historic precedent for the transition to a single national system—specifically the establishment of VORs and associated airways, DME, and ILS in the 1950s. At that time the military did not want to equip with VOR or ILS in tactical aircraft due to weight and space constraints, stating that Non-Directional Beacons (NDB) and four course ranges for enroute navigation and ground controlled approach (GCA) for landing was sufficient pending implementation of TACAN. The military also wanted to evolve to use TACAN because of weight/size and operational advantages over VOR and to include their implementation of DME, rather than the civil DME standard. The civil community, particularly airlines, wanted VOR for improved accuracy and usability over four course ranges and NDBs with ILS for approaches. In the end the NDBs and four course ranges were retained until military aircraft and operating practices transitioned to TACAN, the military DME standard was adopted for all DMEs and ILS was standardized for approaches, though the military continued GCA approaches, particularly for tactical aircraft.

The transition to RNAV/RNP may be undertaken economically for military aviation by retaining TACAN as a system, discontinuing only specific facilities on an individual basis; incorporating military use considerations for identifying VOR service for discontinuation in enroute and terminal environments; designating special use airspace and other military usage features with RNAV references as well as TACAN or VOR rho/theta and

distance references; and retaining ILS at current sites with installation of new ILSs by military where needed in lieu of LP and LPV.

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Issued in Washington, DC, on August 14, 2012.

Lansine Toure,

Acting Manager, Navigation Programs.

[FR Doc. 2012-20464 Filed 8-20-12; 8:45 am]

BILLING CODE 4910-13-P

COMMODITY FUTURES TRADING COMMISSION

17 CFR Part 39

RIN 3038-AD47

Clearing Exemption for Swaps Between Certain Affiliated Entities

AGENCY: Commodity Futures Trading Commission.

ACTION: Proposed rule.

SUMMARY: The Commodity Futures Trading Commission (“CFTC” or “Commission”) is proposing a rule to exempt swaps between certain affiliated entities within a corporate group from the clearing requirement (the “inter-affiliate clearing exemption” or the “proposed exemption”) under Section 2(h)(1)(A) of the Commodity Exchange Act (“CEA”). The Commission also is proposing rules that detail specific conditions counterparties must satisfy to elect the proposed inter-affiliate clearing exemption, as well as reporting requirements for affiliated entities that avail themselves of the proposed exemption. The Commission has finalized a rule that addresses swaps that are subject to the end-user exception. Counterparties to inter-affiliate swaps that qualify for the end-user exception would be able to elect to not clear swaps pursuant to the end-user exception or the proposed rule. The proposed rule does not address swaps that an affiliate enters into with a third party that are related to inter-affiliate swaps that are subject to the end-user exception. The Commission intends separately to propose a rule addressing swaps between an affiliate and a third party where the swaps are used to hedge or mitigate commercial risk arising from inter-affiliate swaps for which the end-user exception has been elected.

DATES: Comments must be received on or before September 20, 2012.

ADDRESSES: You may submit comments, identified by RIN number 3038-AD47, by any of the following methods:

- *The agency’s Web site, at: <http://comments.cftc.gov>. Follow the*

instructions for submitting comments through the Web site.

- *Mail:* David A. Stawick, Secretary of the Commission, Commodity Futures Trading Commission, Three Lafayette Centre, 1155 21st Street NW., Washington, DC 20581.

- *Hand Delivery/Courier:* Same as mail above.

- *Federal eRulemaking Portal:* <http://www.regulations.gov>. Follow the instructions for submitting comments.

Please submit your comments using only one method.

All comments must be submitted in English, or if not, accompanied by an English translation. “Inter-affiliate Clearing Exemption” must be in the subject field of responses submitted via email, and clearly indicated on written submissions. Comments will be posted as received to <http://www.cftc.gov>. You should submit only information that you wish to make available publicly. If you wish the Commission to consider information that is exempt from disclosure under the Freedom of Information Act, a petition for confidential treatment of the exempt information may be submitted according to the established procedures in CFTC regulation 145.9.¹

Throughout this proposed rulemaking, the Commission requests comment in response to specific questions. For convenience, the Commission has numbered each of these comment requests. The Commission asks that, in submitting responses to these requests, commenters identify the specific number of each request to which their comments are responsive.

The Commission reserves the right, but shall have no obligation, to review, pre-screen, filter, redact, refuse, or remove any or all of a submission from www.cftc.gov that it may deem to be inappropriate for publication, such as obscene language. All submissions that have been redacted or removed that contain comments on the merits of the rulemaking will be retained in the public comment file and will be considered as required under the Administrative Procedure Act and other applicable laws, and may be accessible under the Freedom of Information Act.

FOR FURTHER INFORMATION CONTACT:

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¹ 17 CFR 145.9. Commission regulations may be accessed through the Commission’s Web site, <http://www.cftc.gov>.

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I. Background

A. Clearing Requirement for Swaps

On July 21, 2010, President Obama signed the Dodd-Frank Wall Street Reform and Consumer Protection Act (“Dodd-Frank Act” or “DFA”).² Title VII of the Dodd-Frank Act amended the CEA,³ and established a new regulatory framework for swaps. The legislation was enacted to reduce systemic risk, increase transparency, and promote market integrity within the financial system by, among other things: (1) Imposing clearing and trade execution requirements on standardized derivative products; (2) creating rigorous recordkeeping and data reporting regimes with respect to swaps, including real-time public reporting; and (3) enhancing the Commission’s rulemaking and enforcement authorities over all registered entities, intermediaries, and swap counterparties subject to the Commission’s oversight.

Section 723 of the Dodd-Frank Act added section 2(h) to the CEA, which establishes a clearing requirement for swaps.⁴ The new section makes it unlawful for any person to engage in a swap, if the Commission determines such swap is required to be cleared, unless the person submits the swap for clearing to a registered derivatives clearing organization (“DCO”) (or a DCO that is exempt from registration).⁵ The

² See Dodd-Frank Wall Street Reform and Consumer Protection Act, Public Law 111-203, 124 Stat. 1376 (July 21, 2010).

³ 7 U.S.C. 1 *et seq.* (2006).

⁴ CEA section 2(h)(1)(A), 7 U.S.C. 2(h)(1)(A).

⁵ See CEA section 2(h)(1)(A), 7 U.S.C. 2(h)(1)(A). The CEA’s clearing requirement states that, “[i]t shall be unlawful for any person to engage in a swap unless that person submits such swap for

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