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

800 Independence Avenue, S.W.
Washington, DC 20591

JAN 29 2015

Captain Mark R. Bradley
Chairman, Performance Based Operations
Aviation Rulemaking Committee (PARC)
1010 Delta Boulevard
Atlanta, GA 30354

Dear Captain Bradley:

I would like to thank you for the recommendations from the Performance Based Aviation Rulemaking Committee (PARC) concerning magnetic variation in aircraft inertial systems, flight management systems, and instrument procedure design. The attached Magnetic Variation Action Plan describes the status and plans that the FAA has undertaken in response to the PARC recommendations. A critical action taken is to update the operations specifications and operational guidance so that all operators understand their obligation to maintain the aircraft magnetic model to tolerance prescribed by the original equipment manufacturer.

I would like to request your support for the PARC to re-evaluate one of the main principles from the original magnetic variation report. As you are aware, the FAA recently delayed updates to the Instrument Landing System (ILS) procedures at Anchorage and Fairbanks, Alaska. The FAA agreed to delay those updates after receiving confirmation from Boeing and Airbus that their aircraft would not be adversely affected by the current ILS procedures, which are one and one-half and two degrees out of tolerance as of December 2014. This appears to conflict with the PARC recommendation to maintain all Category III approach procedures to within one degree of tolerance to the current magnetic variation. Recognizing the costs to the FAA to update instrument flight procedures, and the potential impact to aircraft using older magnetic values in the aircraft, I would like to ask the PARC to reevaluate magnetic variation requirements that cover all ILS categories and any other magnetic variation tolerances that may be expanded beyond current standards.

If you have any questions concerning our action plan or the new request concerning magnetic variation, please contact Bruce DeCleene, Manager, Flight Technologies and Procedures Division, at (202) 267-8790.

Sincerely,

Margaret Gilligan
Associate Administrator for Aviation Safety

Enclosure

Magnetic Variation Action Plan

Recommendations:

a. Update guidance for aircraft OEM documentation to address procedure compatibility with magnetic variation source data so operators can more easily determine the airplane qualification requirements for operations at a specific location and time.

Discussion: FAA is developing a new AC 120-xLS (exact title in coordination) which addresses OEM documentation of procedure MagVar compatibility with aircraft ILS system performance. OpSpecs C059 and C060 being revised to support requirements for current MagVar data. In addition, a revision to Advisory Circular (AC) 20-138D, Airworthiness Approval of Positioning and Navigation Systems, has been published and provides more general guidance.

Task 1: Update AC 20-138D concerning OEM MV table update requirements

Responsible Office(s)	Completion Date
AIR-130	3/30/2014

Status: Complete

Task 2: Publish guidance in AC 120-xLS (title TBD).

Responsible Office(s)	Expected Completion Date
AFS-410	Tentative: 07/31/2015

Status: Harmonization with EASA and addition of GLS has pushed back publication and further coordination until those actions are complete.

Task 3: Publish guidance in C059

Responsible Office(s)	Expected Completion Date
AFS-410	07/31/2015

Status: In Work

Task 4: Publish guidance in C060

Responsible Office(s)	Expected Completion Date
AFS-410	07/31/2015

Status: In Work

b. Replace process requirements with a performance requirement in Order 8260.19E to achieve the legacy standard for magnetic variation accuracy of +/- 1 degree for CAT II/III ILS facilities.

Discussion: The FAA incorporated the one degree performance requirement into Order 8260.19E, Flight Procedures and Airspace.

Task: Incorporate process recommendation into Order 8260.19E

Responsible Office(s)	Completion Date
AFS-420	2/22/13

Status: Complete

c. Update Order 8260.19E to support autoflight to CAT I ILS facilities, where needed, by requiring +/- 1-2 degrees magnetic variation accuracy depending upon facility latitude.

Discussion: Autoland is not a Cat I requirement and thus, this would incur excessive expenses to achieve and maintain to this 1-2 degree tolerance. Practice autoland on CAT I ILS facilities is authorized by OpSpec C061, which requires the operator to determine that the aircraft system permits safe approaches and landings using the ILS facility and procedures. The FAA will revise OpSpec C061 to include MagVar as an operator requirement.

g. Hold the Anchorage airport and ILSs magnetic variations at their current values of 19 degrees E until December 2014. Update the Fairbanks value to 20 degrees E as soon as possible in 2013.

Discussion: A Notice to Airmen (NOTAM) is currently in place for both Anchorage and Fairbanks restricting Cat II/III operations to aircraft with compatible MagVar databases. The Regional Airspace and Procedures Team postponed Fairbanks 2013 update due to a military request not to change Eielson AFB NAVAIDs, which affected Fairbanks civil procedures. Anchorage and Fairbanks MagVar updates were scheduled for January 2015, however, most operators could not update aircraft in time, which would have impacted operations at a critical time of the year. FAA agreed to move the updates out six months to a year.

Task 1: Update Anchorage MV to WMM 17 degrees East

Responsible Office(s)	Expected Completion Date
Aeronautical Navigation Products	TBD

Status: Procedure publication delayed to allow more aircraft to be updated to current MagVar tables. Publication cycles in October or December of 2015, would allow staggering with Fairbanks, to avoid changing procedures during the most critical time of the year for weather.

Task 2: Update Fairbanks MV to WMM 19 degrees East

Responsible Office(s)	Expected Completion Date
Aeronautical Navigation Products	TBD

Status: Procedure publication delayed to allow more aircraft to be updated to current MagVar tables. Fairbanks is farther out of tolerance and should be published prior to Anchorage if they are staggered. August 2015 publication cycle would allow staggering of updates with Anchorage, and both updates to occur prior to the most critical time of the year for weather.

h. Support NOAA's sustained commitment to providing the World Magnetic Model (WMM) and periodically collaborate with NOAA to ensure that the WMM products continue to meet the needs of civil aviation users in terms of accuracy, availability, frequency of update, and geographic applicability.

Discussion: The FAA will coordinate a Memorandum of Understanding with NOAA to ensure any changes to the performance, accuracy, resolution, etc., of the magnetic variation calculator is coordinated with the aviation community.

Task: Coordinate a MOU with NOAA concerning the WMM use by aviation and AeroNav batch processing.

Responsible Office(s)	Expected Completion Date
Aeronautical Navigation Products	2/28/2015

Status: In Work.

i. Encourage RTCA SC-227 to review the recommendations and consider the safety and operational benefits of current magnetic variation data for incorporation into the MASPS and MOPS.

Discussion: The FAA briefed RTCA/SC-227 on the PARC report and possible RTCA actions to mitigate MagVar issues through equipment design changes. Inclusion and use of procedure MagVar will eliminate issues with any future mismatches in MagVar at an airport and moving airport MagVar up in priority will align equipment usage with procedure design usage of MagVar.

Task: Refer the PARC MagVar report to RTCA/SC-227 for consideration.

Responsible Office(s)	Completion Date
AFS-420/AIR-130	06/18/2014

Status: Complete. RTCA SC-227 revised the priority order for use of MagVar data, and added Procedure MagVar to the list as the first priority. No action was taken on coordinating release dates of on-board MagVar tables.

FAA 1. Study whether the tolerance of the on-airport VOR can be increased to three degrees at Cat II/III airports, while maintaining the ILSs at one degree in order to reduce cost and help speed up ILS updates.

Discussion: Due to the reduction in the number of VORs under the Minimum Operational Network (MON), updating VORs which may soon be removed, only to match the Cat II/III ILS tolerance, incurs additional expense and consumes resources that could be applied to other efforts in maintaining and upgrading the NAS.

Task 1: Determine the impact to Cat II/III ILS equipment operation of maintaining the VOR to three degrees, which could result in a total four degree difference between the VOR NAVAID MagVar and the published ILS final approach course due to lead and lag.

Responsible Office(s)	Expected Determination Date
AIR-130	Complete10/31/2014

Status: Complete. Input from manufacturers did not indicate any equipment issues with this change.

Task 2: Change Order 8260.19, paragraph 2-5-3, to allow the VOR MagVar to be updated separately from the ILS(s) at Cat II/III airports if Task 1 determines the impact is acceptable.

Responsible Office(s)	Expected Completion Date
AFS-420	Tentative: 03/05/2015

Status: Draft text submitted for publication.

FAA 2. Study whether the tolerance for all VORs not at Cat II/III airports can be increased beyond the current three degrees.

Discussion: Due to the reduction in the number of VORs under the Minimum Operational Network (MON), updating VORs which may soon be removed incurs additional expense and consumes resources that could be applied to other efforts in maintaining and upgrading the NAS. Differences in ground track when the procedures are flown conventional versus flown as an overlay using equipment which may not use the NAVAID MagVar, or flying conventional as a radial DME fix versus as an RNAV overlay flown as a TF leg between waypoints, and other similar issues will have to be explored and the safety of the operation determined.

Task 1: Request the PARC make a recommendation on the operational impact of increasing the MagVar tolerance for all VORs not considered "on airport" at a Cat II/III airport to a larger, yet to be determined, value.

Responsible Office(s)	Expected Determination Date
AFS-420	TBD

Status: Work with PARC to research the safety issues with increased VOR MagVar tolerance. Outcome of FAA 1, Task 1, will likely impact this Task, at least at Cat I ILS airports.

Task 2: Change Order 8260.19, paragraph 2-5-3, to allow greater than three degree tolerances if determined to be appropriate.

Responsible Office(s)	Expected Completion Date
AFS-420	TBD

Status: Waiting on outcome of Task 1.