



Federal Aviation Administration

Memorandum

Date: JUL 21 2008

To: Thomas C. Accardi, Manager, National Flight Procedures Office, AJW-3

From: *JW* John W. McGraw, Manager, Flight Technologies and Procedures Division, *H Smith*
AFS-400

Subject: Use of Automated Precipitous Terrain Algorithms for Minimum Vectoring Altitude (MVA) and Minimum Instrument Flight Rules (IFR) Altitude (MIA) Required Obstacle Clearance (ROC) Reductions.

PURPOSE

This memorandum provides policy guidance to MVA/MIA reviewers in reference to Notice 8260.64, Radar Approaches and Minimum Vectoring Altitudes – Current Guidance and Criteria, paragraph 10.5.5 and the use of Automated Precipitous Terrain Algorithms when the facility requests a ROC reduction.

BACKGROUND

General criteria describing precipitous terrain adjustment has historically been addressed by Order 8260.3, United States Standard for Terminal Instrument Procedures (TERPS), Vol. 1, paragraph 323a. Specific criteria (i.e., unique to a segment or navigation type) referred to the general criteria (e.g., paragraphs 233, 243, 274, etc). Order 8260.19C, Flight Procedures and Airspace, paragraph 363a, obliquely addressed precipitous terrain adjustments for MVA/MIA development by referencing Order 8260.3, paragraph 1041b(3), which describes the ROC requirement for the initial approach segment of an airport surveillance radar (ASR) approach and states, "Allowance for precipitous terrain should be made as specified in paragraph 323".

In response to National Transportation Safety Board (NTSB) safety recommendation A96-131 and Aeronautical Charting Forum issue # 92-02-104, the Flight Procedures Standards Branch, AFS-420, issued the June 18, 2004, policy memorandum to Aviation System Standards, AVN-1, Subject: Automated Precipitous Terrain Adjustment. This memorandum provided direction on the immediate implementation of the precipitous terrain algorithms in the Instrument Approach Procedures Automation TERPS software tool, but it was not possible at the time to make the corresponding changes to 8260.3, paragraph 323. It is significant to note that the policy memorandum did not explicitly reference MVA/MIA development or review, nor did it provide any specific exceptions to paragraph 323, which remained in effect until superseded by publication of Order 8260.3B Change 20, dated December 7, 2007.

Subsequent to this memorandum, Notice 8260.57, Criteria and Guidance for Radar Operations, dated June 8, 2006, was developed to incorporate radar approach and MVA criteria into a single directive (MIA development was to remain in Order 7210.37, En Route MIA Sector Charts). Paragraph 10.5.5 addressed precipitous terrain and only specified that it be considered when taking a ROC reduction in designated mountainous terrain, with no direct reference to use of software/algorithms. Notice 8260.64, dated September 14, 2007, was issued after cancellation of Notice 8260.57 and introduced the requirement to "evaluate and identify terrain as precipitous or non-precipitous using software that implements FAA-approved algorithms". At the time, it was felt this change was necessary as a logical evolution of the standard in response to the spirit/intent of the NTSB recommendation and to harmonize with the criteria intended for Change 20 (i.e., Vol. 1, paragraph 3.2.2.b).

It should be noted that the AFS-420 lead specialist on precipitous terrain has confirmed that the algorithms developed in collaboration with the National Center for Atmospheric Research were tailored to the evaluation of instrument approach procedure segments. More recent evaluation of the variables and the weighting factors lead us to believe that the algorithms may not be suitable for evaluation of terrain underlying a large volume of airspace such as an MVA/MIA sector. Recent developments associated with the implementation of Notice 8260.64 and design of MVAs using the Sector Design and Analysis Tool have illustrated inconsistencies and unexpected results that also raise questions on the appropriateness of the precipitous terrain algorithms for MVA/MIA evaluation.

POLICY

It has become apparent that mandating the use of automated precipitous terrain algorithms was premature for MVA/MIA evaluation and is therefore rescinded. Discontinue use of software tools implementing the current algorithms to determine the presence/absence of precipitous terrain during review/approval of vectoring charts.

In the interim, whenever a ROC reduction is taken, facility managers must include in the MVA package the rationale/justification for taking the reduction in accordance with current ATO MVA directives.

Notice 8260.64 paragraph 10.5.5 may be interpreted as follows:

10.5.5 ROC Reductions.

ROC may only be reduced in accordance with current ATO MVA directives. Authorized ROC reductions are as follows:

- a. **ASR.** No less than one thousand (1,000 ft) of ROC may be applied.
- b. **Air Route Surveillance Radar.** No less than one thousand five hundred feet (1,500 ft) or one thousand seven hundred (1,700 ft) of ROC may be applied over terrain under TERPS, volume 1, paragraph 1720b(1). One thousand feet (1,000 ft) of ROC may be applied over manmade structures under TERPS, volume 1, paragraph 1720b(2). Both paragraphs are applied and the higher value determines the MVA.

This policy remains in effect until specifically rescinded by Flight Technologies and Procedures Division, AFS-400. If you have any questions, please contact Mr. Thomas J. Nichols, Flight Procedure Standards Branch, AFS-420, at (405) 954-1171.

Attachments