

AERONAUTICAL CHARTING FORUM
Charting Group
Meeting 15-01 – April 28 - 30, 2015

RECOMMENDATION DOCUMENT

FAA Control # ACF-CG RD 15-01-291

Subject:

Charting and Evaluation of Departure Procedure Climb Gradients

Background/Discussion:

Order 8260.46E, Departure Procedure Program,

Paragraph 2-1-1d(2) states: "Flight Standards Service or appropriate Department of Defense (DoD) authority must approve DPs requiring a climb gradient (CG) in excess of 500 ft/NM (600 ft/NM for helicopters)."

Paragraph 2-1-1e(1)(b) Note states:

Note: When establishing crossing altitudes for other than meeting obstacle clearance and/or lateral navigation (LNAV) engagement altitude requirements, stakeholders should give consideration to aircraft performance limitations based on the type of aircraft expected to be using the SID and whether those aircraft will be capable of meeting these altitude restrictions."

Paragraph 2-1-1e(2) states: "Charting a Minimum Climb Gradient. Establish a single minimum CG exceeding 200 ft/NM [400 ft/NM for helicopters beginning at the initial departure fix (IDF)] whenever required for obstruction clearance and include the altitude to which the gradient is required in the Takeoff Minimums." Additionally, it states: "Do not establish CGs for crossing altitudes used to support airspace, environmental, or ATC operational limitations."

Discussion: Pilots and Dispatchers are required to ensure all flights can make or exceed performance requirements for all procedures. Without an accurate climb gradient published on the chart whether the gradient be a ATC restriction or a TERPS requirement, the pilot cannot determine the performance requirements of the flight.

Recommendations:

Chart a maximum climb gradient based on a plane evaluated throughout the SID for the most restrictive ATC restriction or TERPS requirement.

Flight Standards Service should evaluate **all** SID climb gradients that exceed 500 ft/NM.

Comments:

Submitted by: Gary McMullin

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Date: March 23, 2015

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Gary McMullin, Southwest Airlines, presented the new Recommendation to the ACF. Gary reviewed the request, stating that pilots find it difficult to determine if they can meet the climb gradients required on specific departure procedures. It is proposed that a maximum climb gradient be published on the chart based on an ATC restriction or a TERPS requirement. He also proposes that all climb gradients that exceed 500 ft/NM should be evaluated.

Gary [reviewed multiple examples](#) of older SIDs where a climb gradient was explicitly provided and a newer SID that requires the pilot to evaluate and calculate a climb gradient for each segment of the departure route. He pointed out that the process is time consuming and is potentially hazardous if the pilot calculates a segment climb gradient incorrectly. Gary pointed out in his examples instances where the climb gradient on a given segment exceeds 500ft/nm, which depending upon aircraft weight and air temperature, some aircraft are able to fly.

Discussion shifted to whether this is currently a charting issue or an issue pertaining to criteria. Valerie Watson, AJV-553, stated that the Terminal Charting Team is not authorized to conduct calculations and publish the gradients and can only publish what is provided on the FAA Form 8260-15B source document. She stated that if climb gradients are specified for charting on the source document, they will be charted.

Rich Boll, NBAA, stated that NBAA had previously shared their concerns on climb gradients during the last review of FAA Order 8260.46. Rich stated that he believes that there does need to be some type of scrutiny of ATC altitude restrictions. He suggested that maybe this could be pursued through the PARC or the TAPP.

Gary voiced his opinion that something should be done in the interim while these issues are being worked out. He suggested that a hold be placed on the establishment of any Departure with a climb gradient over 500 ft/NM and the reevaluation of those already established.

Tom Schneider, AFS-420, stated that these ATC driven crossing altitude restrictions must be analyzed for feasibility during the initial SID development stage. Working collaboratively with the local ATC facility, local operators, and lead carriers, pre-publication coordination should catch these issues well beforehand to prevent unrealistic ATC driven crossing altitudes from ever being published.

Rich then shifted the discussion to his presentation from the TAPP Working Group. Rich stated that the TAPP is working on issues related to compliance with climb gradients. The TAPP has created a draft Information for Operators (InFO). The purpose of the InFO is to be able to provide aircraft operators and pilots information on how to comply with the climb gradients on SIDS, ODPs and missed approach procedures. The language of the InFO is still under discussion, but the TAPP Group is anticipating its release in the coming months.

Consensus was to close this item in the Charting Group and work it in the PARC VNAV Action Team. In the future, it can be brought back to the IPG for recommended changes to Order 8260.46.

STATUS: CLOSED