AERONAUTICAL CHARTING FORUM
Charting Group
Meeting 13-01 – April 24-25, 2013

RECOMMENDATION DOCUMENT
FAA Control # ACF-CG RD 13-01-270

Subject: Step-down fix chart note

Background/Discussion: Current charts with step-down fixes contain a note in the profile view
that states: “*LNAV only.” The note is somewhat ambiguous. That is, does it mean any line of
minima predicated on LNAV horizontal guidance, or, does it mean only the LNAV line of
minima?

Many interpret this note as the step-down fix only applies to the LNAV line of minima. In
actuality, the step-down fix applies to both the LNAV and LNAV/VNAV lines of minima due to
certain avionics limitations; in particular because baro-VNAV can be used on an approach with
LNAV/VNAV minima.

Baro-VNAV systems contain the following aircraft/rotorcraft flight manual (or flight manual
supplement) limitation:

“When using the <insert name> VNAV system, the barometric altimeter must be used as
the primary altitude reference for all operations.” [emphasis added]

This limitation applies to step-down fixes as well and has been in effect for many years (AC 20-
129 circa 1988). The reason for the operational mitigation to baro-VNAV-generated vertical
guidance is due to potential error sources. It is possible for baro-VNAV to generate a
misleading glidepath that takes the aircraft below a charted step-down fix altitude. In these
circumstances, aircraft separation from obstacles may not meet the desired level of safety.

Recommendations: Change the profile view chart note from: “*LNAV only”
to: “N/A LPV”

Do not include an asterisk note on procedures that do not have an LPV line of minima.

Comments:

Submitted by: Kevin Bridges
Organization: FAA/AIR-130
E-mail: 
Date: 24 April 2013
MEETING 13-01:

Kevin Bridges, AIR-130, briefed the issue. Kevin reviewed current charting practices related to the notes associated with stepdown fixes on LNAV approaches that utilize Baro-VNAV systems. Kevin commented that pilots are increasingly treating Baro-VNAV vertical guidance as if it were like an ILS. This may have unintended consequences and pilots may fly the incorrect flight path.

Tom Schneider, AFS-420, stated that this issue should be submitted to the United States-Instrument Flight Procedures Panel (US-IFPP) for discussion. If the US-IFPP determines that there is a need to change the note, both the Instrument Procedures Group and the Charting Group can address the issue.

STATUS: OPEN

ACTION: Kevin Bridges, AIR-130, to take the suggestion to the US IFPP and report on the outcome at next AFC.

MEETING 13-02:

Kevin Bridges, AIR-130, commented that since the last ACF the suggestion was submitted to the USIFPP. The USIFPP is still considering the issue and there is nothing yet to report. Kevin will report progress of the issue at the next ACF.

STATUS: OPEN

ACTION: Kevin Bridges, AIR-130, will monitor progress of the issue through the US IFPP and report at next AFC.

MEETING 14-01:

Kevin Bridges, AIR-130, reviewed the topic. He stated that this issue was discussed at the US-IFPP and that there was support for changing the profile note. The note will be changed from “LNAV only” to “LNAV/VNAV and LNAV only”.

Kel Christianson, AFS-470, stated that these changes will be in the next AIM update scheduled for publication in January 2015.

Tom Schneider, AFS-420, stated that the note will be updated in the next update of FAA Order 8260.19.

Valerie Watson, AJV-3, stated that updates to the notes will be applied to the charts through either an amendment to the 8260 Form or a P-NOTAM.

STATUS: OPEN

ACTION: Tom Schneider, AFS-420, will revise FAA Order 8260.19 and report at next ACF.

ACTION: Kel Christianson, AFS-470, will track requested AIM changes and report back at next AFC.
MEETING 14-02

Tom Schneider, AFS-420, briefed the topic and advised that the revised FAA Order 8260.19G will be published March 2015. Kel Christianson, AFS-470, added that work on the changes to the AIM have been put on hold until the revisions to the Order have been published.

Rich Boll, NBAA, presented a briefing in which he expressed various concerns regarding pilot confusion over how to apply the step down fix chart note. One of those concerns is that there is a belief among pilots that the step down fix does not apply to circling. Part of the confusion stems from combining LNAV/VNAV and LNAV-only capabilities onto a single chart. Rich presented various solutions to address this confusion, including adding circling to the existing chart note, separating the vertically guided and non-vertically guided approaches onto different charts, or adjusting the TERPS criteria to remove LNAV/VNAV minima and only publishing LPV minima.

John Collins, GA Pilot, inquired as to whether there were any temperature restrictions associated with LNAV/VNAV approaches where Baro VNAV was required. Pilots within the audience commented that there is an assumption that a Baro-VNAV system attempts to fly the descent path and is potentially dangerous.

Rich put forth the following request from NBAA regarding actions on this topic:

- Suspend action to amend chart note
- In the short term, establish an FAA/Industry working group to identify, evaluate, and select suitable options to address the current issue.
- In the longer term, AFS to work with AIR to establish appropriate criteria within TERPS supporting continued use of LNAV/VNAV minima that reflect existing certification criteria respective to approach Baro-VNAV

John Collins, GA pilot, expressed his opinion that a stepdown fix after the FAF (GS Intercept) should not apply to an LNAV/VNAV procedure as it is a vertically guided procedure that meets TERPS criteria for obstacle clearances and specifies temperature limitations when using Baro-VNAV equipment to assure these obstacle clearances are satisfactorily met.

Lev Prichard, APA, stated that he does not support the addition of the asterisk for the stepdown altitude, as it will most certainly destabilize approaches using VNAV equipment. It is not necessary as LNAV minimums use a flat OCS and LNAV/VNAV minimums use a temperature corrected sloping OCS. The stepdown fix does not effectively exist for LNAV/VNAV minima and would have a negative operational effect on a stabilized approach in cold temperatures for Baro-VNAV equipped aircraft by requiring them to interrupt the VNAV path by entering another vertical mode, thus complicating and destabilizing the procedure. It is a non-issue for aircraft utilizing SBAS (WAAS), and therefore chart clutter. We do support other possible changes as discussed if it alleviates the circling issue brought up by NBAA.

Tom stated that these recommendations would have to go back to the US-IFPP and this issue be reopened in order to address the concerns. Tom reminded the audience that the related FAA Orders are still in draft. With regard to the circling portion of this issue, Tom stated that there are
two options. Either the note can be expanded to also apply to circling, or a rule can be established within TERPS that if there is a step down fix, circling MDA cannot be established below that step down fix altitude.

**STATUS: OPEN**

**ACTION:** Tom Schneider, AFS-420, will readdress the issue at the USIFPP and report at the next ACF.

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**MEETING 15-01**

Kevin Bridges, AIR-131, provided an update. Kevin stated that activity on this topic is ongoing within the US-IFPP and that they will determine whether the guidance needs to be revised or expanded. Current policy regarding the publication/charting of stepdown fix notes remains unchanged until further notice.

**STATUS: OPEN**

**ACTION:** Kevin Bridges, AIR-131, will report at the next ACF.