

AERONAUTICAL CHARTING MEETING
Instrument Procedures Group
Meeting 19-02 – October 2019

RECOMMENDATION DOCUMENT

FAA Control # 19-02-344

Subject: Intermediate Segment Stepdown Altitudes

Background/Discussion:

In 2011, FAA AFS-400 published a policy memorandum ([attached](#)) providing guidance for the locating the fixes used for ATC vertical separation purposes and glidepath intercept support regarding simultaneous operations. Paragraph 3 of the memo provided guidance for locating fixes on straight-in aligned procedure for ATC vertical separation purposes at locations where high temperatures induce premature descent. The purpose of this guidance was to ensure that fixes located on the intermediate segment of approaches supporting simultaneous operations could reasonably be expected to be at or below the ILS glideslope so that the aircraft could descend on the ILS glideslope and remain at or above the published intermediate segment step-down fix altitudes leading to the PFAF. This is in accordance with the safety risk findings supporting simultaneous parallel approach operations.

This policy memorandum was supposed to be incorporated into Order 8260.3 U.S. Standard for Terminal Instrument Procedures (TERPS). NBAA has learned that this did not occur, and further that the FPTs never applied this memorandum to any procedures then in development or currently deployed in the NAS. FAA did include a reference to the need to “consider” the effect of high temperature in the TERPS reference guidance on simultaneous independent approaches in Appendix E, paragraph 5.f.:

f. Approach design for fixes on the portion of the approach that is aligned with the FAC. **It is highly recommended that the high temperature algorithm (also called temperature compensation) be used when placing fixes on the FAC and extended FAC.** The advantage is to allow aircrews to make a stabilized descent, even on days with high temperatures. If the high temperature algorithm is not applied, on high temperature days the pilot might have to shallow out or even briefly level off to meet an altitude restriction instead of being able to follow the glide slope indication. However, since the algorithm results in the fixes being further out, there may be circumstances, such as airspace constraints, that preclude applying the high temperature algorithm. TERPs specialists should coordinate with the affected ATC facility.

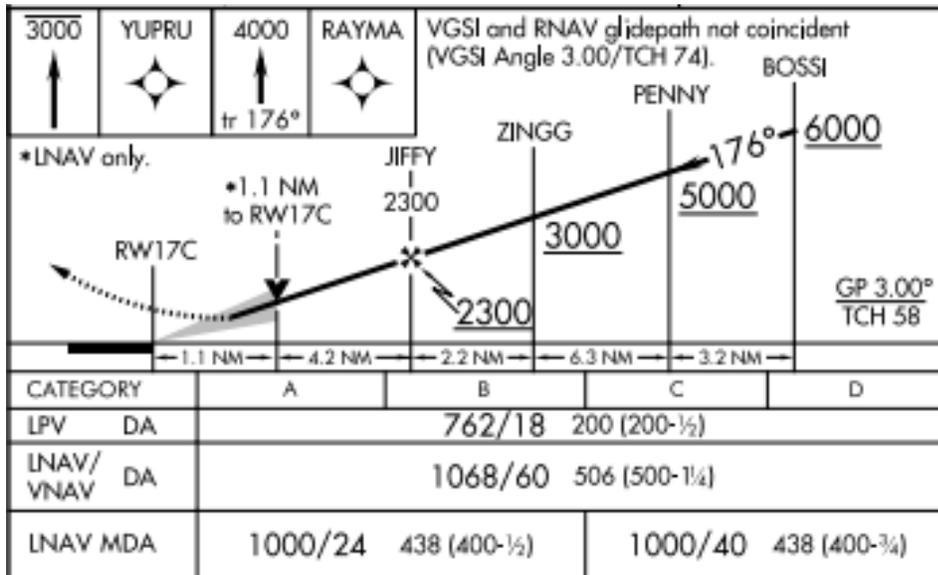
However, no algorithm is furnished in TERPS or any other FAA order to the TERPS specialist for completing this analysis nor is it required that they do so.

The policy memorandum was issued as result of pilot altitude deviations occurring on the ILS approaches at Chicago O'Hare (KORD) to the newly commissioned runways. The memorandum was to ensure, obstructions and terrain needs notwithstanding, that an aircraft could descend on the ILS glidepath with reasonable confidence that it would remain above published intermediate stepdown fix altitudes.

NBAA has recently learned that certain WAAS-SBAS capable RNAV systems will begin using WAAS-SBAS vertical guidance starting at the Final Approach Course Fix (FACF), which is typically, but not always co-located with the intermediate fix (IF) on an RNAV approach. Since the WAAS-SBAS generated vertical path is not subject to hot/cold temperature effects as occurs with a barometric derived (Baro-VNAV) vertical path, the effects of hot temperatures on

compliance with the intermediate segment stepdown fix altitudes on these approaches is similar to an ILS glideslope, as illustrated by this example - KDFW RNAV(GPS) Rwy 17C:

- At 100°F, ZINGG is 200' above the WAAS-SBAS glidepath.
- At 130°F (charted limit), ZINGG is 300' above WAAS-SBAS glidepath.



DALLAS-FORT WORTH INTL (DFW)
 32°54'N-97°02'W
 RNAV (GPS) RWY 17C

An aircraft descending using VNAV, which is generated by WAAS/SBAS and not Baro-VNAV, and on the vertical path would cross below the published altitudes at PENNY, ZINGG and JIFFY if BOSSI is designated at the FACP in nav-database coding.

Recommendations:

NBAA recommends that the policy memorandum be incorporated into Order 8260.3 U.S. TERPS and on approaches where LPV minima are published, in Order 8260.58.

Comments:

This request affects Order 8260.3 and Order 8260.58.

Submitted by: Richard J. Boll II
Organization: NBAA
Phone: 316.655.8856
E-mail: richard.boll@sbcglobal.net
Date: 9/16/19

Initial Meeting 19-02: Rich Boll, NBAA, briefed the new issue using slides. FAA recognized the temperature compensating altitude issue, and issued a policy memo in 2011. This memo was planned to be incorporated onto TERPS changes, however this did not happen, instead there was language added to the simultaneous approach operations guidance suggesting altitudes be compensated at locations with high temperatures, but the algorithm was never added to TERPS. Rich also stated there are errors in the algorithm that need repairs. The NBAA recommendation is to move the policy memorandum language into TERPS, and correct the algorithm. Some locations with this concern moved the impacted fixes farther out facilities to alleviate the problem. Gary McMullin, Southwest Airlines, pointed out there can be discrepancies in indicated altitudes between aircraft flying LPV or LNAV/VNAV vertical guidance on the same approach since the LNAV/VNAV glidepath is derived by barometric altimeter. John Collins, general aviation pilot, added pushing out the last fix some distance would help. Rich pointed out AIM changes might be required in the future, but would depend on Flight Procedures and Airspace Group decisions.

Action Items:

- FAA Flight Procedures and Airspace Group will review the 2011 policy memorandum and determine if it should be incorporated into Order 8260.3.

Status: Item open.

Meeting 20-02: Jeff Rawdon, FAA Flight Procedures and Airspace Group (FPAG), briefed the issue summary and current status from the [slide](#). A memo was published in 2011 to provide guidance for adjusting intermediate segment fix locations for high temperature effects. The memo advised that guidance would be placed in a future revision of Order 8260.3, but this has not yet occurred. The plan at this point is to include it in a revision in the near future. Appropriate guidance will be included as an appendix to the order, and language currently referencing the 2001 memo will be revised to reference the appendix. Gary Fiske, FAA ATC Procedures (Terminal) Team, said as a result of the 2011 memo, KLAX ILS finals were revised to account for high temperature days by moving some fixes. John Blair, FAA Flight Operations Group (FOG), advised he and Joe Lintzenich, FOG, worked the situation in depth, and they found that over the years many locations had applied the memo guidance and support including the guidance in Order 8260.3. Rich Boll, NBAA, added this is also an RNAV issue, particularly for SBAS approach procedures. Jeff said they will ensure language in Order 8260.3 (and also Order 8260.58 if necessary) will point to the appendix. Paul Hannah, Lean Engineering, discussed that the PARC NAV WG has discussed similar capture fix issues, and Gary Petty, FPAG, said the changes would be coordinated as necessary to ensure there is no disconnect and would not have an unexpected negative effect on existing procedures.

Action Items:

- Flight Procedures and Airspace Group will brief the Order 8260.3 changes.

Status: Item open.
