Federal Aviation Administration

Memorandum

Date: SEP 04 2013

To: Abigail Smith, Director, Aeronautical Navigation Products, AJV-3

From: Bruce DeCleene, Manager, Flight Technologies and Procedures Division, AFS-400

Subject: Temporary Waivers to FAA Order 8260.3B, United States Standard for Terminal Instrument Procedures (TERPS), Volume 1, Chapter 3, Paragraph 3.3.2c.

Purpose: This memorandum approves temporary waivers to TERPS, Volume 1, Chapter 3, paragraph 3.3.2c for unlighted obstacles that penetrate the visual areas of straight-in instrument approach procedures (IAPs) in certain circumstances.

Discussion: Obstacles that penetrate visual surfaces pose a significant hazard to operators at night. We have received a number of waiver requests to use a visual glide slope indicator (VGSI) in lieu of obstruction lighting where it has been determined an adequate level of safety is provided by a properly sighted and commissioned VGSI. Recognizing that immediate action must be taken when unlighted penetrations are found, this memorandum approves a 30-day temporary waiver when an equivalent level of safety has been established as defined in the attachments. This action was approved by the Procedure Review Board (PRB) on August 29, 2013.

Action: Temporary waivers are granted when the request complies with the criteria outlined in attachments 1 or 2 of this memo as summarized below:

- Attachment 1 describes the criteria to apply a temporary waiver by providing an equivalent level of safety using a suitable VGSI.

- Attachment 2 defines the criteria to apply a temporary waiver by providing an equivalent level of safety with the high precision accuracy associated with Instrument Landing System (ILS), localizer, Localizer Performance with Vertical Guidance (LPV), and Localizer performance (LP) procedures.

We recognize that in some instances, a waiver may be requested to continue operations with the noncompliance beyond the 30-day temporary waiver. An automatic 30-day extension to the temporary waiver is approved when a formal waiver request is submitted within 30 days of discovery. This will provide adequate time to review the proposal without impacting night operations where a rationale for an equivalent level of safety has been identified.

Summary: No further approval is required from the Flight Standards Service to apply the temporary waiver to penetrations which qualify under Attachment 1 or 2. The waiver begins the day that the noncompliant obstacle is identified and expires 60 days later. This memorandum will remain in effect until it is specifically cancelled or superseded.

If you have any questions, please contact Mr. George Gonzalez, Acting Manager, Flight Procedure Standards Branch, AFS-420, at (405) 954-4164.

Attachments:
(1) Temporary Use of VGSI in Lieu of Obstruction Lighting;
(2) Temporary Mitigation of Unlighted 20:1 Obstacle Penetrations Associated with ILS, Localizer, LPV and LP Instrument Approach Procedures.

Attachment 1. Temporary Use of VGSI in Lieu of Obstruction Lighting

A temporary waiver to Order 8260.3, volume 1, chapter 3, paragraph 3.3.2c(2)(b) is approved which authorizes an approach or applicable set of minimums to be used at night for IAPs with a VGSI installed to the applicable runway provided:

a. The VGSI is not restricted (e.g., no distance or angular limits).

b. The elevation of the obstacle is not higher than the obstacle clearance surface (OCS) of the VGSI, or the obstacle is located outside of the VGSI OCS area.

c. The VGSI angle is equal to or less than the IAP's glidepath angle/vertical descent angle (VDA).

d. The VGSI threshold crossing height (TCH) is not more than 15 feet higher than the IAP TCH.

e. A Visual Descent Point is not published and visibility is not lower than one statute mile/5000 RVR.

f. A T-NOTAM is issued to deny the approach or applicable minimums at night when the VGSI is inoperative. See Order 8260.19, paragraph 8-54m(2)(h).

g. Not more than 30 calendar days have elapsed from the day the noncompliant obstacle was identified. If a waiver request is submitted to AFS within 30 days, the temporary waiver is automatically extended for 30 days from the submission of the waiver request.

During the temporary waiver period, the obstacle may be lighted, removed, or lowered so that it is no longer a penetration. If appropriate, a waiver may be requested for the penetration. Note that any VGSI used as mitigation will need to be flight inspected before a permanent waiver can be considered.

Attachment 2. Temporary Mitigation of Unlighted 20:1 Obstacle Penetrations Associated with ILS, Localizer, LPV, and LP Instrument Approach Procedures

A temporary waiver to Order 8260.3, volume 1, chapter 3, paragraph 3.3.2c(2)(b) is approved for ILS, localizer, LPV, or LP IAPs to be used at night provided:

a. The final course is aligned within 0.03 degrees of the runway centerline (RCL) extended and the course passes through the landing threshold point (LTP) within +/- 5 feet. This attachment does not apply to localizer back course procedures.

b. A Visual Descent Point is not published and visibility is not lower than one statute mile/5000 RVR.

c. The unlighted obstacle is located outside the full-scale deflection of the ILS, localizer, LPV, or LP final approach. Determine deflection as follows:

(1) ILS and localizer. Calculate full-scale deflection of the localizer course at the obstacle's distance from LTP using formula 2-1. See Figure 2-1.

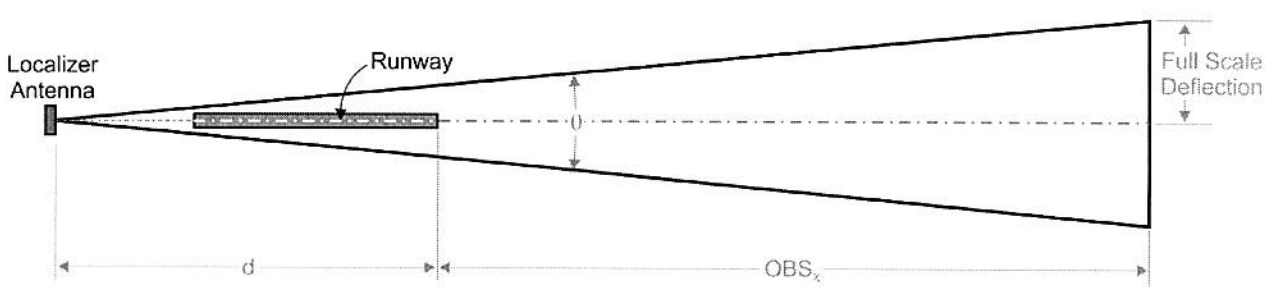
Formula 2-1. Localizer Deflection at Obstacle's Distance From LTP

$$\text{DEFLECTION} = \frac{(d + OBS_x) \times \tan\left(\theta \times \frac{\pi}{180}\right)}{2}$$

Where

θ = *commissioned width of localizer in degrees*
d= distance (feet) of localizer antenna to LTP
OBS_x= *distance (feet) LTP to point on RCL extended abeam obstacle*

Figure 2-1. Localizer Deflection



(2) LPV and LP.

(a) Determine the lateral guidance sector angle (LGSA) to be used in calculations for full scale deflection of the LPV/LP signal using formula 2-2. Refer to the procedure's Final Approach Segment (FAS) data block to obtain the course semi-width at LTP and the location of the Flight Path Alignment Point (FPAP).

Formula 2-2. LGSA

$$LGSA = atan\left(\frac{CW_{LTP}}{d_{GARP}}\right) \times \frac{180}{\pi}$$

Where

CW_{LTP} = Semi-width of the lateral course at the LTP (converted to feet)
d_{GARP} = Distance from the LTP to the FPAP, plus an additional 1000 feet

(b) Calculate full scale deflection of the LPV/LP signal at the obstacle's distance from LTP using formula 2-3. See figure 2-2.

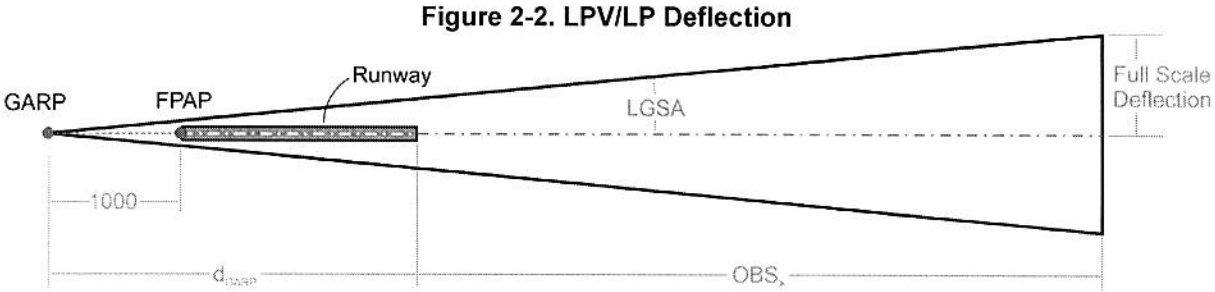
Formula 2-3. LPV/LP Deflection at Obstacle's Distance From LTP

$$DEFLECTION_{LPV_LP} = \left(d_{GARP} + OBS_X\right) \times tan\left(LGSA \times \frac{\pi}{180}\right)$$

Where

d_{GARP} = Distance from the LTP to the FPAP, plus an additional 1000 feet
OBS_X= distance (feet) LTP to point on RCL extended abeam obstacle
LGSA= value from paragraph 2-1a(2)(a)

Figure 2-2. LPV/LP Deflection



c. Not more than 30 calendar days have elapsed from the day the noncompliant obstacle was identified. If a waiver request is submitted to AFS within 30 days, the temporary waiver is automatically extended for 30 days from the submission of the waiver request.

During the temporary waiver period, the obstacle may be lighted, removed, or lowered so that it is no longer a penetration. If appropriate, a waiver may be requested for beyond the temporary 60-day limit.