



Federal Aviation Administration

Memorandum

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To: Regional All Weather Operations (AWO) Program Managers
(see attached distribution list)

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

Subject: Transponder Landing System (TLS) Design Criteria

PURPOSE: This memorandum provides updated guidance for the design and obstacle assessment of TLS approach procedures. The **AFS-400** July 28, 2006, memorandum titled "TLS Obstacle Evaluation Criteria" is canceled.

DISCUSSION: The National Airspace System (NAS) and supporting instrument procedure design criteria as evolved since the July 28, 2006, memorandum was signed. This memorandum provides current guidance.

POLICY:

Non-area navigation (RNAV) transitions to and from final: Apply Order 8260.3B, U.S. Standard for Terminal Instrument Procedures (TERPS), Volume 3, for procedure design and obstacle assessment.

RNAV transitions to and from final: Apply Order 8260.54A, U.S. Standard for RNAV, for procedure design and obstacle assessment. Apply Chapter 5 for final and Section 1 missed approach segments.

The following restrictions apply to TLS approach procedures:

1. The TLS is certified for glidepath angles from 2.5° through 4.0".
2. For non-RNAV construction, the intermediate fix (IF) must be defined by navigational aids (NAVAIDS) not associated with the TLS. For both non-RNAV and RNAV procedures, the IF must be on the final approach course extended. Establish a holding **pattern** at the IF (based on the inbound course to the IF) for use in the event the TLS azimuth course is not acquired.

3. The minimum height above threshold (HATh) value is 350 feet. For aircraft using diversity transponder antennas, the minimum HATh value varies with the aircraft fuselage diameter and maximum longitudinal antenna separation. The following table lists the minimum HATh values:

FUSELAGE DIAMETER	MAX LONGITUDINAL ANTENNA SEPARATION	MINIMUM HATh
≤ 9 feet (2.74 meters)	10 feet	350
> 9 feet (2.74 meters) ≤ 12 feet (3.66 meters)	15 feet	480
> 12 feet (3.66 meters) ≤ 15 feet (4.57 meters)	20 feet	610
> 15 feet (4.57 meters) ≤ 20 feet (6.10 meters)	25 feet	810

Process TLS approaches as a "SPECIAL" approach procedure under Order 8260.19D, Flight Procedures and Airspace. EXCEPTION: Process TLS procedures through the Flight Procedures Implementation and Oversight Branch, AFS-460, instead of the National Flight Procedures Group, AJW-32.

Order 8400.14, Air Carrier IFR Approval for Transponder Landing System Special Category I Approaches, is supplemented as follows:

Chapter 4, paragraph 4-1e. "After the TLS procedure request is made by the applicant to the POI, it must be forwarded to the AWO for Regional Airspace Procedures Team (RAPT) processing. The AWO and AFS-460, Flight Procedure Implementation and Oversight Branch, will assist the assigned Flight Standards inspector in advising the applicant operator in the formulation of the TLS approach procedure."

Chapter 4, paragraph 4-1g(4). "The draft TLS instrument approach is a key factor in any application for operational use of TLS under instrument conditions and in any subsequent operational suitability evaluation. It should be as complete and as close to the final product as possible. This means that it should entail at a minimum: a frequency to be used, a final approach course, a missed approach, an initial approach fix (IAF) if appropriate, a final approach fix (FAF), a correct name for the approach, the controlling authority, a set of minimums to fly as well as terrain and obstacle information and minimum safe altitudes. The initial draft approach may come from any source, but the final product must be approved by AFS-400. It will then be coordinated with the regional AWO for use in the operational evaluation. Forward the draft TLS instrument procedure to AFS-460 for quality control purposes and evaluation prior to use in any facility operational suitability evaluation. This step is mandatory for purposes of obtaining Flight Standards approval and potential acceptance by the Air Traffic Services."

If you have questions, contact Mr. Jack Corman, Program Analyst, Flight Procedure Standards Branch, AFS-420, at (405) 954-4164.

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