



Federal Aviation Administration

Memorandum

Date:

To: Mission Support Services, Service Center Directors

From: Wade E.K. Terrell, Acting Manager, Flight Technologies and Procedures Division

Subject: Instrument Approach Procedure Design Practices to Prevent Un-stabilized Approaches

The Commercial Aviation Safety Team (CAST) and FAA Aviation Safety (AVS) have identified reduction of un-stabilized approaches as an item of interest in the prevention of aviation accidents. High rates of un-stabilized approaches result in increased rates of missed approaches and increase the possibility of runway overruns, hard landings, controlled flight into terrain, and other adverse events. Accordingly, instrument approach procedures (IAPs) should be designed to facilitate stabilized approaches.

A recent increase in un-stabilized approaches at two airports was identified, leading to an analysis of the IAPs involved. While those IAPs were developed within criteria, the analysis identified that combinations of specific design element values may increase the likelihood of un-stabilized approaches. These design elements are: final approach segment length, intermediate segment descent gradient, and overall descent gradient from the initial approach fix to the runway.

The analysis identified ranges for each of these elements and their contribution to un-stabilized approaches. The ranges for each element and the likelihood of contribution to an un-stabilized approach are:

	Final Approach Segment Length	Intermediate Segment Descent Gradient	Overall Descent Gradient
Low Likelihood	Greater than 3.5 nautical miles (NM)	Less than or equal to 150 feet/NM	Less than or equal to 275 feet/NM
Enhanced Likelihood	Between 3.0 and 3.5 NM	Between 150 and 300 feet/NM	Between 275 and 300 feet/NM
High Likelihood	Less than 3.0 NM	Greater than 300 feet/NM	Greater than 300 feet/NM

To reduce the likelihood of un-stabilized approaches, procedure designers should ideally chose values identified as “low likelihood.” However, if this cannot be accomplished, designers should avoid designing procedures with:

- More than one element identified as “high likelihood;”
- More than one element identified as “enhanced likelihood;” or
- One element identified as “high likelihood” and one or more elements identified as “enhanced likelihood.”

IAP designers should work closely with all stakeholders to ensure the IAP design does not increase the likelihood of un-stabilized approaches. Additional emphasis on conformance to this memorandum should be considered for IAP designs at Part 139 airports.

If you have any questions, please contact TJ Nichols, Standards Section Manager, Flight Procedures and Airspace Group at (405) 954-9359 or thomas.j.nichols@faa.gov.

cc: Office of Accident Investigation and Prevention
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