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## APPENDIX 2

### STABILIZED APPROACH: CONCEPTS AND TERMS

A **stabilized approach** is one of the key features of safe approaches and landings in air carrier operations, especially those involving transport category airplanes.

A stabilized approach is characterized by a **constant-angle, constant-rate of descent** approach profile ending near the touchdown point, where the landing maneuver begins. A stabilized approach is the safest profile in all but special cases, in which another profile may be required by unusual conditions.

All appropriate **briefings and checklists** should be accomplished before 1000' height above touchdown (HAT) in instrument meteorological conditions (IMC), and before 500' HAT in visual meteorological conditions (VMC)

Flight should be **stabilized by 1000' HAT** in IMC, and by 500' HAT in VMC.

An approach is stabilized when all of the following **criteria** are maintained from 1000 HAT (or 500 HAT in VMC) to landing in the touchdown zone:

The airplane is on the correct<sup>1</sup> track.

The airplane is in the proper landing configuration.

After glide path intercept, or after the final approach fix (FAF), or after the derived fly-off point (per Jeppesen) the pilot flying requires no more than normal bracketing corrections<sup>2</sup> to maintain the correct track and desired profile (3° descent angle, nominal) to landing within the touchdown zone. Level-off below 1000' HAT is not recommended.

The airplane speed is within the acceptable range specified in the approved operating manual used by the pilot.

The rate of descent is no greater than 1000 feet per minute (fpm).

- If an expected rate of descent greater than 1000 fpm is planned, a special approach briefing should be performed.
- If an unexpected, sustained rate of descent greater than 1000 fpm is encountered during the approach, a missed approach should be performed. A second approach may be attempted after a special approach briefing, if conditions permit.

Power setting is appropriate for the landing configuration selected, and is within the permissible power range for approach specified in the approved operating manual used by the pilot.

## APPENDIX 2 (continued)

**When no vertical guidance is provided:** Vertical guidance may be provided to the pilot by way of an electronic glideslope, a computed descent path displayed on the pilot's navigation display, or other electronic means. On approaches for which no vertical guidance is provided, the flightcrew should plan, execute, and monitor the approach with special care, taking into account traffic and wind conditions. To assure vertical clearance and situation awareness, the pilot not flying should announce crossing altitudes as published fixes and other points selected by the flightcrew are passed. The pilot flying should promptly adjust descent angle as appropriate. A constant-angle, constant-rate descent profile ending at the touchdown point is the safest profile in all but special cases.

*Visual contact.* Upon establishing visual contact with the runway or appropriate runway lights or markings, the pilot should be able to continue to a safe landing using normal bracketing corrections, or, if unable, should perform a missed approach.

*No visual contact.* The operator may develop procedures involving an approved, standard MDA buffer altitude or other approved procedures to assure that descent below MDA does not occur during the missed approach. If no visual contact is established approaching MDA or an approved MDA buffer altitude, or if the missed approach point is reached, the pilot should perform the published missed approach procedure. (OpSpec paragraph C073 provides for special authorization under certain conditions to go below the MDA while executing a missed approach.) Below 1000' HAT, leveling off at MDA (or at some height above MDA) is not recommended, and a missed approach should be performed.

**Note <sup>1</sup>:** A **correct track** is one in which the correct localizer, radial, or other track guidance has been set, tuned, and identified, and is being followed by the pilot. Criteria for following the correct track are discussed in FAA Advisory Circulars relating to Category II and Category III approaches. Criteria for following track in operations apart for Category II and Category III are under development.

**Note <sup>2</sup>:** **Normal bracketing corrections** relate to bank angle, rate of descent, and power management. Recommended ranges are as follows (operating limitations in the approved airplane flight manual must be observed, and may be more restrictive):

Bank angle	Maximum bank angle permissible during approach is specified in the approved operating manual used by the pilot, and is generally not more than 30°; the maximum bank angle permissible during landing may be considerably less than 30°, as specified in that manual.
Rate of descent	± 300 fpm deviation from target
Power management	Permissible power range is specified in the approved operating manual used by the pilot
Overshoots	Normal bracketing corrections occasionally involve momentary overshoots made necessary by atmospheric conditions. Such overshoots are acceptable. Frequent or sustained overshoots caused by poor pilot technique are not normal bracketing corrections.