Attachment 5

to Operations Group Factual Report

DCA05MA04

GLIDE PATH INFORMATION

Use of Barometric and Radar Altimeters

All instrument approaches will be executed using category I minimums with adjustments for "High Minimums" Captains when applicable. If a difference exists between the Captain's and First officer's altimeters, the altimeter reading the lowest altitude will be used to determine all altitude restrictions (i.e., ATC assignments, procedure altitudes, DA or MDA, etc.) during an approach.

While use of the Radar Altimeter is prohibited for establishing arrival at approach minimums, it is a valuable secondary reference - particularly after leaving minimums during descent to touchdown. During instrument approaches the DH windows on the ADI's will be set to the published or applicable DA or MDA, referenced to AFL elevation (above TDZE or Airport Elevation). On all visual approaches, set the DH windows should be set to 500' AFL.

Landing Speeds

Landing weight will be computed and the VREF and VYSE for landing should be determined from the Jetstream 32 Speed Cards as soon as feasible after the necessary landing airport data is received.

Regardless of the speed used during the approach phase, the speed at crossing the runway threshold must be within +5 / -0 knots of VREF.

Minimum Speeds for Approaches

When flying any approach the minimum speed is 130 KIAS until the aircraft is established on final and a speed reduction is necessary to cross the threshold at VREF (+5 / -0 knots).

During a No Flap approach the minimum speed is 140 KIAS until the aircraft is established on final and a speed reduction is necessary to cross the threshold at VREF (+5 / -0 knots).

Use of Higher Approach Speeds

During approaches, the crew may use a higher approach speed. This speed is referred to as the "Briefed Approach Speed". This speed MAY NOT exceed VFE or VLE for the existing configuration.

Regardless of the speed used during the approach phase, the speed at crossing the runway threshold must be at VREF (+5 / -0 knots).

Flap Extension

As flaps are extended, particularly as they travel to 35°, a noticeable pitch up, or "balloon" will be encountered. This balloon should be anticipated and compensated for by applying forward pressure and pitch trim as necessary. Initially, a pitch attitude of approximately 3° below the horizon will be necessary. This pitch change should be initiated as soon as the command for flap extension is issued.

Normal Glide Path

The normal glide path is based on an ILS glide slope angle of 3°. Once the final approach is established only small adjustments to the glide path, approach speed and trim are normally required. This will result in a stabilized approach under IFR or VFR conditions.

Aim all approaches at the 1000' point on the runway. Although the actual touchdown point will vary with the glide path angle, the touchdown will not be short or unnecessarily long if the recommended 1000' visual aim point is used.

The glide path angle as well as height when crossing the end of the runway directly affect landing distance. For example: crossing the end of the runway at 100' rather than 50' can increase landing distance by about 950' on a 3° glide path. Even crossing the end of the runway at a 50' height, the landing distance is increased as approach path becomes flatter. A glide path angle of 1° can increase landing distance by about 1500' over that required for a 3° path. Best results are obtained at a normal ILS or VASI glide path angle.

Final Approach

A 3° glide path can be closely approximated by maintaining 300' of altitude for each mile from the runway. For example, when crossing a fix five miles from touchdown, the aircraft should be at (or slightly above) 1500' above the runway at that point. Any fix (e.g., DME or established landmark) that is accurately defined can be used in applying this rule.
In addition to the 300-feet per mile rule, ground speed and rate of descent can be used along with visual cues to insure a correct glide path. The rate of descent on a 3° glide path is a function of ground speed and will most often be between 650' and 800' per minute. If the ground speed is known, or can be accurately estimated, the approximate rate of descent on a 3° glide path can be calculated by the following rule of thumb: One-half the ground speed (knots) times ten will give a close approximation of the descent rate (fpm) required to maintain the desired (3°) glide path. For example, ground speed is 140 knots: 140 ÷ 2 x 10 = 700 fpm required to maintain approximate 3° glide path.

Visual Approaches

It is just as important to establish and stabilize the proper glide path angle on visual approach as it is on an ILS approach. The normal glide path angle of 3° is recommended. The following variables affect the ability to accurately judge this angle by visual means alone - when VASI, PAPI, or other visual or electronic approach aids are not available:

- Runway Slope: An up-slope in either the runway or approach zone creates an illusion of being high. A down-slope in the runway or approach zone creates an illusion of being low.
- Visibility: Rain, haze, smoke, dust, glare or darkness may cause a flight crew to believe they are higher than they actually are.
- Lighting: Bright runway lights appear closer, dim runway lights appear farther away – either case can lead to a misjudged approach.
- Runway Dimensions: The width of the runway relative to its length will also affect visual perspective.

These illusions and their effect can be minimized by cross-checking the approach path against barometric or radar altimeter indications (but beware of radar altitude - it may be affected by undulating terrain below), and by maintaining an awareness of the special problems associated with such approaches.

In light of the above, whenever possible, all visual approaches should be made with assistance from VASI, PAPI, or other available visual approach aids, or with an electronic glide slope (ILS) as reference.

Stabilized Approach Criteria

All approaches should be conducted so as to remain within the stabilized approach criteria as outlined in the Flight Manual.

Unstable Approaches

If an approach fails to meet the stabilized approach criteria, the non flying pilot shall state so, and state the criteria not met. For example: "Approach unstable, sink rate twenty-five hundred".