Docket No. SA-532

Exhibit No. 2-Y

NATIONAL TRANSPORTATION SAFETY BOARD

Washington, D.C.

Operations/Human Performance Group Chairmen
Airbus Flight Crew Training Manual
Normal Operations - Landing
Flare

(2 Pages)

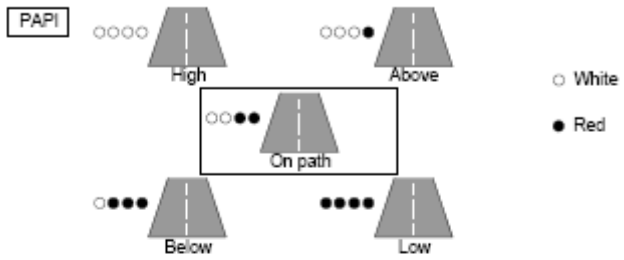
Attachment 24

to Operations / Human Performance Group Factual Report

DCA09MA026

AIRBUS FCTM
NORMAL OPERATIONS - LANDING
FLARE

use of VASI/TVASI/PAPI



This technique will ensure that performance margins are not compromised and provide adequate main gear clearance.

FLARE

Ident.: NO-160-00005576.0001001 / 26 MAR 08
Applicable to: ALL

PITCH CONTROL

When reaching 50 ft, auto-trim ceases and the pitch law is modified to flare law. Indeed, the normal pitch law, which provides trajectory stability, is not the best adapted to the flare manoeuvre. The system memorizes the attitude at 50 ft, and that attitude becomes the initial reference for pitch attitude control. As the aircraft descends through 30 ft, the system begins to reduce the pitch attitude at a predetermined rate of 2 ° down in 8 s. Consequently, as the speed reduces, the pilot will have to move the stick rearwards to maintain a constant path. The flare technique is thus very conventional.
From stabilized conditions, the flare height is about 30 ft. This height varies with different parameters, such as weight, rate of descent, wind variations...
Avoid under flaring.

- The rate of descent must be controlled prior to the initiation of the flare (rate not increasing)
- Start the flare with positive backpressure on the sidestick and holding as necessary
- Avoid forward stick movement once Flare initiated (releasing back-pressure is acceptable)

At 20 ft, the "RETARD" auto call-out reminds the pilot to retard thrust levers. It is a reminder rather than an order. The pilot will retard the thrust levers when best adapted e.g. if high and fast on the final path the pilot will retard earlier. In order to assess the rate of descent in the flare, and the aircraft position relative to the ground,

look well ahead of the aircraft. The typical pitch increment in the flare is approximately 4 °, which leads to -1 ° flight path angle associated with a 10 kt speed decay in the manoeuvre. A prolonged float will increase both the landing distance and the risk of tail strike.

LATERAL AND DIRECTIONAL CONTROL

FINAL APPROACH

In crosswind conditions, a crabbed-approach should be flown.

FLARE

The objectives of the lateral and directional control of the aircraft during the flare are:

- To land on the centerline
- And, to minimize the loads on the main landing gear.

During the flare, rudder should be applied as required to align the aircraft with the runway heading. Any tendency to drift downwind should be counteracted by an appropriate lateral (roll) input on the sidestick.
In the case of a very strong cross wind, the aircraft may be landed with a residual drift (up to about 5 °) to prevent an excessive bank (up to about 5 °).
Consequently, combination of the partial de-crab and wing down techniques may be required.

MAXIMUM DEMONSTRATED CROSSWIND FOR LANDING

Ident.: NO-160-00005578.0001001 / 16 JUN 08
Applicable to: ALL

With a good reported braking action, the maximum demonstrated crosswind at landing is 33 knots, with gusts up to 38 knots.

CALL OUT

Ident.: NO-160-00005579.0001001 / 26 MAR 08
Applicable to: MSN 0844-1393

If pitch attitude exceeds 10 °, the PNF will announce "PITCH".