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Dutch Safety Board
P.O. Box 95404
2509 CK Den Haag
The Netherlands

Via email:

Subject: Boeing response to Dutch Safety Board Safety Recommendation 3 – Auditory Low Speed Warning – Turkish Airlines 737-800 TC-JGE Accident at Amsterdam, 25 Feb 2009

References: (a) Final Report, May 2010, same subject

Dear

Please find attached our response to Safety Recommendation 3 included in the reference (a) final report.

The information included with this correspondence is controlled under the US Export Administration Regulations (15 CFR Parts 300-799) and has been categorized as ECCN: 9E991. Information categorized as ECCN 9E991 is acceptable for public release.

Please feel free to contact us if you have any questions.

Best regards,

<original signed by>

Chief Engineer
Air Safety Investigation

Enclosure: Boeing response to Dutch Safety Board Safety Recommendation 3 – Auditory Low Speed Warning – Turkish Airlines 737-800 TC-JGE Accident at Amsterdam, 25 Feb 2009



Boeing response to Dutch Safety Board Safety Recommendation 3
Auditory Low Speed Warning
Turkish Airlines 737-800 TC-JGE Accident at Amsterdam, 25 Feb 2009

On 25 February 2009, a Turkish Airlines 737-800, registration TC-JGE, crashed on approach to Amsterdam Schiphol Airport (EHAM). The final report published by the Dutch Safety Board included the following Safety Recommendation:

The investigation revealed that the available indications and warnings in the cockpit were not sufficient to ensure that the cockpit crew recognised the too big a decrease in speed at an early stage. The Board has thus formulated the following recommendation:

Boeing, FAA and EASA

3. *Boeing, FAA and EASA should assess the use of an auditory low-speed warning signal as a means of warning the crew and - if such a warning signal proves effective - mandate its use.*

Boeing Response

During the investigation, there was disagreement as to whether the available indications and warnings regarding low airspeed were sufficient. In the U.S. Summary Comments, the NTSB identified eight different cues of slowing airspeed that were available to the pilots during the approach. Had these indications been heeded, the pilots would have had adequate time to initiate corrective action and avoid the accident.

Regardless, Boeing has acted to further enhance the available alerts by adding a new "Airspeed Low" aural alert. An "AIRSPEED LOW, AIRSPEED LOW" aural alert is triggered when airspeed decreases below 70% of the margin to stall speed, which is represented by an amber band. This aural alert is produced by the Enhanced Ground Proximity Warning Computer (EGPWC) and is triggered at the same time as the existing flashing amber box surrounding the digital airspeed display on the primary flight display.

For production, the new EGPWC was introduced at Line Number 3329, delivered in July 2010.

For retrofit, a Boeing Service Letter titled "New Enhanced Ground Proximity Warning Computer (EGPWC) Upgrade to Support Runway Awareness and Advisory System (RAAS), add AIRSPEED LOW alert, and Radio Altimeter source select logic", dated October 27, 2010, has been released advising operators that a new EGPWC has been installed in production and is available for retrofit. A Boeing Alert Service Bulletin (737-34A2292) will also be released in 2nd Quarter 2011 that will provide retrofit instructions for all 737NG aircraft delivered with the Honeywell EGPWC installed. A Honeywell Component Service Bulletin, dated September 21, 2010, provides upgrade instructions for existing units.