U.S. Department of Transportation

Federal Aviation Administration

Memorandum

Subject:	INFORMATION: Equivalent Level of Safety Finding for Airbus Model A380-800 FAA Project Number CP101	Date:	26 September 05
		Reg Ref:	§ 25.107
From:	Manager, Transport Standards Staff, Airplane and Flight Crew Interface Branch, ANM-111	Reply to Attn of:	Mel Rogers ANM-111
To:	Manager, Transport Standards Staff, International Branch, ANM-116	ELOS Memo #:	CP101-F-17

Background

Airbus has requested, in a letter to the FAA, dated February 14, 2001, the use of the proposed FAR/JAR revision to §25.107(e)(1)(iv) as developed in the Fast Track Harmonization Program. The proposed change allows the use of reduced margins between the takeoff rotation speed, V_R, and the liftoff speed, V_{LOF} for geometry limited airplanes.

Although the proposed standard would allow a reduction in the V_{MU} to V_{LOF} speed margin for certain airplanes, it would maintain the same level of safety relative to that intended by the current standards. The reduced speed margin would apply only to airplanes for which V_{MU} is limited by airplane geometry, such that a hard physical limit (fuselage contact with the runway) protects the airplane from reaching a potentially hazardous takeoff pitch attitude while still on the ground. Since the minimum required speed margin between V_{MU} and V_{LOF} is, in part, intended to reduce the probability for an airplane to reach a takeoff pitch attitude beyond that which has shown to be safe, the additional protection against such a condition inherent to a geometry-limited airplane would allow the V_{MU} and V_{LOF} speed margin to be reduced while providing the same level of safety. Currently, the FAA allows, by equivalent safety finding, a reduction in the V_{MU} to V_{LOF} speed margin for the all-engines-operating condition. The proposed standard would codify this practice and extend its application to the one-engine-inoperative condition.

The Fast Track Harmonization Program was initiated in November 1999 as an Aviation Rulemaking Advisory Committee (ARAC) activity in an effort to expedite the rulemaking process for a number of regulations and associated policy. The harmonization of Section 25.107(e)(1)(iv) was part of this effort, and was the responsibility of the Flight Test Harmonization Working Group.

Regulation(s) requiring an ELOS

§ 25.107(e)(1)(iv)

Based on recommendations from the Flight Test Harmonization Working Group for a rule and advisory material change, as presented in the ARAC Working Group Report, the following shall apply:

> FAR/JAR 25.107(e)(1)(iv) A speed that, if the airplane is rotated at its maximum practicable rate, will result in a V_{LOF} of not less than –
> (A) 110 percent of V_{MU} in the all-engines-operating condition, and 105 percent of V_{MU} determined at the thrust-to-weight ratio corresponding to the one-engine-inoperative condition; or
> (B) If V_{MU} is limited by the geometry of the airplane (i.e., tail contact with the runway), 108 percent of V_{MU} in the all-engines-operating condition and 104 percent of V_{MU} determined at the thrust-to-weight ratio corresponding to the one-engine-inoperative condition.

In conjunction with the above rule change to Section 25.107(e)(1)(iv), the advisory material contained in the Flight Test Guide, Chapter 2., Section 2., Paragraph 10(b)(5)(viii), which pertains to V_{MU} testing for geometry limited airplanes, has been revised. It presents an acceptable means for demonstrating compliance based on flight demonstration.

FAA approval and documentation of the ELOS

The FAA has approved the aforementioned Equivalent Level of Safety Finding in project issue paper F-17. This memorandum provides standardized documentation of the ELOS that is non-proprietary and can be made available to the public. The Transport Directorate has assigned a unique ELOS Memorandum number (see front page) to facilitate archiving and retrieval of this ELOS. This ELOS Memorandum number should be listed in the Type Certificate Data Sheet under the Certification Basis section. An example of an appropriate statement is provided below.

Equivalent Safety Finding(s) have been made for the following regulation:
§ 25.107(e)(1)(iv), Takeoff speeds (documented in TAD ELOS Memo CP101-F-17)

Original Signed by Steve Boyd — *September 26, 2005*

Manager, Transport Standards Staff, Airplane and Flight Crew Interface Branch, ANM-111 — Date

ELOS Originated by TSS:	Project Engineer Mel Rogers	Routing Symbol ANM-111