



3 bis villa Emile Bergerat, 92522 Neuilly-sur-Seine Cedex, France

Reference : TEC/OPS/SEP – 08-0294.SLG

8 July 2008

Subject : **Wake turbulence aspects of Airbus A380-800 aircraft**

Action
required : As indicated in paragraph 2 below

Sir/Madam,

1. I have the honour to refer to the guidance issued in November 2005 (T13/3-05-0661.SLG and October 2006 (TEC/OPS/SEP(T11/72) – 06-320.SLG by this office on the subject of Airbus A380 wake vortex aspects. You will recall that an ad hoc group of experts under the auspices of the United States Federal Aviation Administration, the European Organisation for the Safety of Air Navigation (Eurocontrol), the Joint Aviation Authorities and the manufacturer were studying the wake vortex aspects of this new aircraft. As their work was still in progress, and data collection, processing and analysis were ongoing, the recommendations made at that time were necessarily conservative
2. The ad hoc group has provided updated guidance based on a revised safety case. Accordingly, new guidance related to wake turbulence aspects of the Airbus A380-800 aircraft is contained in **Attachment A**. It should be noted that radar separation minima have been reduced from that previously recommended, shown in **Attachment B**. I strongly encourage you to implement this revised guidance as soon as possible. All guidance previously issued on the subject of Airbus A380 wake vortex aspects is hereby superseded.
3. A review of the current wake turbulence categorization scheme is under way. A proposal for amendment of the *Procedures for Air Navigation Services — Air Traffic Management* (PANS-ATM, Doc 4444) will follow in due course and, in accordance with the established procedure, States and international organizations will be consulted.

Please accept the assurances of my highest consideration.

Karsten Theil
ICAO Regional Director
Europe and North Atlantic

Enclosure: Attachment A – Updated guidance on A380-800 Wake Vortex Aspects
Attachment B – Revisions to radar separation minima for A380-800

Distribution: EUR/NAT States of accreditation, Eurocontrol, IAOPA, IATA, IBAC, IFALPA, and IFATCA

GUIDANCE ON A380-800 WAKE VORTEX ASPECTS
(Issued on 30 June 2008)

1. INTRODUCTION

This guidance is based on the current outcome of work by an ad hoc group of experts under the auspices of the United States Federal Aviation Administration, the European Organisation for the Safety of Air Navigation (Eurocontrol), the Joint Aviation Authorities and the manufacturer. A review by the ad hoc group of the current wake turbulence categorization scheme is under way.

The Airbus A380-800, with a maximum take-off mass in the order of 560 000 kg, is the largest passenger aircraft ever to enter into revenue service. The aircraft is in the HEAVY wake turbulence category and the *Procedures for Air Navigation Services — Air Traffic Management* (PANS-ATM, Doc 4444) apply. However, as vortices generated by the A380-800 are more substantial than for other aircraft in the HEAVY wake turbulence category, this guidance recommends an increase in relation to the wake turbulence separation minima published in the PANS-ATM. This is intended to ensure that aircraft operating near an A380-800 do not encounter wake vortices of a greater magnitude than are generated by other aircraft in the HEAVY wake turbulence category. States are strongly encouraged to implement this guidance pending an amendment to the PANS-ATM.

Note. — For ease of reference, related PANS-ATM provisions are indicated below.

2. INDICATION OF AIRCRAFT TYPE
(PANS-ATM 4.9.2 and Appendix 2)

2.1 For A380-800 aircraft the letter “J” should be entered into the space allocated to wake turbulence under Item 9 of the ICAO flight plan.

2.2 For A380-800 aircraft the expression “SUPER” should be included immediately after the aircraft call sign in the initial radiotelephony contact between such aircraft and ATS units.

3. NON-RADAR WAKE TURBULENCE LONGITUDINAL SEPARATION MINIMA
(PANS-ATM 5.8.2, 5.8.3, 5.8.4 and 5.8.5)

3.1 Arriving aircraft

The following non-radar separation minima should be applied to aircraft landing behind an A380-800 aircraft:

- a) MEDIUM aircraft behind an A380-800 aircraft — 3 minutes;
- b) LIGHT aircraft behind an A380-800 aircraft — 4 minutes.

3.2 Departing aircraft

3.2.1 A minimum separation of 3 minutes should be applied for a LIGHT or MEDIUM aircraft and 2 minutes for a non-A380-800 HEAVY aircraft taking off behind an A380-800 aircraft when the aircraft are using:

- a) the same runway;
- b) parallel runways separated by less than 760 m (2 500 ft);
- c) crossing runways if the projected flight path of the second aircraft will cross the projected flight path of the first aircraft at the same altitude or less than 300 m (1 000 ft) below;
- d) parallel runways separated by 760 m (2 500 ft) or more, if the projected flight path of the second aircraft will cross the projected flight path of the first aircraft at the same altitude or less than 300 m (1 000 ft) below.

3.2.2 A separation minimum of 4 minutes should be applied for a LIGHT or MEDIUM aircraft when taking off behind an A380-800 aircraft from:

- a) an intermediate part of the same runway; or
- b) an intermediate part of a parallel runway separated by less than 760 m (2 500 ft).

3.3 Displaced landing threshold

A separation minimum of 3 minutes should be applied between a LIGHT or MEDIUM aircraft and an A380-800 aircraft when operating on a runway with a displaced landing threshold when:

- a) a departing LIGHT or MEDIUM aircraft follows an A380-800 aircraft arrival; or
- b) an arriving LIGHT or MEDIUM aircraft follows an A380-800 aircraft departure if the projected flight paths are expected to cross.

3.4 Opposite direction

A separation minimum of 3 minutes should be applied between a LIGHT or MEDIUM aircraft and an A380-800 aircraft when the A380-800 aircraft is making a low or missed approach and the LIGHT or MEDIUM aircraft is:

- a) utilizing an opposite-direction runway for take-off; or
- b) landing on the same runway in the opposite direction, or on a parallel opposite-direction runway separated by less than 760 m (2 500 ft).

4. RADAR WAKE TURBULENCE SEPARATION MINIMA
(PANS-ATM 8.7.4.4 and 8.7.4.4.1)

4.1 The following wake turbulence radar separation minima should be applied to aircraft in the approach and departure phases of flight in the circumstances given in 4.2.

<i>Preceding aircraft</i>	<i>Succeeding aircraft</i>	<i>Wake turbulence radar separation minima</i>
A380-800/ non-A380-800 HEAVY	A380-800	Not required*
A380-800	Non-A380-800 HEAVY	11.1 km (6.0 NM)
A380-800	MEDIUM	13 km (7.0 NM)
A380-800	LIGHT	14.8 km (8.0 NM)

*When a wake turbulence restriction is not required then separation reverts to radar separation minimum as prescribed by the appropriate ATS authority. The recommendation of the ad hoc group (safety case) indicated that no wake constraint exists for the A380-800 either following another A380-800 or a non-A380-800 HEAVY aircraft.

4.2 The minima set out in 4.1 should be applied when:

- a) an aircraft is operating directly behind an A380-800 aircraft at the same altitude or less than 300 m (1 000 ft) below; or
- b) both aircraft are using the same runway, or parallel runways separated by less than 760 m; or
- c) an aircraft is crossing behind an A380-800 aircraft, at the same altitude or less than 300 m (1 000 ft) below.

— — — — —

REVISIONS TO RADAR SEPARATION MINIMA FOR A380-800

<i>Preceding aircraft</i>	<i>Succeeding aircraft</i>	<i>Wake turbulence radar separation minima</i>
A380-800/ non-A380-800 HEAVY	A380-800	7.4 km (4.0 NM) Not required*
A380-800	Non-A380-800 HEAVY	11.1 km (6.0 NM)
A380-800	MEDIUM	14.8 km (8.0 NM) 13 km (7.0 NM)
A380-800	LIGHT	18.5 km (10.0 NM) 14.8 km (8.0 NM)

— END —