



भारतीय विमानपत्तन प्राधिकरण AIRPORTS AUTHORITY OF INDIA

DIRECTORATE OF AIR TRAFFIC MANAGEMENT

RAJIV GANDHI BHAWAN, NEW DELHI-110003

[File No. AAI/ATM/S&P/31-16/2011]

Doc. Id: ED/ATM/2011/311602/ATMC/PROC

ATMC

AIR TRAFFIC MANAGEMENT CIRCULAR NO. 8 of 2011

Guidance on A380, B747-8 & B787 Wake Turbulence Separation Minima

1. Introduction

- 1.1 A study on Airbus A380 wake vortex aspects was conducted by an expert group in the field of wake vortices from the United States Federal Aviation Administration (FAA), the European Organisation for the Safety of Air Navigation (EUROCONTROL), and the European Aviation Safety Agency (EASA) under the supervision of ICAO. Based on the extensive flight test programme, the group has revised the earlier guidance issued in November 2005 and October 2006 on A380-800 Wake Vortex.
- 1.2 A Boeing 747-8 Expert Group also examined flight test and simulation data and established safety case arguments for approach, landing, departure, climb, descent, and cruise of Boeing 747-8 relative to other aircraft. The Expert group has submitted final recommendations to ICAO.
- 1.3 Introduction of B787 (Dreamliner) into operations has necessitated awareness about its wake turbulence Category to ATCOs.
- 1.4 In view of reduction in radar separation minima to 3NM in the airspace wherein it has been authorised, there is need to revise the distance based wake turbulence minima.

2. Purpose

- 2.1 Purpose of this ATMC is to provide interim guidance to air traffic controllers about procedures applicable to the A380-800. It will also provide guidance about wake turbulence procedures applicable to the B747-800 (B748), B787 (Dreamliner) and revision to distance based wake turbulence separation minima prescribed in Manual of Air Traffic Services –Part1 (MATS-1).



Guidance on A380, B747-8 & B787 Wake Turbulence Separation Minima

3. Scope

3.1 This ATMC is applicable to all Air Traffic Controllers working at various AAI airports/ATC centres/ATC units.

1. Procedures:

4.1 Procedures Applicable to A380:

4.1.1 General:

- a) 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 commercial service.
- b) Vortices generated by the A380-800 are more substantial than for other aircraft in the HEAVY wake turbulence category which necessitate an increase in relation to the wake turbulence separation minima published in MATS-1. 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.

4.1.2 Indication of Aircraft Type

- a) 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.
- b) 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.

4.1.3 Non-Radar Wake Turbulence Longitudinal Separation Minima

a) Arriving aircraft

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

Leading Aircraft	Following Aircraft	Separation Minima
A380-800	MEDIUM	3 min
A380-800	LIGHT	4 min



Guidance on A380, B747-8 & B787 Wake Turbulence Separation Minima

b) Departing aircraft

Conditions	Leading Aircraft	Following Aircraft	Separation Minima
Departing from a) the same runway b) parallel runway separated by less than 760 m 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 1 000 ft below;	A380-800	Non-A380-800 HEAVY	2 minutes
	A380-800	MEDIUM or LIGHT	3 minutes
d) Parallel runways separated by 760 m 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 1 000 ft below.			
Departing from a) an intermediate part of the same runway; or b) an intermediate part of a parallel runway separated by less than 760 m	A380-800	MEDIUM or LIGHT	4 minutes

c) 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:

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

d) 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:

- i) utilizing an opposite-direction runway for take-off; or
- ii) landing on the same runway in the opposite direction, or on a parallel opposite-direction runway separated by less than 760 m.



Guidance on A380, B747-8 & B787 Wake Turbulence Separation Minima

4.1.4 The Distance Based Wake Turbulence Separation Minima

- a) The distance based wake turbulence separation minima when preceding aircraft is A380-800 is as described in Para 5.

4.2 Procedures Applicable to B747-8 (B748):

- 4.2.1 B 747-8 is in the HEAVY wake turbulence category; therefore all the procedures appropriate for aircraft in the HEAVY category will be applicable to B747-8 also.

4.3 Procedures Applicable to B787 (Dreamliner):

- 4.3.1 B 787 has been categorised as HEAVY in ICAO DOC 8643 and, therefore all the procedures appropriate for aircraft in the HEAVY category will be applicable to B787.

5. Distance Based Applicable Wake Turbulence Separation Minima

- 5.1 The following distance based wake turbulence separation minima being provided with an ATS surveillance service should be applied to aircraft in the approach and departure phases of flight in the circumstances given in 5.2).

Preceding aircraft	Succeeding aircraft	Distance Based Wake Turbulence Separation Minima
A380-800/ Non-A380-800 HEAVY	A380-800	Not required+
A380-800	Non-A380-800 HEAVY	6 NM*
	MEDIUM	7 NM*
	LIGHT	8 NM*
HEAVY	HEAVY	4 NM*
	MEDIUM	5NM*
	LIGHT	6 NM*
MEDIUM	HEAVY	Not required+
	MEDIUM	Not required+
	LIGHT	5 NM*
LIGHT	HEAVY	Not required+
	MEDIUM	Not required+
	LIGHT	Not required+



Guidance on A380, B747-8 & B787 Wake Turbulence Separation Minima

- + When a wake turbulence restriction is not required, then separation reverts to prescribed radar separation minimum.
- * In the airspace wherein prescribed radar separation minimum is more than applicable wake turbulence separation minimum, prescribed radar separation minimum will have precedence over wake turbulence separation minimum.

5.2 The minima set out in 5.1) shall be applied when:

- i) an aircraft is operating directly behind another aircraft at the same altitude or less than 1 000 ft below; or
- ii) both aircraft are using the same runway, or parallel runways separated by less than 760 m; or
- iii) an aircraft is crossing behind another aircraft, at the same altitude or less than 1000 ft below.

6. Queries

6.1 Any queries or further guidance required on the contents of this ATMC should be addressed to:

Executive Director [ATM]
Airports Authority of India
Rajiv Gandhi Bhawan
Safdarjung Airport
New Delhi-110003
E-mail: edatm@aai.aero

7. Validity

7.1 This ATMC will remain in force until further notice and all previous guidance on A380, B747-8 and B787 Wake Turbulence is hereby cancelled.

[JYOTI PRASAD]
EXECUTIVE DIRECTOR [ATM]
AIRPORTS AUTHORITY OF INDIA
Dated: 05-10-2011