



**U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION**

Air Traffic Organization Policy

**ORDER  
JO 7110.316**

**Effective Date:**  
January 28, 2013

**SUBJ:** Reduced Wake Turbulence Separation on Departure from Heavy/B757 Aircraft Departing Parallel Runways, Spaced Less Than 2,500 Feet, Using Wake Turbulence Mitigation for Departures (WTMD)

---

**1. Purpose of This Order.** This order describes equipment and conditions that allow aircraft departing from the upwind runway of a pair of Closely Spaced Parallel Runways (CSPR) to depart after a Heavy/B757 aircraft departing the downwind runway without applying wake turbulence separation standards specified in Federal Aviation Administration (FAA) Order JO 7110.65. This order also specifies guidance for requesting assessment for other airport CSPR pairs not specified in Appendix A. Initially, George Bush Intercontinental/Houston (IAH), San Francisco International Airport (SFO), and Memphis International Airport (MEM) are authorized to conduct the operations contained in this Order on runway pairs specified in Appendix A. A decision to expand implementation into any or all of the other 7 listed airports is at the discretion of the Director, Terminal Operations – Headquarters.

**2. Audience.** This order applies to the Terminal Services organization and all associated air traffic control facilities.

**3. Where Can I Find This Order?** This order is available on the MyFAA employee Web site at [https://employees.faa.gov/air\\_traffic/publications](https://employees.faa.gov/air_traffic/publications).

**4. Explanation of Policy Changes.** Increased airport capacity and reduced departure delays, under visual meteorological conditions (VMC) down to and including 1,000-foot ceiling and 3 miles visibility can be achieved by using WTMD reduced separation departures.

FAA Order JO 7110.65, paragraph 3-9-6f2, includes a wake turbulence constraint to treat runways with centerlines separated by less than 2,500 feet as a single runway when applying wake turbulence separation minima. Additionally, paragraph 3-9-7 includes wake turbulence requirements for intersection departures from CSPRs. Paragraph 7-2-1 excludes tower-applied visual separation when wake turbulence separation is required. This change permits departures from the upwind runway of the designated runway pair without wake turbulence separation when the appropriate conditions exist. Tower-applied visual separation is then permitted between a succeeding aircraft departing the upwind runway behind a Heavy/B757 aircraft departing the downwind runway.

**5. How can additional airports be authorized to use WTMD?** Written requests for analysis of specific airport and runway pairs must be made to Terminal Operations – Headquarters through the managing service area for the requesting facility. The request will be addressed through the following process:

**a.** The facility will provide a written request to the managing service area for an analysis. The request must include:

- (1) The runway pair(s).
- (2) The centerline separation between the runway pair(s).

**b.** The service area will evaluate the request and forward to Terminal Operations – Headquarters.

**c.** Terminal Operations – Headquarters will:

(1) Request a wake encounter risk assessment from ATO System Operations Services.

(2) Coordinate the wake encounter risk assessment with ATO Safety and Technical Training and Air Traffic Safety Oversight Service (AOV) and amend Appendix F of the WTMD SRMD.

(3) Approve the risk assessment and amended SRMD (subparagraph d) or communicate disapproval with proposed mitigations to the managing service area (subparagraph e).

**d.** The approval will be:

(1) Coordinated by Terminal Operations – Headquarters, through the Office of ATO Safety and Technical Training and the managing service area, to the originating facility.

(2) Implemented by the originating facility contingent upon the provisions in this order.

(3) Approvals will be followed with an implementation of WTMD in the airport traffic control tower and training must be completed prior to operational use of WTMD reduced separation.

**e.** Disapprovals with proposed mitigations will be coordinated by Terminal Operations – Headquarters through the Office of ATO Safety and Technical Training, ATO System Operations, the managing Service Area, and to the originating facility for further action.

**6. What equipment is required?** The following ATC systems support current CSPR operations and are also required to support WTMD operation:

**a.** Terminal radar with automation.

**b.** Tower Radar Display.

**c.** Communications (air-ground voice).

**d.** Automated Surface Observing System (ASOS).

**e.** Rapid Update Cycle (RUC).

**f.** Additional elements that are required for WTMD that will be added to existing systems are:

(1) Displays to support WTMD information requirements.

(2) Aural alert for WTMD.

(3) Stand alone processor hosting the WTMD Wind Forecast Algorithm (WFA) and supporting software.

**7. What are the administrative requirements for WTMD?**

**a.** The change to the National Airspace System (NAS) imposed by WTMD will require the following new documents, or modifications to the appropriate sections of the following documents, to reflect the revised procedures:

(1) Facility Standard Operating Procedures (SOP) to outline requirements and procedures for the use of WTMD at the eligible airports, including local controller and FLM roles and responsibilities.

(2) Facility training plans must be updated and required training conducted. Refresher training will be provided annually at each facility.

(3) Watch Check Lists and Position Relief Checklists updated to include WTMD status.

(4) Notices to Airmen (NOTAMS) to advise flight crews of availability of WTMD operations at specific airports.

(5) Automatic Terminal Information Service (ATIS) messages to advise flight crews that WTMD operations are currently being conducted.

(6) Technical Operations documents (for example, procedures, routine and non-routine maintenance, validation of sensor and data inputs, etc).

b. Data retention will occur per requirements contained in FAA Order 7210.3, Facility Operation and Administration, Chapter 11, National Programs, Section 3, Data Recording and Retention.

**8. What are the operational requirements to use WTMD?** Figure 1 provides a graphical depiction of the definitions provided in Paragraph 14 of this order. Aircraft #1, (the lead aircraft) is a Heavy/B757 aircraft departing the downwind (non-WTMD enabled) runway. The trailing aircraft is aircraft #2 and is departing the upwind (WTMD enabled) runway. The lead aircraft in the next pair of reduced separation is Aircraft #3.

*Fig 1*  
**Top Down View of WTMD Authorized Reduced Separation Procedure**

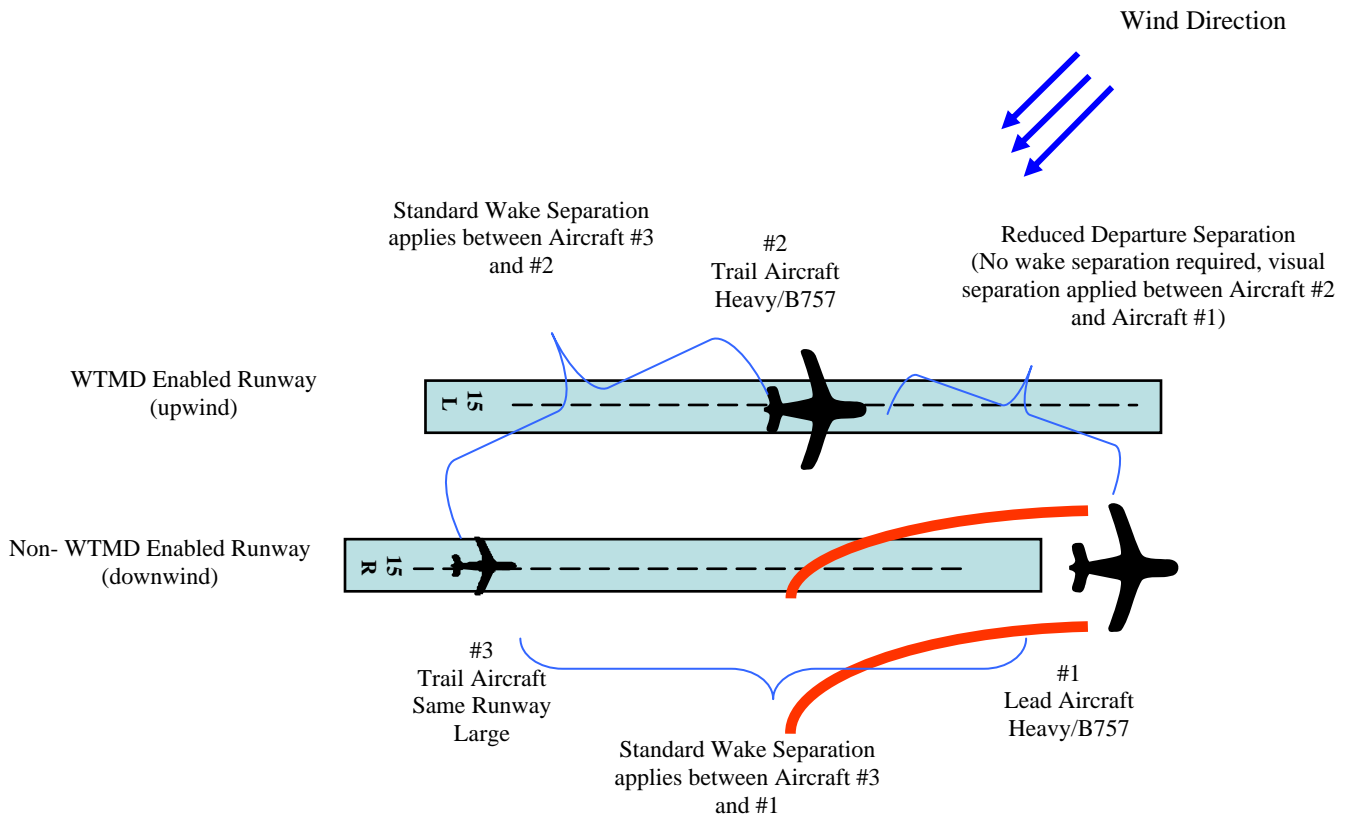
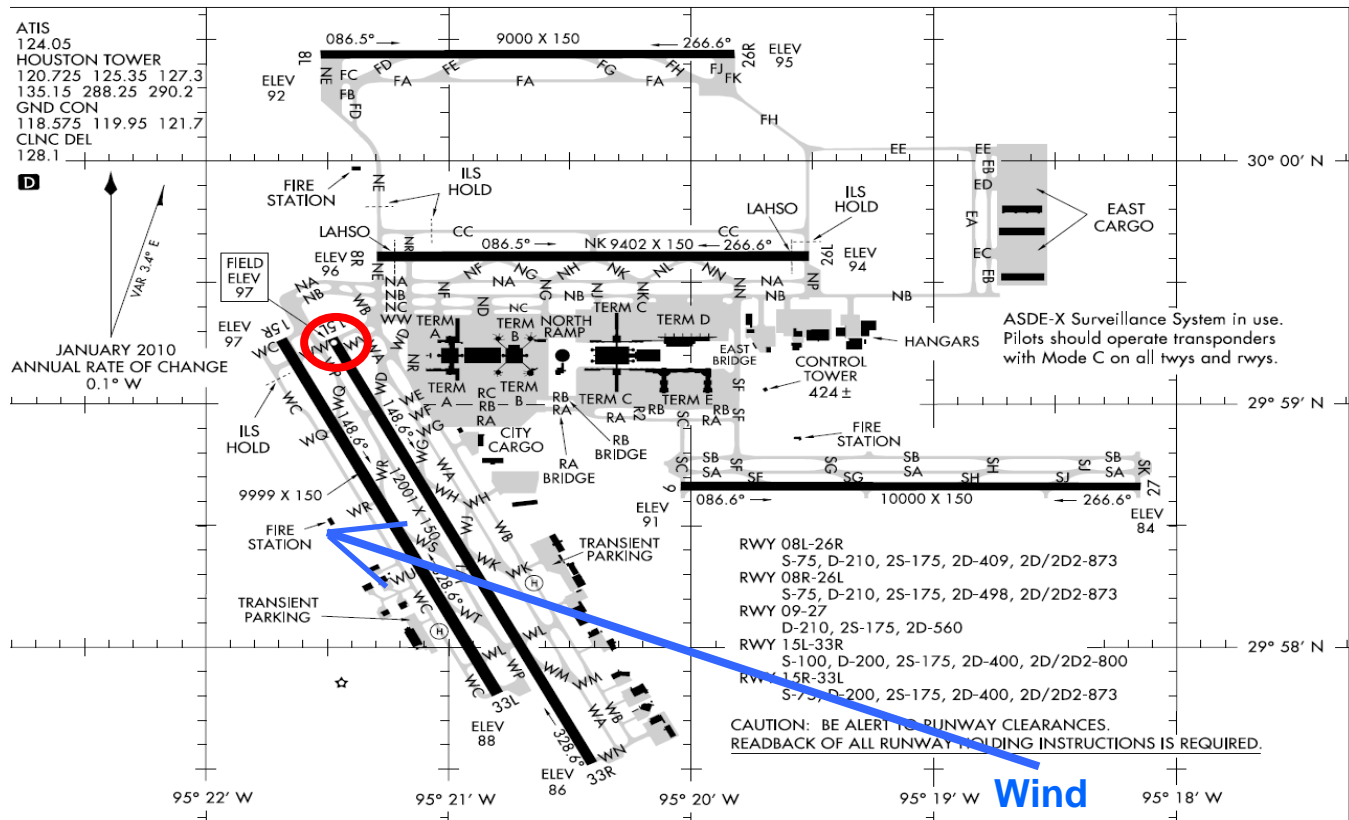


Fig 2:  
Top Down View of WTMD Authorized Runway at IAH



**9. Under what conditions can WTMD be used?** Reduced separation on departure is authorized for the airport/runway combinations identified in Appendix A, Table A-1, under the following conditions:

**a.** Visual conditions exist with a ceiling of 1,000 feet or higher and visibility of at least 3 miles to ensure that a turn to establish headings that diverge by at least 15 degrees can be observed prior to the trailing aircraft reaching 1,000 feet AGL.

**b.** The WTMD FLM/CIC display identifies a runway as “WTMD available” and that runway is used for departure operations.

**c.** The FLM/CIC:

- (1) Determines that reduced separation operations are beneficial.
- (2) Enables WTMD operations through the WTMD FLM/CIC display and verbally declares that WTMD operations are in use and identifies the wake independent runway.
- (3) Coordinates with the local controller(s) and TRACON to identify the first reduced separation pair.
- (4) Enables a WTMD available runway.
- (5) Observes that the local control WTMD display identifies the intended WTMD enabled runway.

**d.** The local controller may clear any aircraft for takeoff from the WTMD enabled runway after a Heavy/B757 aircraft has begun its takeoff roll from the downwind runway.

(1) The trailing aircraft may begin its takeoff roll from the departure end of the runway, or

(2) The trailing aircraft may begin its takeoff roll from an intersection.

(3) If the trailing departure is a Heavy/B757 aircraft, ensure that it does not overtake the leading aircraft prior to course divergence and prior to reaching 1,000 feet AGL.

**e.** Standard wake turbulence separation is mandatory:

(1) Behind aircraft departing from the same runway.

(2) For succeeding aircraft departing from the WTMD enabled runway and any trailing aircraft departing from the downwind (non-WTMD enabled) runway.

**f.** Terminate use of reduced departure separation for any aircraft yet to be issued a takeoff clearance:

(1) When the FLM/CIC announces that WTMD operations are terminated. The FLM/CIC must coordinate with the local controller(s) and TRACON to identify the last reduced separation pair.

(2) If the WTMD visual alert is displayed or an aural alert is sounded indicating immediate cessation of WTMD operations.

**g.** Opposite direction departures are excluded from the reduced separation permitted under WTMD.

**h.** The WFA includes criterion that restricts WTMD available status to only be issued when the ASOS winds are within 60 degrees of a direct crosswind, and that the winds be within 70 degrees of a direct crosswind to maintain WTMD-enabled status. The system automatically monitors for these conditions and automatically disables WTMD when conditions outside of the +/-70 degrees from a direct crosswind are observed or predicted. If a controller observes ASOS reports, or reports from other available wind instruments outside this range during WTMD enabled operations, the controller must cease WTMD operations and notify the FLM of the discrepancy, who must then disable WTMD operations.

**NOTE-**

*The use of WTMD does not exclude the need to consider aircraft performance and runway orientation to the winds to ensure safe operations, including, but not limited to the avoidance of runway usage when tailwinds are in excess of 10 knots.*

**10. Navigational Aids.** Simultaneous RNAV departures are not permitted with WTMD operations.

**11. Distribution.** This order is distributed to the following ATO service units: En Route and Oceanic, Terminal, System Operations; the Office of ATO Safety and Technical Training; the NextGen Office; the Air Traffic Safety Oversight Service; the William J. Hughes Technical Center; and the Mike Monroney Aeronautical Center.

**12. Background.** FAA Order JO 7110.65, paragraph 3-9-6f2 includes a wake turbulence constraint to treat runways with centerlines separated by less than 2,500 feet as a single runway when applying wake turbulence separation minima. Additionally, paragraph 3-9-7 includes wake turbulence requirements for intersection departures from CSPRs. Paragraph 7-2-1 excludes tower-applied visual separation when wake turbulence separation is required. This change permits departures from the upwind runway of the designated runway pair without wake turbulence separation when the appropriate conditions exist. Tower-applied visual separation is then permitted between a succeeding aircraft departing the upwind runway behind a Heavy/B757 aircraft departing the downwind runway.

**13. Definitions.** For the purpose of this order, the following definitions are provided.

- a. **Lead Aircraft** - The first aircraft in a sequence of two successive departures.
- b. **Trailing Aircraft** - The second aircraft in a sequence of two successive departures.
- c. **WTMD enabled runway (upwind runway)** - The runway identified by WTMD that is available for reduced departure separation procedures and enabled by the supervisor/CIC. This runway is displayed on the WTMD local display.
- d. **Non-WTMD enabled runway (downwind runway)** - The runway of a CSPR pair that is not enabled for WTMD reduced departure separation operations.

**14. Example Displays.** The following example displays indicate the information provided to the FLM/CIC and the Local Controller.

- a. **WTMD FLM/CIC display** – See Figure 3.
- b. **WTMD Local display** – See Figure 4.

*Fig 3*  
WTMD Supervisor Display



*Fig 4*  
WTMD Local Display



**16. Safety Risk Management.** The risk analysis supporting the WTMD implementation at the initial 10 airports is contained in a Safety Risk Management Document entitled, "Wake Turbulence Mitigation for Departures (WTMD)."



Elizabeth L. Ray  
Vice President, Mission Support Services  
Air Traffic Organization

January 11, 2013  
Date Signed

**Appendix A. Specific Airports/Runway Geometries Approved  
for WTMD**

| <b>Airport</b> | <b>Runway</b> | <b>Airport</b> | <b>Runway</b> |
|----------------|---------------|----------------|---------------|
| <b>BOS</b>     | 4L/R          | <b>MIA</b>     | 8L/R          |
|                | 22R/L         |                | 26R/L         |
| <b>DTW</b>     | 3L/R          | <b>PHL</b>     | 9L/R          |
|                | 21R/L         |                | 27R/L         |
| <b>EWR</b>     | 4L/R          | <b>SEA</b>     | 16C/R         |
|                | 22R/L         |                | 34L/C         |
| <b>IAH</b>     | 15L/R         | <b>STL</b>     | 12L/R         |
|                | 33R/L         |                | 30R/L         |
| <b>MEM</b>     | 18L/C         | <b>SFO</b>     | 1L/R          |
|                | 36R/C         |                | 19R/L         |