



U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
Air Traffic Organization Policy

ORDER

JO 7110.659B

Effective Date:
March 01, 2015

SUBJ: Wake Turbulence Recategorization

1. Purpose of This Order. This new basic order updates Federal Aviation Administration Order JO 7110.659, Wake Turbulence Recategorization. This order provides procedural guidance to FAA Order 7110.65, Air Traffic Control, the Pilot/Controller Glossary, and FAA Order 7210.3, Facility Operation and Administration, related to the implementation and use of Wake Turbulence Recategorization (Recat) procedures and separation minima.

2. Audience. This order applies to all air traffic personnel at facilities authorized to use this order for operational air traffic control services.

3. Where Can I Find This Order? This order is available on the MyFAA employee Web site at https://employees.faa.gov/tools_resources/orders_notices/ and on the air traffic publications Web site at http://www.faa.gov/air_traffic/publications/.

4. Explanation of Changes.

a. Minor editorial changes were made throughout the order.

b. In Appendix A, the term *when wake turbulence separation is required* is used in lieu of describing the wake categories in paragraphs requiring wake turbulence advisories or when a pilot requests to deviate from wake turbulence separation. A reference to Paragraph 5-5-4, Minima, Subparagraph f was inserted where necessary.

c. Appendix A Paragraph 3-9-6: separation for category F behind a category D was changed to same runway; the content of subparagraphs j through l was rearranged for continuity.

d. Appendix A Paragraph 3-9-7: editorial changes to subparagraph a allowed subparagraph b to be reworded for the use of the term *when wake turbulence separation is required* in lieu of excessive wording.

e. Appendix A Paragraph 5-5-4 reduces the separation for category F aircraft behind category D aircraft from 5NM to 4NM, and behind category E aircraft from 4NM to minimum radar separation. Additionally, the requirement for separation for a category F aircraft departing behind a category D aircraft changes to same runway only versus parallel runways separated by less than 2,500 feet.

f. Paragraph 7-2-1 was added to Appendix A prohibiting the use of visual separation behind a category A aircraft.

g. Appendix A Paragraphs 7-4-3 and 7-4-4 were amended to prohibit the use of visual separation behind a category A aircraft.

5. Requirements.

a. At facilities authorized to use Recat for air traffic control services, the applicable provisions of FAA Order 7110.65, Air Traffic Control, are superseded by the corresponding provisions contained in Appendix A of this order.

b. Facilities must receive a Letter of Authorization from the Director, Air Traffic Procedures, AJV-8, prior to the implementation of Recat procedures.

c. All operational personnel must receive training on Recat procedures prior to implementation.

d. Terminal Automation Systems must have the Wake Turbulence Recategorization functions activated.

e. Tower facilities must be equipped with an Electronic Flight Strip Transfer System (EFSTS) or an equivalent electronic flight progress strip system, or develop manual procedures to indicate the wake category on flight progress strips.

f. Facility documents must be updated as appropriate to reflect Recat procedures.

g. The Wake Turbulence Research Office must notify AOV-120 of facilities authorized to use Recat procedures and separation minima.

6. Background. Currently, the U.S. classifies aircraft for wake turbulence purposes based on maximum certificated takeoff weight, resulting in three weight classes of heavy, large, and small. This results in greater than necessary separation distances, especially within the heavy weight class. For example, the current heavy-behind-heavy separation is four miles. This separation is appropriate for a B767 following a B747, but not necessary when the B747 is following the B767.

Under the Recat program, aircraft are classified according to wingspan and the aircraft's ability to withstand a wake encounter, as well as the certificated takeoff weight. This method results in six categories of aircraft for wake turbulence separation purposes. The categories separate the current heavy and large weight classes into four wake categories; two for heavy, and two for large. The A388 and A225 become their own wake category, and the current weight class of small remains as its own wake category. Increased airport capacity with reduced arrival and departure delays can be achieved by using the procedures and separation minima developed for Wake Turbulence Recategorization.

7. Safety Management System. Appropriate safety management documentation, in accordance with FAA Order 1100.161, Air Traffic Safety Oversight, ATO Order 100.37, Air Traffic Organization Safety Management System, and the ATO Safety Management System Manual, has been completed in support of the notice that preceded this order. Therefore, no further SRM analysis is required.

Maurice J. Hoffman FOR HEATHER HEMDAL

Heather Hemdal
Director, Air Traffic Procedures

2/25/15
Date

APPENDIX A

FAA Order 7110.65

2-1-19. WAKE TURBULENCE

a. Apply wake turbulence procedures to an aircraft operating behind another aircraft when wake turbulence separation is required.

NOTE—

Para 5-5-4, Minima, subparagraph f, table 5-5-1, and subparagraph g, table 5-5-2, specify the required radar wake turbulence separations. Time-based separations are contained in Para 3-9-6, Same Runway Separation, Para 3-9-7, Wake Turbulence Separation for Intersection Departures, Para 3-9-8, Intersecting Runway Separation, Para 3-9-9, Nonintersecting Converging Runway Operations, Para 3-10-3, Same Runway Separation, Para 3-10-4, Intersecting Runway Separation, Para 6-1-4, Adjacent Airport Operation, Para 6-1-5, Arrival Minima, and Para 6-7-5, Interval Minima.

No further changes to paragraph

2-1-20. WAKE TURBULENCE CAUTIONARY ADVISORIES

a. Issue wake turbulence cautionary advisories including the position, altitude if known, and direction of flight to aircraft operating behind an aircraft requiring wake turbulence separation when:

REFERENCE—

*AC 90-23, Aircraft Wake Turbulence, Pilot Responsibility, Para 11.
FAAO JO 7110.65, Para 5-5-4, Minima, Subparagraphs f and g.*

1. **TERMINAL.** VFR aircraft that are not being radar vectored are behind the larger aircraft.
2. IFR aircraft accept a visual approach or visual separation.

REFERENCE—

FAAO JO 7110.65, Para 7-4-1, Visual Approach.

3. **TERMINAL.** VFR arriving aircraft have previously been radar vectored and the vectoring has been discontinued.

b. Issue cautionary information to any aircraft if in your opinion wake turbulence may have an adverse effect on it. When traffic is known to be a category A aircraft, include the word *Super* in the description. When traffic is known to be a category B or C aircraft, include the word *Heavy* in the description.

Note, no change

REFERENCE—

*AC 90-23, Aircraft Wake Turbulence
P/CG Term – Aircraft Wake Categories
P/CG Term – Wake Turbulence*

No further changes to paragraph

2-2-6. IFR FLIGHT PROGRESS DATA

Title through a1, no change

2. Number of aircraft if more than one, wake category indicator, type of aircraft, and aircraft equipment suffix.

No further changes to paragraph

APPENDIX A

2-3-4. TERMINAL DATA ENTRIES

Title through Table 2-3-3, block 2a, no change

Table 2-3-3, block 3 - Number of aircraft if more than one, wake category indicator, type of aircraft, and aircraft equipment suffix.

Table 2-3-3, block 4 through table 2-3-4, block 2a, no change

Table 2-3-4, block 3 - Number of aircraft if more than one, wake category indicator, type of aircraft, and aircraft equipment suffix.

Table 2-3-4, block 4 through table 2-3-5, block 2a, no change

Table 2-3-5, block 3 – Number of aircraft if more than one, wake category indicator, type of aircraft, and aircraft equipment suffix.

No further changes to paragraph

2-4-14. WORDS AND PHRASES

Title through a, no change

- b.** The word *Super* must be used as part of the identification of category A aircraft.
- c.** The word *Heavy* must be used as part of the identification of category B or C aircraft.
- d.** *EN ROUTE*. The use of the words *super* or *heavy* may be omitted except as follows:
 - 1.** In communications with a terminal facility about category A, B, or C aircraft operations.
 - 2.** In communications with or about category A, B, or C aircraft with regard to an airport where the en route center is providing approach control service.
 - 3.** In communications with or about category B or C aircraft when the separation from a following aircraft may become less than required by approved procedure.
 - 4.** When issuing traffic advisories.

EXAMPLE–

“United Fifty–Eight Heavy.”

NOTE–

Most airlines will use the word “super” or “heavy” following the company prefix and flight number when establishing communications or when changing frequencies within a terminal facility’s area.

- e.** When in radio communications with “Air Force One” or “Air Force Two,” do not add the heavy designator to the call sign. State only the call sign “Air Force One/Two” regardless of the type aircraft.

2-4-21. DESCRIPTION OF AIRCRAFT TYPES

Except for wake category A, B, or C aircraft, describe aircraft as follows when issuing traffic information.

a through c2 example, no change

- d.** When issuing traffic information to aircraft following a wake category A aircraft, specify the word *Super* before the manufacturer's name and model.

APPENDIX A

EXAMPLE–

“Super A-three-eighty”

e. When issuing traffic information to aircraft following a wake category B, or C aircraft, specify the word *Heavy* before the manufacturer's name and model.

No further changes to paragraph

3-3-5. BRAKING ACTION ADVISORIES

Title through b, no change

1. Issue the latest braking action report for the runway in use to each arriving and departing aircraft early enough to be of benefit to the pilot. When possible, include reports from wake category A, B, or C aircraft when the arriving or departing aircraft is a wake category A, B, or C aircraft.

No further changes to paragraph

3-7-3. GROUND OPERATIONS

Title to a, no change

- a. Category A, B, or C aircraft to use greater than normal taxiing power.
- b. Category F aircraft or helicopters to taxi in close proximity to taxiing or hover-taxi helicopters.

No further changes to paragraph

3-9-6. SAME RUNWAY SEPARATION

Title through WAKE TURBULENCE APPLICATION, no change

c. Do not issue clearances which imply or indicate approval of rolling takeoffs by category A, B, or C aircraft except as provided in para 3-1-14, Ground Operations When Volcanic Ash is Present.

d. Do not issue clearances to category F aircraft to line up and wait on the same runway behind a departing category A, B, or C aircraft to apply the necessary intervals.

d Reference, no change

e. The minima in para 5-5-4, Minima, TBL 5-5-1, may be applied in lieu of the time interval requirements in subparagraphs f and g. When para 5-5-4, TBL 5-5-1, is applied, ensure that the appropriate radar separation exists at or prior to the time an aircraft becomes airborne.

NOTE –

The pilot may request additional separation, but should make this request before taxiing on the runway.

f. Separate IFR/VFR aircraft taking off when departing the same runway or a parallel runway separated by less than 2,500 feet:

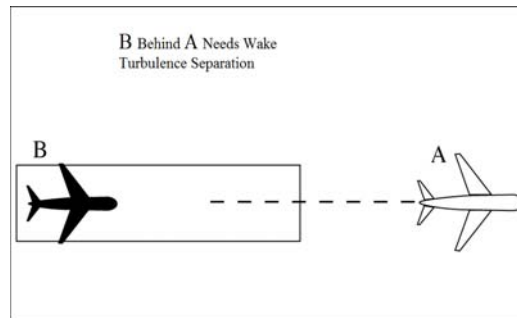
NOTE –

Takeoff clearance to the following aircraft should not be issued until the time interval has passed after the preceding aircraft begins takeoff roll.

APPENDIX A

1. Behind a category A aircraft:
 - (a) Category B, C, D, and E – *3 minutes*.
 - (b) Category F – *4 minutes*.
 2. Behind a category B aircraft:
 - (a) Category B, C, D, and E – *2 minutes*.
 - (b) Category F – *3½ minutes*.
 3. Behind a category C aircraft:
 - (a) Category D and E – *2 minutes*.
 - (b) Category F – *3 minutes*.
- g. Separate a category F behind a category D aircraft by *2 minutes* when departing the same runway.

FIG 3-9-4
Same Runway Separation



h. Separate aircraft when operating on a runway with a displaced landing threshold if projected flight paths will cross when either a departure follows an arrival or an arrival follows a departure:

1. Behind a category A aircraft:
 - (a) Category B, C, D, and E – *3 minutes*.
 - (b) Category F – *4 minutes*.
 2. Behind a category B aircraft:
 - (a) Category B, C, D, and E – *2 minutes*.
 - (b) Category F – *3½ minutes*.
 3. Behind a category C aircraft:
 - (a) Category D and E – *2 minutes*.
 - (b) Category F – *3 minutes*.
 4. Category F aircraft behind category D – *2 minutes*.
- i. Separate aircraft behind another aircraft that has departed or made a low/missed approach when utilizing opposite direction takeoffs or landings on the same or parallel runways separated by less than 2,500 feet by the following minima:

APPENDIX A

1. Behind a category A aircraft:
 - (a) Category B, C, D, and E – *4 minutes*.
 - (b) Category F – *5 minutes*.
2. Behind a category B aircraft:
 - (a) Category B, C, D, and E – *3 minutes*.
 - (b) Category F – *4½ minutes*.
3. Behind a category C aircraft:
 - (a) Category D and E – *3 minutes*
 - (b) Category F – *4 minutes*
4. Category F behind category D – *3 minutes*.

j. Do not approve pilot requests to deviate from the required time interval if the preceding aircraft requires wake turbulence separation.

REFERENCE -

FAAO JO 7110.65, Para 5-5-4, Minima, Subparagraph f.

k. Separate a category F aircraft behind a category E aircraft that has departed or made a low/missed approach when utilizing opposite direction takeoffs on the same runway by *3 minutes* unless a pilot has initiated a request to deviate from the time interval. In the latter case, issue a wake turbulence cautionary advisory before clearing the aircraft for takeoff. Controllers must not initiate or suggest a waiver of the time interval.

NOTE -

A request for takeoff does not initiate a waiver request.

1. Inform an aircraft when it is necessary to hold in order to provide the required time interval.

No further changes to paragraph.

3-9-7. WAKE TURBULENCE SEPARATION FOR INTERSECTION DEPARTURES

- a. Apply the following wake turbulence criteria for intersection departures:

1. Separate a category F aircraft weighing 12,500 lbs. or less taking off from an intersection on the same runway (same or opposite direction takeoff) behind a preceding category F aircraft weighing more than 12,500 lbs. by ensuring the following category F aircraft does not start takeoff roll until at least *3 minutes* after the preceding aircraft has taken off.

2. Separate a category F aircraft taking off from an intersection on the same runway (same or opposite direction takeoff) behind a preceding departing category E aircraft by ensuring that the category F aircraft does not start takeoff roll until at least *3 minutes* after the category E aircraft has taken off.

3. Separate a category F aircraft taking off from an intersection on the same runway (same or opposite direction takeoff) behind a preceding departing category D aircraft by ensuring that the category F aircraft does not start takeoff roll until at least *3 minutes* after the category D aircraft has taken off.

APPENDIX A

4. Separate aircraft taking off from an intersection on the same runway (same or opposite direction takeoff), parallel runways separated by less than 2,500 feet, and parallel runways separated by less than 2,500 feet with the runway thresholds offset by 500 feet or more, by ensuring that the aircraft does not start take-off roll until the following interval exists:

NOTE -

Parallel runways separated by less than 2,500 feet with runway thresholds offset by less than 500 feet must apply para 3-9-6, Same Runway Separation, subpara f.

(a). Behind a category A aircraft:

(1) Category B, C, D, and E – 4 minutes.

(2) Category F – 5 minutes.

(b). Behind a category B aircraft:

(1) Category B, C, D, and E – 3 minutes.

(2) Category F – 4½ minutes.

(c). Behind a category C aircraft:

(1) Category D and E – 3 minutes.

(2) Category F – 4 minutes.

5. Inform aircraft when it is necessary to hold in order to provide the required time interval.

Phraseology through Reference, no change.

b. The time interval is not required when:

1. A pilot has initiated a request to deviate from the time intervals contained in subparagraphs a1 and a2.

NOTE -

A request for takeoff does not initiate a waiver request; the request for takeoff must be accomplished by a request to deviate from the specific time interval.

b2, No change

3. Successive touch-and-go or stop-and-go operations are conducted with any aircraft following an aircraft in the pattern that requires wake turbulence separation, or a departing aircraft in accordance with subparagraphs a1 through a4, provided the pilot is maintaining visual separation/spacing behind the preceding aircraft. Issue a wake turbulence cautionary advisory and the position of the larger aircraft.

NOTE -

Not authorized with a Category A aircraft as the lead aircraft.

REFERENCE -

*FAAO JO 7110.65, Para 5-5-4, Minima, Subparagraph f.
FAAO JO 7110.65, Para 7-2-1, Visual Separation*

b4, delete; renumber b5 to b4

4. If action is initiated to reduce the separation between successive touch-and-go or stop-and-go operations, apply the appropriate separation contained in subparagraphs a1 through a4.

c thru c2, no change.

APPENDIX A

3. Issue a clearance to permit the trailing aircraft to deviate from course enough to avoid the flight path of the preceding aircraft when applying subpara b1 or b2.

No further changes to paragraph.

3-9-8. INTERSECTING RUNWAY SEPARATION

Title through WAKE TURBULENCE APPLICATION, no change.

3. Separate IFR/VFR aircraft taking off behind a landing or departing aircraft on an intersecting runway if flight paths will cross (see FIG 3-9-7 and 3-9-8), or an aircraft departing a parallel runway separated by 2,500 feet or more if projected flight paths will cross (See FIG 3-9-9):

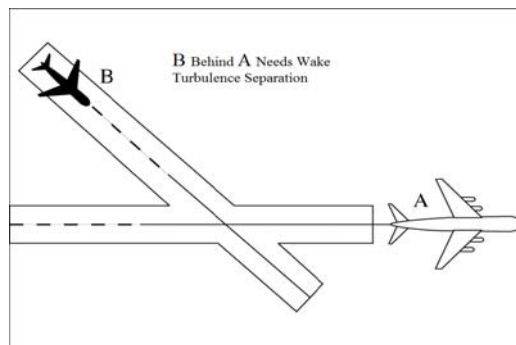
- (a) Behind a category A aircraft:
 - (1) Category B, C, D, and E – 3 minutes.
 - (2) Category F – 4 minutes.
- (b) Behind a category B aircraft:
 - (1) Category B, C, D, and E – 2 minutes.
 - (2) Category F – 3½ minutes.
- (c) Behind a category C aircraft:
 - (1) Category D and E – 2 minutes.
 - (2) Category F – 3 minutes.
- (d) Category F aircraft behind a category D – 2 minutes.

NOTE-

Takeoff clearance to the following aircraft should not be issued until the appropriate time interval has passed from when the preceding aircraft began takeoff roll.

FIG 3-9-7

Departure Behind Departure on Intersecting Runway



APPENDIX A

FIG 3-9-8

Departure Behind Arrival on Intersecting Runway

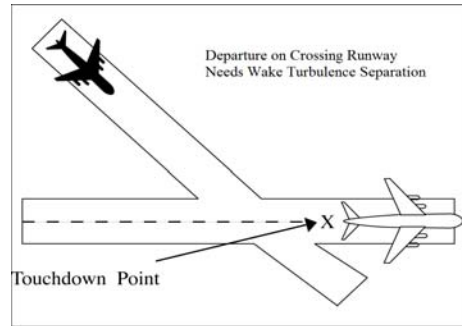
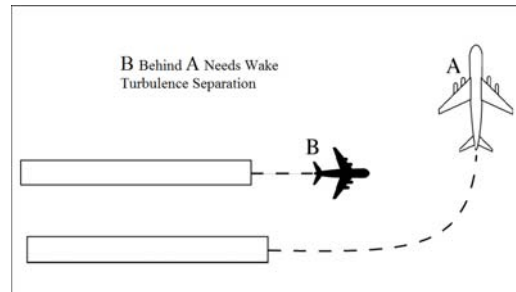


FIG 3-9-9

Parallel Runway



4. Pilot requests to deviate from the required time intervals must not be approved when wake turbulence separation is required.

No further changes to paragraph.

3-9-9. NONINTERSECTING CONVERGING RUNWAY OPERATIONS

Title thru Wake Turbulence Application, no change

b. Separate IFR/VFR aircraft taking off behind a landing or departing aircraft on a crossing runway if projected flight paths will cross (See FIG 3-9-13 and FIG 3-9-14):

NOTE-

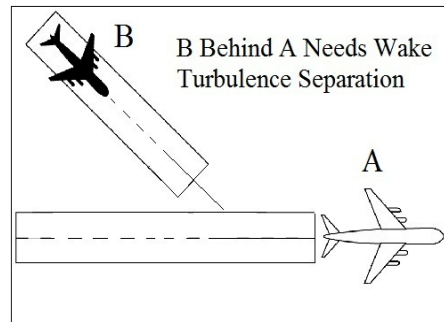
Takeoff clearance to the following aircraft should not be issued until the appropriate time interval has passed from when the preceding aircraft began takeoff roll.

1. Behind a category A aircraft:
 - (a) Category B, C, D, and E – 3 minutes.
 - (b) Category F – 4 minutes.
2. Behind a category B aircraft:
 - (a) Category B, C, D, and E – 2 minutes.
 - (b) Category F - 3½ minutes.

APPENDIX A

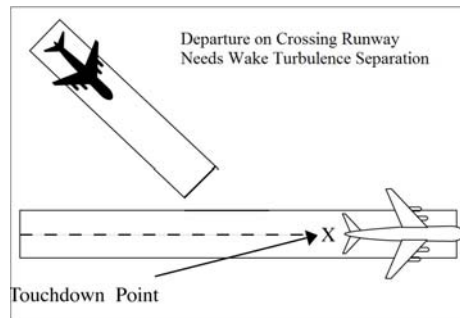
3. Behind a category C aircraft:
 - (a) Category D and E – 2 minutes.
 - (b) Category F – 3 minutes.
4. Category F aircraft behind a category D – 2 minutes.

FIG 3-9-13
Intersecting Runway Separation



Subparagraph c, delete; renumber d to c

FIG 3-9-14
Intersecting Runway Separation



c. Pilot requests to deviate from the required time intervals must not be approved when wake turbulence separation is required.

No further changes to paragraph

3-10-3 SAME RUNWAY SEPARATION

Title through b, no change.

1. The category A or B aircraft to category B, C, D, E, or F aircraft landing behind a departing or arriving category A or B aircraft on the same or parallel runways separated by less than 2,500 feet.
2. The category C aircraft to a category D, E, or F aircraft landing behind a departing or arriving category C aircraft on the same or parallel runways separated by less than 2,500 feet.
3. The category D aircraft to category F aircraft landing behind a departing or arriving category D aircraft on the same or parallel runways separated by less than 2,500 feet.

No further changes to paragraph.

APPENDIX A

3-10-4. INTERSECTING RUNWAY SEPARATION

Title through WAKE TURBULENCE APPLICATION, no change.

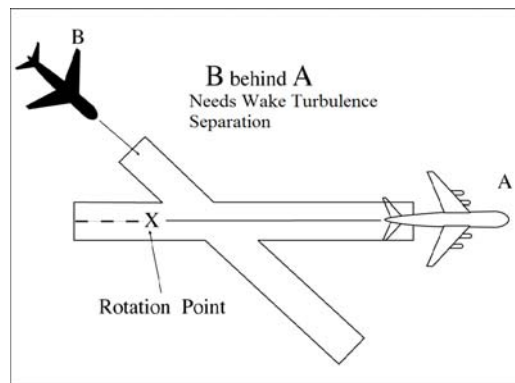
c. Separate IFR/VFR aircraft landing behind a departing aircraft on a crossing runway if the arrival will fly through the airborne path of the departure by the appropriate radar separation or the following interval: (See FIG 3-10-10):

REFERENCE -

FAAO JO 7110.65, Para 5-5-4, Minima, Subpara.f.

1. Behind a category A aircraft:
 - (a) Category B, C, D, and E – 3 minutes.
 - (b) Category F – 4 minutes.
2. Behind a category B aircraft:
 - (a) Category B, C, D, and E – 2 minutes.
 - (b) Category F - 3½ minutes.
3. Behind a category C aircraft:
 - (a) Category D and E – 2 minutes.
 - (b) Category F – 3 minutes.
4. Category F aircraft behind a category D – 2 minutes.

FIG 3-10-10
Intersecting Runway Separation



d. Issue wake turbulence cautionary advisories including the position, altitude if known, and direction of flight to:

1. IFR/VFR category B, C, D, E, or F aircraft landing on a crossing runway behind a departing category A or B aircraft, or IFR/VFR category D, E or F aircraft landing on a crossing runway behind a departing category C aircraft, or IFR/VFR category F aircraft landing on a crossing runway behind a departing category D aircraft, if the arrival flight path will cross the takeoff path behind the departing aircraft rotation point. (See FIG 3-10-11)

FIG 3-10-11 through Example, no change.

APPENDIX A

2. VFR category B, C, D, E, or F aircraft landing on a crossing runway behind an arriving category A or B aircraft, or VFR category D, E, or F aircraft landing on a crossing runway behind an arriving category C aircraft, or VFR category F aircraft landing on a crossing runway behind an arriving category D aircraft, if the arrival flight paths will cross. (See FIG 3-10-12.)

No further changes to paragraph.

3-10-10. ALTITUDE RESTRICTED LOW APPROACH

Title to Note 1, no change

NOTE –

1. *The 500 feet restriction is a minimum. Higher altitudes should be used when warranted. For example, 1,000 feet is more appropriate for category A, B, C, or D aircraft operating over unprotected personnel or aircraft on or near the runway*

No further changes to paragraph.

3-11-1. TAXI AND GROUND MOVEMENT OPERATION

Title through Wake Turbulence Application, no change.

d. Avoid clearances which require category F aircraft or helicopters to taxi in close proximity to taxiing or hover-taxi helicopters.

No further changes to paragraph.

4-8-11. PRACTICE APPROACHES

Title through a.1.(b), no change

2. Where procedures require application of IFR separation to VFR aircraft practicing instrument approaches, standard IFR separation in accordance with Chapter 3, Chapter 4, Chapter 5, Chapter 6, and Chapter 7 must be provided. Controller responsibility for separation begins at the point where the approach clearance becomes effective. Except for when wake turbulence separation is required, 500 feet vertical separation may be applied between VFR aircraft and between a VFR and an IFR aircraft.

REFERENCE -

FAAO JO 7110.65, Para 5-5-4, Minima, Subparagraph f.

No further changes to paragraph.

5-5-4. MINIMA

Title through a.4, no change

NOTE-

Wake turbulence procedures specify increased separation minima for certain categories of aircraft because of the possible effects of wake turbulence.

b. through WAKE TURBULENCE APPLICATION, no change.

f. Separate aircraft by the minima specified in Table 5-5-1 in accordance with the following:

1. When operating within 2,500 feet of the flight path of the leading aircraft over the surface of the earth and/or less than 1,000 feet below a category A, B, or C aircraft.

APPENDIX A

2. Except when departing parallel runways separated by less than 2,500 feet, when operating within 2,500 feet of the flight path of the leading aircraft over the surface of the earth and/or less than 500 feet below a category D aircraft.

3. When departing parallel runways separated by less than 2,500 feet, the 2,500 feet requirement in subparagraph 2 is not required when a category F aircraft departs the parallel runway behind a Category D aircraft. Issue a wake turbulence cautionary advisory and instructions that will establish lateral separation in accordance with subparagraph 2. Do not issue instructions that will allow the category F aircraft to pass behind the category D aircraft.

NOTE -

The application of paragraph 5-8-3, Successive or Simultaneous Departures, satisfies this requirement when an initial heading is issued with the take-off clearance.

Note 1 and 2, delete

TBL 5-5-1

| | | Wake Turbulence Separation for Directly Behind | | | | | |
|---------------|----------|---|----------|----------|----------|----------|----------|
| | | Follower | | | | | |
| | | A | B | C | D | E | F |
| Leader | A | | 5NM | 6NM | 7NM | 7NM | 8NM |
| | B | | 3NM | 4NM | 5NM | 5NM | 5NM |
| | C | | | | 3.5NM | 3.5NM | 5NM |
| | D | | | | | | 4NM |
| | E | | | | | | |
| | F | | | | | | |

WAKE TURBULENCE APPLICATION

g. ON APPROACH. In addition to subpara f, separate an aircraft on approach behind another aircraft to the same runway by ensuring the wake separation minima in *table 5-5-2* will exist at the time the trailing aircraft is within 5 NM of the FAF.

NOTE -

Consider parallel runways less than 2,500 feet apart as a single runway because of the possible effects of wake turbulence.

TBL 5-5-2

| | | Wake Turbulence Separation for On Approach | | | | | |
|---------------|----------|---|----------|----------|----------|----------|----------|
| | | Follower | | | | | |
| | | A | B | C | D | E | F |
| Leader | A | | 5NM | 6NM | 7NM | 7NM | 8NM |
| | B | | 3NM | 4NM | 5NM | 5NM | 7NM |
| | C | | | | 3.5NM | 3.5NM | 6NM |
| | D | | | | | | 4NM |
| | E | | | | | | |
| | F | | | | | | |

h, no change

1. Wake turbulence separation must be applied in accordance with Table 5-5-2.

APPENDIX A

h2, delete

renumber h3 through h5 to h2 thru h4

No further changes to paragraph.

5-5-7. PASSING OR DIVERGING

Title through a.2. Note 1, no change

NOTE –

2. Although all other approved separation may be discontinued, the requirements of para 5-5-4 minima, subpara f must apply when wake turbulence separation is required.

REFERENCE -

FAAO JO 7110.65, Para 5-5-4, Minima, Subparagraph f.

No further changes to paragraph.

5-8-3. SUCCESSIVE OR SIMULTANEOUS DEPARTURES

TERMINAL

Except when wake turbulence separation is required, separate aircraft departing from the same airport/heliport or adjacent airports/heliports in accordance with the following minima provided radar identification with the aircraft will be established within 1 mile of the takeoff runway end/helipad and courses will diverge by 15 degrees or more.

REFERENCE-

FAAO JO 7110.65, Para 3-9-7, Wake Turbulence Separation for Intersection Departures.

FAAO JO 7110.65, Para 3-9-8, Intersecting Runway Separation.

FAAO JO 7110.65, Para 5-5-4, Minima, Subparagraph f.

Note 1, 2, 3 through FIG 5-8-3, no change

Fig 5-8-3 Note, References, delete

b through FIG 5-8-5, no change

Fig 5-8-5 Note, delete

No further changes to paragraph.

5-8-5. DEPARTURES AND ARRIVALS ON PARALLEL OR NONINTERSECTING DIVERGING RUNWAYS

Title through FIG 5-8-12, no change.

NOTE –

In the event of a missed approach by an aircraft requiring wake turbulence separation behind it, apply the procedures in para 3-9-6, Same Runway Separation, para 3-9-8, Intersecting Runway Separation, or Para 3-9-9, Nonintersecting Converging Runway Operations, as appropriate, to ensure that the larger aircraft does not overtake or cross in front of an aircraft departing from another runway.

REFERENCE -

FAAO JO 7110.65, Para 5-5-4, Minima, Subparagraph f.

No further changes to paragraph.

APPENDIX A

6-1-4. ADJACENT AIRPORT OPERATION

Title through WAKE TURBULENCE APPLICATION, no change.

The ATC facility providing service to and having control jurisdiction at adjacent airports must separate arriving or departing IFR aircraft on a course that will cross the flight path:

- a. Behind category A aircraft:
 1. Category B, C, D, and E – *3 minutes*.
 2. Category F – *4 minutes*.
- b. Behind category B aircraft:
 1. Category B, C, D, and E – *2 minutes*.
 2. Category F – *3½ minutes*.
- c. Behind category C aircraft:
 1. Category D and E – *2 minutes*.
 2. Category F – *3 minutes*.
- d. Category F aircraft behind a category D – *2 minutes*.

FIG 6-1-1
Adjacent Airport Operation -- Arrival

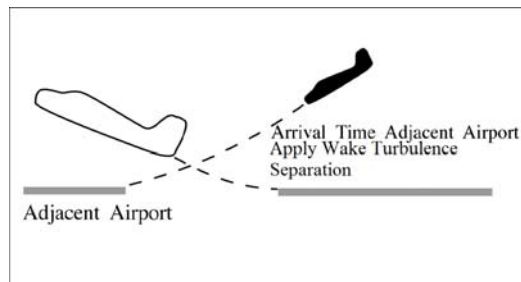
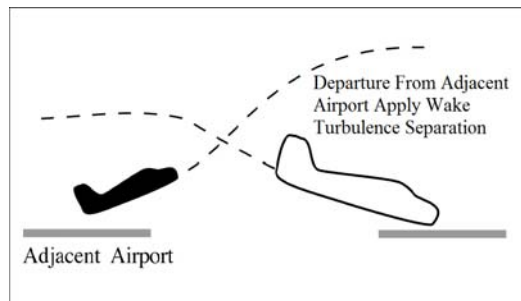


FIG 6-1-2
Adjacent Airport Operation – Departure



APPENDIX A

6-1-5. ARRIVAL MINIMA

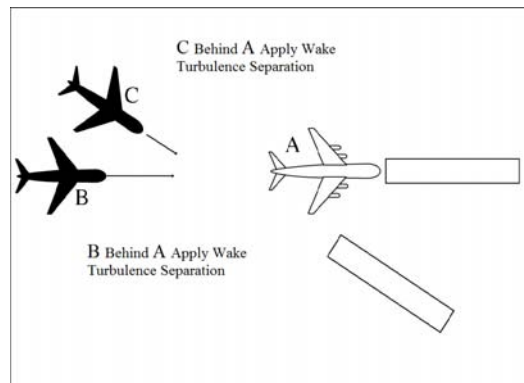
TERMINAL

WAKE TURBULENCE APPLICATION

Separate IFR aircraft landing behind other arriving aircraft to the same runway, a parallel runway separated by less than 2,500 feet, or a crossing runway if projected flight paths will cross, by the following:

- a. Behind category A aircraft:
 1. Category B, C, D, and E – *3 minutes*.
 2. Category F – *4 minutes*.
- b. Behind category B aircraft:
 1. Category B, C, D, and E – *2 minutes*.
 2. Category F – *3½ minutes*.
- c. Behind category C aircraft:
 1. Category D and E – *2 minutes*.
 2. Category F – *3 minutes*.
- d. Category F aircraft behind a category D – *2 minutes*.

FIG 6-1-3
Arrival Minima Landing Behind
Category A, B, C, and D.



6-7-5. INTERVAL MINIMA

Use the following time or radar interval as the minimum interval between successive approaches and increase the intervals as follows:

- a. Minutes or miles in trail:
 1. Behind a category A aircraft:
 - (a) Category B – *3 minutes* or *5 miles*.
 - (b) Category C – *3 minutes* or *6 miles*.

APPENDIX A

- (c) Category D and E – 3 minutes or 7 miles.
- (d) Category F – 4 minutes or 8 miles.
- 2. Behind a category B aircraft:
 - (a) Category B – 2 minutes or 3 miles.
 - (b) Category C – 2 minutes or 4 miles.
 - (c) Category D and E – 2 minutes or 5 miles.
 - (d) Category F – 3½ minutes or 7 miles.
- 3. Behind a category C aircraft:
 - (a) Category D and E – 2 minutes or 3½ miles.
 - (b) Category F – 3 minutes or 6 miles.
- 4. Category F aircraft behind category D – 2 minutes or 4 miles.
- b. Further increase of the interval may be necessary, considering the following:
 - 1. Relative speeds of the aircraft concerned.
 - 2. Existing weather conditions.
 - 3. Distance between the approach fix and the airport
 - 4. Type of approach being made.

NOTE –

Increased separation is required for smaller aircraft behind larger/heavier aircraft due to the possible effects of wake turbulence.

REFERENCE –

FAAO JO 7110.65, Para 5-9-5, Approach Separation responsibility

FAAO JO 7110.65, Para 6-7-1, Application

FAAO JO 7110.65, Para 6-7-2, Approach Sequence

7-2-1. VISUAL SEPARATION

Aircraft may be separated by visual means, as provided in this paragraph, when other approved separation is assured before and after the application of visual separation. To ensure that other separation will exist, consider aircraft performance, wake turbulence, closure rate, routes of flight, and known weather conditions. Reported weather conditions must allow the aircraft to remain within sight until other separation exists. Do not apply visual separation between successive departures when departure routes and/or aircraft performance preclude maintaining separation. Visual separation is not authorized when the lead aircraft is a category A.

No further changes to paragraph

7-4-3. CLEARANCE FOR VISUAL APPROACH

Title through c3, no change

- 4. Do not apply visual separation when the lead aircraft is a category A.

REFERENCE –

FAAO JO 7110.65, Para 7-2-1, Visual Separation.

APPENDIX A

d. When wake turbulence separation is required, aircraft must be informed of the preceding airplane manufacturer and/or model.

EXAMPLE—

“Cessna Three Four Juliet, following a heavy Boeing 747, 12 o’clock, seven miles.”

or

“Cessna Three Four Juliet, following a Seven-Fifty-Seven, 12 o’clock, four miles.”

REFERENCE—

FAAO JO 7110.65, Para.2-4-21, Description of Aircraft Types.

FAAO JO 7110.65, Para 5-5-4, Minima, Subparagraph f.

No further changes to paragraph.

7-4-4. APPROACHES TO MULTIPLE RUNWAYS

Title through c., no change

1. Parallel runways separated by less than 2,500 feet. Unless approved separation is provided by ATC, an aircraft must report sighting a preceding aircraft making an approach (instrument or visual) to the adjacent parallel runway. When an aircraft reports another aircraft in sight on the adjacent final approach course and visual separation is applied, controllers must advise the succeeding aircraft to maintain visual separation. Do not permit an aircraft to overtake another aircraft if wake turbulence separation is required.

NOTE -

Visual separation is not authorized when the lead aircraft is a category A.

REFERENCE -

FAAO JO 7110.65, Para 5-5-4, Minima, Subparagraph f.

FAAO JO 7110.65, para 7-2-1 Visual Separation..

No further changes to paragraph.

7-6-7. SEQUENCING

Title through c1, no change.

2. When parallel runways are less than 2,500 feet apart, do not permit an aircraft to overtake another aircraft established on final within the facility’s area of responsibility when wake turbulence separation is required.

REFERENCE -

FAAO JO 7110.65, Para 5-5-4, Minima, Subparagraph f.

Pilot/Controller Glossary. Remove *Aircraft Weight Classes* and insert the following:

Aircraft Wake Categories. For the purposes of Wake Turbulence Separation Minima, aircraft are categorized as Category A through Category F. Each aircraft is assigned a category based on wingspan and maximum takeoff weight (MTOW).

a. Category A - Aircraft capable of MTOW of 300,000 pounds or more and a wingspan greater than 245 feet.

b. Category B - Aircraft capable of MTOW of 300,000 pounds or more and a wingspan greater than 175 feet and less than or equal to 245 feet.

c. Category C – Aircraft capable of a MTOW of 300,000 pounds or more and a wingspan greater than 125 feet and less than or equal to 175 feet.

APPENDIX A

d. Category D – Aircraft capable of a MTOW less than 300,000 pounds and a wingspan greater than 125 feet and less than or equal to 175 feet; or, aircraft capable of a MTOW greater than 41,000 pounds with a wingspan greater than 90 feet and less than or equal to 125 feet.

e. Category E – Aircraft capable of a MTOW greater than 41,000 pounds with a wingspan greater than 65 feet and less than or equal to 90 feet.

f. Category F – Aircraft capable of a MTOW of less than 41,000 pounds and a wingspan less than or equal to 125 feet, or aircraft capable of a MTOW less than 15,500 pounds regardless of wingspan, or a powered sailplane.

FAA Order JO 7210.3:**3-6-7. PREARRANGED COORDINATION**

Title thru b6, No change

7. Controllers who penetrate another controller's airspace using P-ACP must determine whether the lead aircraft requires wake turbulence separation behind it.

REFERENCE

FAAO JO 7110.65, Para 5-5-4, Minima, subparagraph f.

No further changes to paragraph