

NOTICE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION

N 8260.76

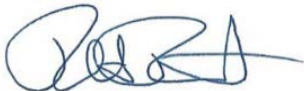
Effective Date:

National Policy

Cancellation Date:

SUBJ: Design, Evaluation, and Documentation Policy Enabling MARS Procedures within FAA Order 8260.3 and FAA Order 8260.19

- 1. Purpose of this Notice.** This notice provides guidance for the design, evaluation, and documentation of Instrument Flight Procedures (IFPs) supporting Multiple Air Route Separation (MARS) Instrument Approach Procedures (IAPs). This notice contains guidance pertinent to Title 14, Code of Federal Regulations, [part 97, Standard Instrument Procedures](#).
- 2. Audience.** All personnel who are responsible for IFP development, evaluation, and/or documentation.
- 3. Where can I find this Notice?** You can find this notice on the [FAA's public website](#) and the [Dynamic Regulatory System](#).
- 4. Background.** The MARS concept was initiated by a recommendation from the NextGen Advisory Committee through the work of the NextGen Integration Working Group and the Northeast Corridor Initiative. MARS expands the application of Established on Required Navigation Performance (EoR) to authorized approach procedures, including non-parallel runway configurations at single or multiple airports. This notice codifies the design, evaluation, and documentation guidance for IAPs supporting this type of operation.
- 5. Guidance.** See Appendix A for information applicable to Order 8260.3, United States Standard for Terminal Instrument Procedures (TERPS), and Appendix B for information applicable to Order 8260.19, Flight Procedures and Airspace.
- 6. Explanation of Policy Changes.** See appendices A and B for new policy and applicable policy changes.
- 7. Disposition.** We will incorporate the information in this notice into Order 8260.3 and Order 8260.19, as applicable, before this notice expires. Direct questions or comments concerning the information in this notice to 9-AWA-AFS400-COORD@faa.gov.



For Hugh J. Thomas
Executive Director, Flight Standards Service

Appendix A. Revisions to FAA Order 8260.3, United States Standard for Terminal Instrument Procedures (TERPS)

1. Paragraph 15-1-8 is changed to read:

a. Approval. If a request is received involving any of the following situations, the procedures require approval (see paragraph 1-4-2).

(1) A request for an independent approach operation involving runways that are not parallel.

(2) A request for missed approaches with radius-to-fix (RF) turns.

(3) A request for triple independent approach operations and one set of parallel runways is closely spaced (see appendix E, sections 2 and 3).

Exception: If the guidance for close-spaced runways will be applied to both pairs, then section 15-2 applies, and the procedure may be processed without review or approval (see paragraph 1-4-2).

(4) A request for quadruple independent approach operations.

(5) A request for two adjacent airports to have simultaneous independent approach operations.

Exception: If the adjacent airports are conducting Multiple Air Route Structure (MARS) operations, then section 15-6 applies.

b. Coordination information. When approach procedures authorize simultaneous operations, the following information must be included in the procedure package as applicable.

(1) Include the type of operation (such as dependent, independent, or both, SCP, SOIA) to be authorized for the approach.

(2) List each simultaneous runway pair/triple/quad and the approaches authorized for simultaneous operations, with the approach being submitted.

(3) Indicate the altitude/point where the simultaneous operation will begin (depicted as "Point S" in the figures in the chapter and described in paragraph 15-2-4.b).

(4) Incorrect flight procedure selection information as identified in paragraph 15-5-2.

2. Adding a new section (15-6) to chapter 15 titled, “Multiple Air Route Separation (MARS).” Below is the new content that will be added:

**Chapter 15. Simultaneous Approach Operations
Section 15-6. Multiple Air Route Separation (MARS)**

15-6-1. Purpose. This section provides TERPS criteria for simultaneous independent operations between aircraft established on MARS-authorized instrument approaches. MARS expands the application of EoR to authorized approach procedures, including non-parallel runway configurations at single or multiple airports.

15-6-2. General Guidance. Apply this section when Air Traffic Control (ATC) or the Site Implementation Team (SIT) requests approaches for MARS operations. For an overview of MARS, see appendix E.

15-6-3. Types of Approaches. The following types of approaches are authorized to support MARS operations:

- a. ILS,
- b. GLS,
- c. RNAV (GPS), and
- d. RNAV (RNP).

15-6-4. Approach Design. Applies to approved paired IAPs flowing in the same direction (not opposite direction), authorized to be flown in MARS reduced separation. IAPs used for MARS operations must comply with the applicable design standards, except as stated in this chapter.

- a. Use of the flight director (FD) or autopilot (AP) is required for all PBN segments without restriction.
- b. The initial and intermediate approach segments must be PBN segments, unless the initial and/or intermediate segment are aligned with the final approach course and within the operational service volume of the ILS or GLS.
- c. Use of GPS is required for all PBN segments.
- d. IFPs with less than standard separation applied in the final approach segment (i.e., ATC not required to maintain 3 NM lateral and/or 1000 ft vertical separation) must have vertical guidance in the final approach segment (e.g., ILS glideslope, GLS, baro-VNAV, LNAV/VNAV, or LPV glidepath).
- e. All PBN segments within 3.5 NM of the paired procedure, measured from each segment centerline, must be constructed as either RF legs or TF legs with FB turn types between subsequent legs, except as required by Order 8260.19K, paragraphs 8-6-4.a(6)(c) and 8-6-4.a(6)(d).

f. Converging segments between subsequent TF legs within 3.5 NM of the paired procedure, measured from each segment centerline, must have a course change of 50 degrees or less.

15-6-5. Missed Approach Design. Missed approach path must diverge from the paired procedure by at least 45 degrees until other means of separation are provided.

15-6-6. Charting. Instrument approach procedures are annotated with “Simultaneous Approach Authorized.” Charting requirements are specified in Order 8260.19, chapters 4 and 8.

15-6-7. Coordination and Approval. Each proposed MARS implementation must be analyzed for site-specific collision risk prior to implementation. For a safety analysis, a written request must be submitted to the Flight Technologies and Procedures Division, with a copy to the Flight Research and Analysis Group (AFS-430).

3. Adding a new section (7) to appendix E titled, “Additional Information for Multiple Air Route Separation (MARS)”. Below is the new content that will be added:

Appendix E. Simultaneous Approach Operations

Section 7. Additional Information for Multiple Air Route Separation (MARS) Operations

1. Purpose. This section is associated with section 15-6 and provides background information on operations for simultaneous independent operations between aircraft established on MARS-approved instrument approaches, including non-parallel runway configurations at single or multiple airports.

2. Background. MARS extends the EoR application to aircraft operating at the same or adjacent airports. At several high-density airports in the NAS, the flight paths associated with Instrument Flight Procedures (IFPs) to adjacent airports contain a variety of approaches and/or departures that overlap one another, putting them in conflict with one another when applying radar separation standards. Adjacent airports with conflicting IFPs become dependent on each other’s operations, reducing operational efficiency. The MARS design is intended to resolve many of these conflicts by establishing new separation requirements using independent navigation procedures. MARS introduces a system of authorized instrument flight procedures, ATC procedures, surveillance, and communication requirements that will allow aircraft operations to be safely conducted with approved reduced separation criteria once aircraft are established on a PBN segment of approved and paired IAPs.

3. Safety Studies. Those conducted by the Flight Technologies and Procedures Division and other organizations have shown that MARS operations can be safely conducted at various locations across the NAS, provided the geometry and relationship between paired procedures are analyzed for collision risk, developed in accordance with this guidance, and incorporate existing best practices for procedure design. For additional information, see “Safety Analysis of Multiple Airport Route Separation (MARS) Same Direction Approaches with Two Controllers (Phase I),” published August 2025 (DOT/FAA/AFS400/2025/R/31).

a. Safety studies that support MARS operations are based on the assumption that standard separation, either 1000 ft vertical and/or 3 NM lateral, is maintained until participating aircraft are established on a PBN segment of approved procedures to the same or an adjacent airport.

b. While the notional procedures enable a broad understanding of how MARS operations at the same or adjacent airports may be implemented and the associated safety of those implementations, not all possible combinations were represented by those notional procedures. As a result, each site-specific proposed MARS implementation is analyzed for collision risk prior to implementation, until further patterns of implementation can be developed.

4. Related Documentation. Refer to ATC directives, such as FAA Order JO 7210.3, Facility Operation and Administration, and FAA Order JO 7110.65, Air Traffic Control, for operational requirements.

5. SIT. At locations that propose the use of MARS procedures, the use of a SIT is recommended to work through the issues of establishing the approach procedures. The team is made up of FAA (including the Flight Technologies and Procedures Division) and industry members, and the leadership of the team is as designated by Air Traffic.

a. When the ATC facility and Service Center are determining whether to form a SIT, considerations include the complexity of the project and the expressed desire of persons and organizations to participate in the approach design/documentation. If no team is formed, the ATC facility that controls the airspace in which the procedures are to be conducted must perform the responsibilities of the team.

b. When an ATC facility proposes a procedure designed for an airport served primarily by air carriers, they should attempt to solicit the assistance of a “lead carrier” in the design and flyability of the proposed approach procedure.

6. Key Findings. Consider the following when designing procedures:

a. An aircraft should not be considered established on an approach unless the procedure is designed such that the controller can verify that the flight crew is flying the approach for which they were cleared.

b. RNP of 1 NM is acceptable for the turn to the final approach segment, given GPS and either autopilot or flight director are required.

c. To the maximum extent possible, establish at least 300 ft of vertical path deconfliction between the two procedures where the approaches are converging.

d. Controller interventions may better maintain aircraft-to-aircraft separation by issuing a specific heading when directing a go-around, rather than flying the published track. However, missed approaches must deconflict without controller intervention.

e. STARS Conflict Alert and TCAS may generate alerts due to procedure convergence. Notable causes and mitigations include:

(1) Opposite-direction geometries with a significant intercept angle in only one of the paths are more likely to generate TCAS Resolution Advisories (RA) than when both paths have large intercept angles.

(2) MARS procedure concepts with shifted intercept points that may result in near head-on geometries during turns had the highest simulated TCAS RA frequency.

(3) TCAS RAs are more likely at higher speeds, higher Sensitivity Levels, and smaller minimum separation between paths.

(4) Same direction operations on 9000 ft or greater parallel approach courses, when measured from each segment centerline, regardless of intercept angle and shifts in intercept points, generally do not produce TCAS RAs.

(5) If flights are established on parallel courses, regardless of same or opposite direction operations, TCAS RAs are highly unlikely.

f. The most significant factor in the risk of turn overshoots was found to be the TF-TF FB turn when flown with the autopilot navigating laterally in a heading mode. The heading mode may be used to comply with radar vectors or otherwise maintain a constant heading. For the flight crews to use it during a PBN transition indicates that they may not have loaded the proper approach transition or otherwise misunderstood the clearance. Advising crews of this risk to overshoot supports effective use of MARS procedures.

4. Add the following to Table B-1. Acronyms and Abbreviations:

| | |
|------|--|
| EoR | Established on Required Navigation Performance |
| MARS | Multiple Air Route Separation |
| SIT | Site Implementation Team |

5. Add the following to Appendix B, Section 2, Definitions:

Site implementation team (SIT). At locations proposing simultaneous procedures, particularly for complex operations like MARS and SCP approaches, forming a SIT comprising the FAA (including the Flight Technologies and Procedures Division) and industry members is recommended to work through the issues of establishing approach procedures.

Appendix B. Revisions to FAA Order 8260.19, Instrument Procedures and Airspace

1. Paragraph 8-6-12.o(8) is changed to read:

(8) Simultaneous dependent and independent approach operations. When ATC has determined that certain instrument approach procedures meet the requirements to support either of these operations, the chart must be annotated to indicate that the approach is authorized to be conducted simultaneously with another runway or an adjacent airport.

(a) When informed by an ATC facility that simultaneous dependent or independent approach operations will be conducted in accordance with either FAA Order JO 7110.65, Air Traffic Control, or FAA Order 8260.3, United States Standard for Terminal Instrument Procedures (TERPS), with another runway or an adjacent airport, the approach chart must be annotated to indicate that simultaneous approach operations are authorized. Enter in the "Notes" section: "CHART NOTE: SIMULTANEOUS APPROACH AUTHORIZED."

(b) For RNAV (GPS) procedures associated with simultaneous independent approaches with LNAV minima published on the same chart with LPV or LNAV/VNAV minima, include the following in the "Notes" section: "CHART NOTE: LNAV PROCEDURE NA DURING SIMULTANEOUS OPERATIONS." This note applies to Multiple Air Route Separation (MARS) RNAV (GPS) procedures only when there is reduced lateral separation applied in the final approach segment.

(c) For GLS and RNAV (GPS) procedures used for simultaneous dependent or independent approach operations, enter the following in the "Notes" section: "CHART NOTE: USE OF FD OR AP REQUIRED DURING SIMULTANEOUS OPERATIONS." This chart note may be required on ILS procedures, such as those supporting MARS operations, under certain conditions specified in Order 8260.3 and ATO Directives, based on the type of ATC operations being conducted. The ATC facility and/or the applicable OSG will provide this information, when required, to the applicable procedure development specialist. There is no need to chart this note on an RNAV (RNP) procedure used for simultaneous approach operations, as the "Authorization Required" for all RNAV (RNP) approach procedures identifies that the Flight Director (FD) or Autopilot (AP) is a requirement for the authorization.

(d) When informed by an ATC facility that simultaneous operations will be conducted using the provisions in Order JO 7110.308, Simultaneous Dependent Approaches to Closely Spaced Parallel Runways, use of vertical guidance is required. In the "Notes" section, enter: "CHART NOTE: SIMULTANEOUS APPROACH AUTHORIZED. SIMULTANEOUS OPERATIONS REQUIRE USE OF VERTICAL GUIDANCE; MAINTAIN LAST ASSIGNED ALTITUDE UNTIL ESTABLISHED ON GLIDESLOPE (FOR RNAV PROCEDURES USE 'GLIDEPATH')." In unique cases where ATC has determined a runway can be used simultaneously with multiple parallel runways, one of which qualifies for Order JO 7110.308 procedures and the other runway(s) qualify for basic simultaneous operations, in the "Notes" section, enter: "CHART NOTE: SIMULTANEOUS APPROACH AUTHORIZED WITH RWY (NUMBER). SIMULTANEOUS APPROACH AUTHORIZED WITH ILS RWY (NUMBER) REQUIRES USE OF VERTICAL GUIDANCE; MAINTAIN LAST ASSIGNED ALTITUDE UNTIL ESTABLISHED ON GLIDESLOPE/GLIDEPATH."

Note: For Order JO 7110.308 procedures, document the applicable chart notes in paragraphs 8-6-12.o(7)(b) through 8-6-12.o(7)(c) in the order they appear above, following the notes from 8-6-12.o(7)(d), to ensure they are placed in that sequence on the chart.

(e) When informed by an ATC facility that simultaneous operations will be conducted to support MARS operations, in the “Notes” section, enter: “CHART NOTE: SIMULTANEOUS APPROACH AUTHORIZED.” For procedures authorized for MARS operations with less than standard separation in the final approach segment (i.e., ATC not required to maintain 3 NM lateral and/or 1000 ft vertical separation), in the “Notes” section, enter: “CHART NOTE: SIMULTANEOUS APPROACH AUTHORIZED. SIMULTANEOUS OPERATIONS REQUIRE USE OF VERTICAL GUIDANCE.”

Note: For MARS procedures, document the applicable chart notes in paragraphs 8-6-12.o(7)(b) through 8-6-12.o(7)(c) in the order they appear above, following the notes from 8-6-12.o(7)(e), to ensure they are placed in that sequence on the chart.

2. Add the following to Table A-1. Acronyms and Abbreviations:

| | |
|------|--|
| EoR | Established on Required Navigation Performance |
| MARS | Multiple Air Route Separation |