

# NOTICE

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

N JO 7110.588

Effective Date:  
June 13, 2012

Cancellation Date:  
June 12, 2013

Guidance for the Implementation of FUSION/Automatic Dependent Surveillance-  
**SUBJ:** Broadcast (ADS-B) within Common Automated Radar Terminal System Model IIIE  
(CARTS) and Standard Terminal Automation Replacement System (STARS)

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1. **Purpose of This Notice.** The purpose of this notice is to prescribe guidance when operating in FUSION display mode.
2. **Audience.** This notice applies to the Air Traffic Organization (ATO) Terminal Service Unit.
3. **Where Can I Find This Notice?** This notice is available on the MyFAA employee Web site at [https://employees.faa.gov/tools\\_resources/orders\\_notices/](https://employees.faa.gov/tools_resources/orders_notices/) and on the air traffic publications Web site at [http://www.faa.gov/air\\_traffic/publications/](http://www.faa.gov/air_traffic/publications/).
4. **Cancellation.** This notice cancels previous FUSION guidance for individual facilities provided in N JO 7110.561, N JO 7110.570, and N JO 7110.575.
5. **Procedures.**
  - a. All procedures contained in FAA Order JO 7110.65 for the terminal domain related to air traffic control services using STARS or CARTS-Terminal Automation System must apply to the FUSION target. This includes radar identification, separation, advisories, and monitoring simultaneous independent area navigational/global positioning system or independent approaches.
  - b. Use FUSION tracker automation systems as follows:
    - (1) FUSION should be the preferred sensor to the extent that it is operationally feasible.
    - (2) Inform other interfaced facilities of scheduled and unscheduled shutdowns.
    - (3) Initiate a track/tag on all aircraft to the extent possible. As a minimum, aircraft identification should be entered, and automated handoff functions should be used.
    - (4) Mode C or pilot-reported altitude must be displayed, if available, and be kept current all times that the aircraft is in level flight.
  - c. Apply approved separation between the centers of fused targets; however, do not allow a fused target to touch another fused target. Target resolution must be applied between the edges of the fused target. All other provisions for terminal separation must apply.
  - d. A solid circle target symbol must be displayed depicting the aircraft position.
  - e. The current terminal or en route radar sensor required for 3 nautical miles (NM) must update the target position to apply 3NM separation.

**NOTE-**

*During periods of known radar outages, ADS-B-only surveillance may not be used in lieu of radar to meet surveillance requirements for Q and T routes or for RNAV/RNP approach procedures and any approach that states "RADAR Required."*

**f.** A solid circle target symbol associated with a three-character indicator for increased separation required (ISR) must be displayed when the terminal or en route radar sensors updating the target position is outside of the current sensor requirement for 3NM separation. ISR indicates that either the confidence level of the track is such that 3NM separation, 1-½NM separation, and target resolution cannot be used and 5NM separation is required.

**NOTE-**

1. *In the event of a sensor outage or other loss of confidence resulting in an unexpected ISR on one or more aircraft, the ATCS working that aircraft must transition from 3-mile to 5-mile separation, or establish some other form of approved separation (visual or vertical) as soon as feasible. This action must be timely, but taken in a reasonable fashion, using the controller's best judgment, as not to reduce safety or the integrity of the traffic situation. For example, if an ISR message is received when an aircraft is established on final with another aircraft on short final, it would be beneficial from a safety perspective to allow the trailing aircraft to continue the approach and land rather than terminate a stabilized approach.*
2. *Currently, ADS-B to ADS-B separation is not authorized for air traffic operations.*
3. **FOR STARS ONLY.** *If an air traffic controller attempts to select the "ADS" sensor button in the SITE submenu of the Display Control Bar, the selection will be denied, and "PRIVILEGE VIOLATION" will be displayed in the readout area.*

**g.** When providing radar service to VFR aircraft and an ISR is being displayed, target resolution is prohibited.

**REFERENCE-**

FAAO JO 7110.65, Para 7-7-3, Separation  
 FAAO JO 7110.65, Para 7-8-3, Separation  
 FAAO JO 7110.65, Para 7-9-4, Separation

**h.** When applying Class B Service to VFR aircraft and an ISR is being displayed, discontinue 1-½NM separation and revert to 5NM separation or other Class B methods.

**REFERENCE-**

FAAO JO 7110.65, Para 7-9-4, Separation

**i.** When the ADS-B Computer Human Interface is enabled, the following applies:

(1) Non-ADS-B indicators must be distinguishable in line 1 of the data block. When an aircraft is not ADS-B-equipped, the "Non-ADS-B" indicator must be a solid circle.

(2) When an aircraft is within ADS-B coverage and the aircraft's ADS-B equipment becomes inoperable, a hollow circle will be displayed to the left of the aircraft ID in line 1 of the data block. Additionally, the three-character "ADB" indicator in line 2 of the data block must be displayed. Air traffic control must acknowledge the "ADB" indicator with a 'Slew' and Enter which will then remove "ADB" from the data block.

(3) Inform an aircraft when its ADS-B transmitter appears to be inoperative or malfunctioning.

**PHRASEOLOGY-**

(Aircraft ID) YOUR ADS-B TRANSMITTER APPEARS TO BE INOPERATIVE/MALFUNCTIONING.

**j.** When operating in the FUSION mode, "TRK" may be displayed in the data block. "TRK" indicates the track can no longer be used to provide radar separation.

**6. Distribution.** This notice is distributed to the following ATO service units: Terminal, En Route and Systems Operations Services; the Office of ATO Safety and Technical Training; the Air Traffic Safety Oversight Service; and the William J. Hughes Technical Center.

**7. Background.** FUSION is the combination of all available surveillance sources (airport surveillance radar [ASR], air route surveillance radar [ARSR], ADS-B, etc.) into the display of a single tracked target for air traffic control separation services. FUSION is the equivalent of the current single-sensor radar display. FUSION performance is characteristic of a single-sensor radar display system. Terminal areas use mono-pulse secondary surveillance radar (ASR-9, Mode S). The performance of this system will be used as the baseline radar system to ensure minimal degradation of current separation operations within the NAS.

ADS-B is a key enabling technology supporting the implementation of the Next Generation Air Transportation System. The incorporation of ADS-B as a surveillance source requires the incorporation of multiple surveillance sources such as ARSR, ASR, ADS-B, and multilateration into existing and future air traffic control automation systems. It has been determined that FUSION is the best method to accomplish this. The Surveillance and Broadcast Services Air Traffic CHI Workgroup was established to ensure functional standardization and usability of multiple surveillance sources integration in both the terminal and en route domains.

**8. Safety Management System.** The provisions of this notice are based on the FUSION System Safety Risk Management Document (SRMD), Sub-System Hazard/System Hazard Analysis for CARTS and STARS, prepared by the FAA Surveillance and Broadcast Services Program. This SRMD supports the procedural guidance contained in this notice.



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June 12, 2012

Date Signed