

# NOTICE

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

N JO 7110.539

**Effective Date:**  
October 30, 2010

**Cancellation Date:**  
October 29, 2011

**SUBJ:** Guidance for the Implementation of System Track Display Mode (STDM)/FUSION/ADS-B within the Common Automated Radar Terminal System-Model IIIIE (CARTS) at Louisville TRACON (SDF)

---

**1. Purpose of This Notice.** This purpose of this notice is to prescribe guidance when using FUSION. These procedures are currently being tested at Louisville TRACON (SDF). This notice replaces N JO 7110.510, Guidance for the Implementation of System Track Display Mode (STDM)/FUSION/ADS-B within the Common Automated Radar Terminal System-Model IIIIE (CARTS) at Louisville TRACON (SDF), effective October 30, 2009.

**2. Audience.** This notice applies to the Air Traffic Organization (ATO) Terminal Service Unit at SDF TRACON.

**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. Explanation of Changes.** Procedures were further defined for the use of FUSION for monitoring simultaneous independent area navigation/global positioning system or independent approaches and separation requirements when ISR is displayed. Requirements for the updating of Mode C data were added.

**5. Procedures.**

**a.** All procedures contained in FAA Order JO 7110.65 for the terminal domain related to ATC services using the Automated Radar Terminal Systems (ARTS)-Terminal, to include radar identification, separation, advisories, and phraseology, apply to FUSION target.

**b.** FUSION may not be used for monitoring simultaneous independent area navigation/global positioning system or independent approaches.

**c.** Use FUSION tracker automation systems as follows:

(1) For initial operating capability, the STDM should be the preferred sensor to the extent that it is operationally feasible.

(2) Inform other inter-faced 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) Assigned and reported altitude must be displayed, if available, and be kept current all times that the aircraft is in level flight.

(5) The automatic altitude readout of an aircraft under another controller's jurisdiction may be used for vertical separation purposes without verbal coordination provided that:

(a) Operation is conducted in a STDN mode.

(b) Prearranged coordination procedures are in a facility directive that follows procedures in FAA Order JO 7110.65, Paragraph 5-4-10, Prearranged Coordination, and FAA Order JO 7210.3, Paragraph 3-7-7, Prearranged Coordination.

**d. Information Displayed.** STDN in the status menu area represents Fused Mode.

**e. Apply standard separation:**

(1) 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 provision for terminal separation must apply.

(2) A solid circle target symbol must be displayed depicting the aircraft position.

(3) The current terminal or en route radar sensor required for 3NM must update the target position to apply 3NM separation.

(4) 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 3-mile separation and target resolution cannot be used and 5-mile separation is required or that the track is not being updated by an eligible sensor.

**NOTE-**

*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, such as 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 derogate safety or the integrity of the traffic situation. (For example, if an ISR message is received when an aircraft is on a 3.5 mile 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.)*

(5) When applying Basic Radar Service to VFR aircraft and an ISR is being displayed, target resolution is prohibited.

(6) When applying Class C Service to VFR aircraft and an ISR is being displayed, discontinue target resolution and revert to 5-mile separation or VFR vertical separation.

**NOTE-**

*Currently there is no ADS-B to ADS-B separation standards approval for air traffic operations.*

**f. ADS-B Indicator.**

(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 its ADS-B equipment becomes inoperable, an unfilled (hollow) circle will be displayed to the left of the aircraft ID in line 1 of the data block. Additionally, the three-character "ADS" indicator in line 2 of the data block shall be displayed.

ATC must acknowledge the “ADS” indicator with a ‘Slew’ and Enter which will then remove “ADS” 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.*

**g. Data Block Indicators.** When operating in the STDM Mode, “TRK” may be displayed in the data block. “TRK” indicates the track can no longer be used to provide radar services or separation.

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

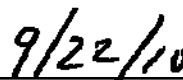
**7. Background.** FUSION is the combination of all available surveillance sources (airport surveillance radar [ASR], air route surveillance radar [ARSR], automatic dependent surveillance – broadcast [ADS-B], etc.) into the display of a single tracked target for air traffic control separation services. 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 (SBS) 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: Sub-System Hazard/System Hazard Analysis for SDF ATCT and PHL ATCT prepared by the FAA Surveillance and Broadcast Services Program. That SRMD supports the procedural guidance contained in this notice, and has been accepted and approved as required by FAA Order 1100.161, Air Traffic Safety Oversight, and the ATO Safety Management System Manual.



Tony A. Mello  
Acting Director, Terminal Safety and Operations Support  
Air Traffic Organization



Date Signed