

# NOTICE

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

**N JO 7110.522**

**Effective Date:**  
February 26, 2010

**Cancellation Date:**  
February 25, 2011

**SUBJ:** Guidance for the Implementation of FUSION within the Standard Terminal Automation Replacement System (STARS) at Philadelphia (PHL) Terminal Radar Approach Control (TRACON)

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**1. Purpose of This Notice.** This purpose of this notice is to prescribe guidance when using FUSION. These procedures are currently being tested at PHL TRACON.

**2. Audience.** This notice applies to the Air Traffic Organization (ATO) Terminal Service Unit at PHL airport traffic control tower (ATCT).

**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. Procedures.**

**a.** All procedures contained in FAA Order 7110.65 for the terminal domain related to air traffic control (ATC) services using STARS, to include radar identification, separation, advisories, and phraseology, must apply to the 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, 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) 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 FUSION 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 7210.3, Paragraph 3-7-7, Prearranged Coordination.

**d. 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 provisions 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 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. This indicates the confidence level of the track is such that 3-mile separation and target resolution cannot be used and 5-mile separation is required.

**NOTE-**

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

**e. 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 the aircraft's 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 must 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.*

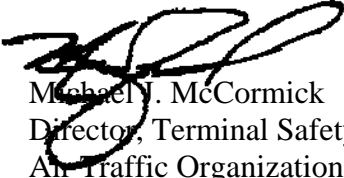
**f. Data Block Indicators.** When operating in the FUSION Mode, "TRK" may be displayed in the data block. "TRK" indicates the track can no longer be used to provide radar services or separation.

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

**6. 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 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.

**7. 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 SDF ATCT and PHL ATCT, prepared by the FAA Surveillance and Broadcast Services Program. This 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.



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