



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

**ORDER
JO 7110.661**

Effective Date:
September 30, 2014

SUBJ: Automatic Dependent Surveillance – Broadcast (ADS-B) In-Trail Procedure (ITP)

- 1. Purpose of This Order.** This order establishes air traffic procedural guidance and requirements applicable to apply reduced longitudinal separation aircraft-to-aircraft during altitude change maneuvers between appropriately authorized and equipped aircraft during operational trials for ADS-B ITP throughout the Oakland Air Route Traffic Control Center (ARTCC) Oceanic Control Area (CTA).
- 2. Audience.** This order applies to the following Air Traffic Organization (ATO) service units: Air Traffic Services Headquarters (AJT); Western Air Traffic Service (ATS) South; and, Oakland ARTCC.
- 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. Cancellation.** This order cancels the following notice: N JO 7110.641, Automatic Dependent Surveillance – Broadcast (ADS-B) In-Trail Procedure (ITP).
- 5. Procedures.** Standard air traffic control procedures contained in FAA Order JO 7110.65 and facility orders must be applied in support of the ADS-B ITP operational trials. Oakland ARTCC will apply ADS-B ITP separation to proximate eligible pairs of aircraft in areas of the Oakland Oceanic CTA as designated by facility directive.
 - a.** To allow qualified aircraft to climb or descend through the altitude of a blocking aircraft when less than standard separation exists, ADS-B ITP requirements are as follows:
 - (1) Communications between ITP aircraft and air traffic control must be via Controller Pilot Data Link Communications (CPDLC).
 - (2) Reference aircraft are identified to air traffic control by the ITP aircraft as part of the ITP clearance request.
 - (3) ITP Distance sent in the ITP request is equal to or greater than 15 NM.
 - (4) Closing Mach differential is equal to or less than 0.06 Mach.
 - (5) Maximum vertical distance between the ITP and reference aircraft is/are 2000 ft.
 - (6) ITP and reference aircraft are same direction traffic.
 - (7) All aircraft are at a single, assigned altitude.
 - (8) Aircraft are not cleared for a route deviation.
 - (9) ITP aircraft and reference are not part of another ITP operation at the same time.

b. ADS-B ITP Controller Procedure. This procedure must be initiated by an ITP request. If any of the following steps are not true, advise the aircraft unable.

- (1) Validate ITP Request. The pilot-reported distance between the ITP aircraft and any referenced aircraft is at least 15NM.
- (2) Initiate Probe on ITP Aircraft.
 - (a) No more than two conflicts exist.
 - (b) All call signs in conflict report(s) are included in the ITP request.
 - (c) All conflict aircraft are same direction traffic as ITP aircraft until vertical separation is reestablished.
 - (d) Closing Mach difference of ITP aircraft and any referenced aircraft is less than or equal to .06 Mach.
 - (e) All conflict aircraft are within 2000 feet of the ITP aircraft.
 - (f) All conflict aircraft are at a single, assigned altitude.
 - (g) No conflicts exist at the requested altitude.
 - (h) No aircraft involved are cleared for a route deviation.
- (3) Issue ITP Altitude Change Clearance. Send an uplink message (UM) containing the proper UM169 message (TBL 1) along with the appropriate message elements (TBL 2):

TBL 1
UM169 Messages

ITP procedure type (number and relative position of reference aircraft)	UM169 Message Element content for ITP
ITP aircraft is behind 1 aircraft	"ITP BEHIND [Aircraft ID]"
ITP aircraft is ahead of 1 aircraft	"ITP AHEAD OF [Aircraft ID]"
ITP aircraft is behind 2 aircraft	"ITP BEHIND [Aircraft ID] AND BEHIND [Aircraft ID]"
ITP aircraft is ahead of 2 aircraft	"ITP AHEAD OF [Aircraft ID] AND AHEAD OF [Aircraft ID]"
ITP aircraft is between 2 aircraft	"ITP BEHIND [Aircraft ID] AND AHEAD OF [Aircraft ID]"

TBL 2
Message Elements

UM20: CLIMB TO AND MAINTAIN [altitude]	UM23: DESCEND TO AND MAINTAIN [altitude]
UM26: CLIMB TO REACH [altitude] BY [time]	UM28: DESCEND TO REACH [ALTITUDE] by [time]
UM27: CLIMB TO REACH [altitude] BY [position]	UM29: DESCEND TO REACH [altitude] BY [position]

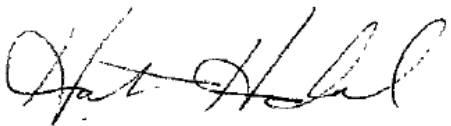
6. Background. The FAA developed the ADS-B ITP oceanic air traffic control procedure to utilize ADS-B user equipment and air traffic control capabilities to allow more oceanic flights to achieve their preferred vertical profiles. The use of advanced communication, navigation, and surveillance capabilities is integral to ADS-B ITP; for example, ADS-B, CPDLC, and RNP. To apply ADS-B ITP, oceanic controllers will utilize manual procedures, as well as Advanced Technologies and Oceanic Procedures (ATOP) automation system capabilities.

This procedure is based on in-trail distance measuring equipment (DME) rules in ICAO Doc 4444, paragraph 5.4.2.3.1. Aircraft pair distance verification is performed by the requesting (ITP) aircraft using on-board ADS-B systems. As with the existing DME procedures, air traffic control validates that the ITP reported criteria meets the procedural standards.

To achieve early benefits, ADS-B ITP will be demonstrated in operational trials by manually applying ADS-B ITP requirements without changes to ATOP and will be limited for use between ADS-B-equipped qualified aircraft. Upon conclusion of the operational trial, ADS-B ITP is planned to be implemented as an enhancement to ATOP software as an automated procedure and the associated controller procedures will be incorporated into FAA Order JO 7110.65 in FY 2016.

7. Safety Management System. Appropriate safety management documentation, in accordance with FAA Order 1100.161, Air Traffic Safety Oversight, ATO Order JO 1000.37, Air Traffic Organization Safety Management System, and the ATO Safety Management System Manual, has been completed in support of this order.

A Safety Risk Management Document (SRMD) documenting the safety case supporting an operational evaluation of ADS-B ITP was required and previously submitted for this trial. The Surveillance and Broadcast Services (SBS) Program Office, Mission Support Services Air Traffic Procedures, and Oakland ARTCC will assess the tools and procedures used for ITP during the operational evaluation. Assuming no restrictions or hazards are uncovered during the evaluations, this Order authorizing the use of ITP at Oakland ARTCC will remain in place until changes to ATOP and associated ITP procedures are incorporated into ATO Order JO 7110.65. Prior to implementation an ATO Order JO 7110.65 change proposal with accompanying SRM safety assessment of the original SRMD assumptions and target level of safety evaluation will be submitted.



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Air Traffic Organization

9/25/14

Date Signed