

**Twenty-Second Meeting of the Cross Polar Trans East Air Traffic Management Providers'
Work Group (CPWG/22)**

(Paris, France 25-27 October 2016)

Agenda Item 5: Status on Action Items

**AUTOMATIC DEPENDENT SURVEILLANCE – BROADCAST
IN-TRAIL PROCEDURES (ITP)
(Action Item # CP14-12)**

Presented by the United States (U.S.) Federal Aviation Administration (FAA)

SUMMARY

This paper presents information on the United States (U.S.) Federal Aviation Administration (FAA) activities associated with the Automatic Dependent Surveillance – Broadcast In-Trail Procedures (ADS-B ITP)

1 Introduction

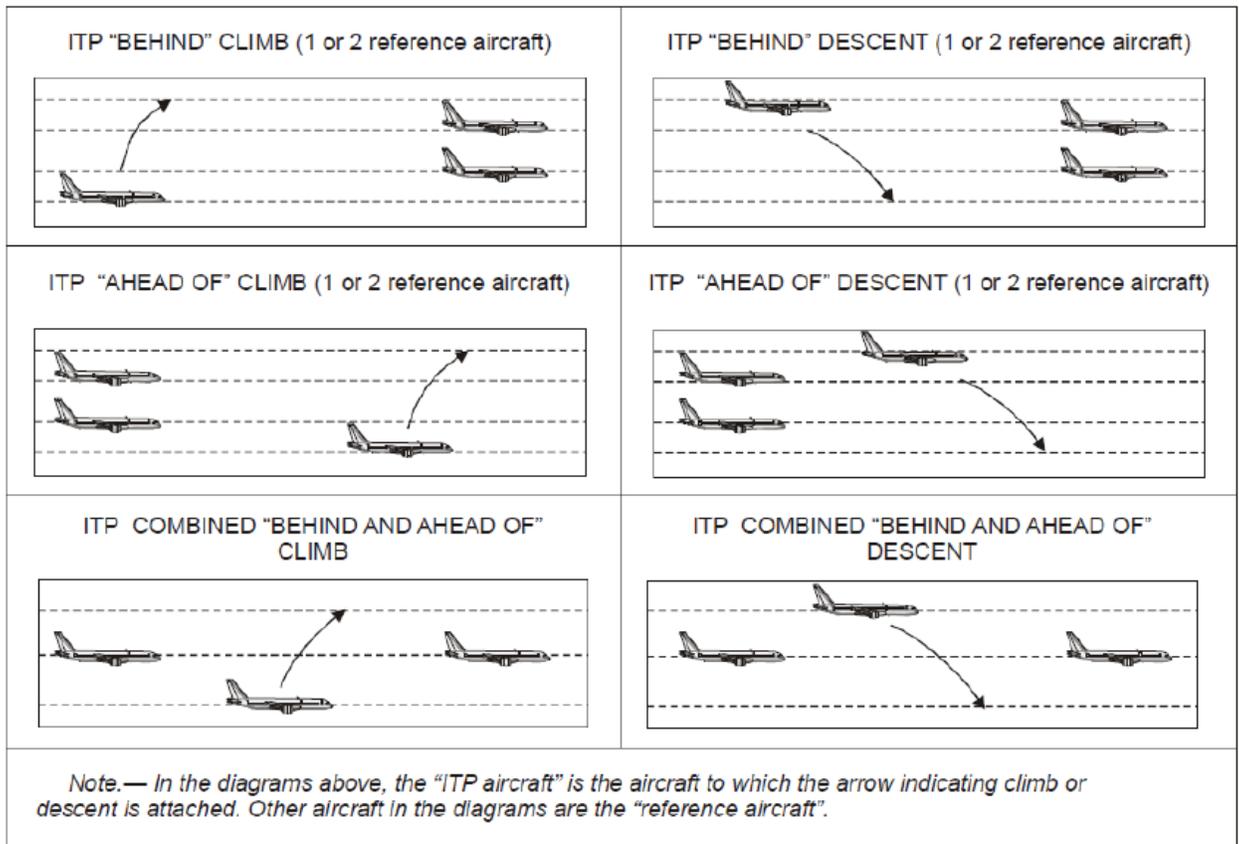
1.1. The FAA Surveillance and Broadcast Services (SBS) Program has developed an airborne Automatic Dependent Surveillance - Broadcast (ADS-B) application to provide benefits to operators that choose to equip their aircraft with appropriate avionics, including "ADS-B In" (i.e. the ability to receive, process, and display ADS-B data from surrounding aircraft). The airborne ADS-B application that has been developed is the ADS-B In-Trail Procedure (ITP).

1.2. Aircraft operating in oceanic airspace are, at times, held at non-optimal flight levels due to conflicting traffic either at the desired flight level or at flight levels between the existing flight level and the optimal flight level. The use of flight level changes enabled by ADS-B ITP can supplement existing oceanic procedures, creating greater operational efficiency

2 Discussion

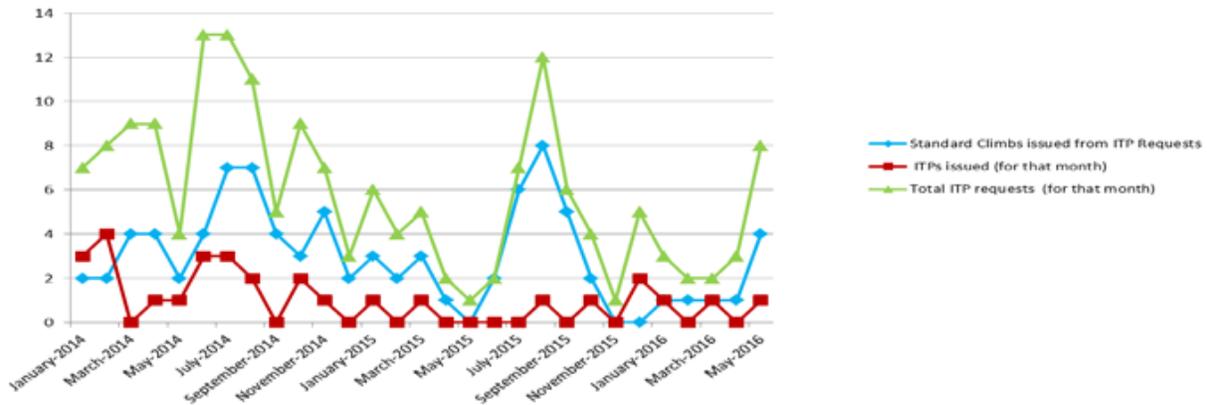
2.1. For ADS-B ITP, the maneuvering (trailing or leading) aircraft obtains the flight identification (ID), altitude, position and ground speed transmitted by proximate ADS-B equipped non-maneuvering aircraft. Based on the ADS-B data from the non-maneuvering, or reference aircraft, a pilot can request clearance for an ITP altitude change to Air Traffic Control (ATC). The controller verifies that the ITP and reference aircraft are same direction traffic and that the maximum closing Mach differential is less than or equal to a Mach number of 0.06. If the controller determines that the requesting aircraft will maintain non-ITP separation minima (i.e. ADS-C 30 nm, 10 minutes longitudinal) with all aircraft other than the ITP reference aircraft, a clearance for the climb or descent may be issued. After re-validating that the ITP initiation criteria are still valid, the maneuvering aircraft may then vertically transition through the altitude of the non-maneuvering aircraft utilizing the 10 Nautical Mile ITP longitudinal separation standard (15 NM at initiation of the ITP).

2.2 While there is no limit on the total climb authorized in the ADS-B ITP flight level change, the reference aircraft cannot be more than 2,000 feet above or below the ADS-B ITP aircraft's altitude. ADS-B ITP maneuvers may be conducted with up to two other aircraft.



2.3. The ADS-B ITP was published on November 13, 2014 in ICAO Procedures for Air Navigation Services and Air Traffic Management (PANS-ATM, Doc 4444), paragraph 5.4.2.7.

2.4. Oakland ARTCC has been conducting an ITP manual trial using a paper checklist since August of 2011. The chart below depicts the number of ITP requests received each month during the manual trial and the resulting clearances issued since 2014.



2.5. New York, Oakland and Anchorage oceanic airspace have received the ATOP ADS-B ITP software update to automate the application of the procedure. Oakland ARTCC began utilizing the automated ITP procedure on June 6, 2016. During the first 5 weeks of the automated application of the ITP procedure (between June 6 and August 12, 2016), Oakland conducted a detailed analysis of the 9 ITP

requests they received during that time period. Of the 9 ITP requests received, two ATOP automated ITP clearances were issued. The following is a detailed analysis of the 9 ATOP automated processing of the requests:

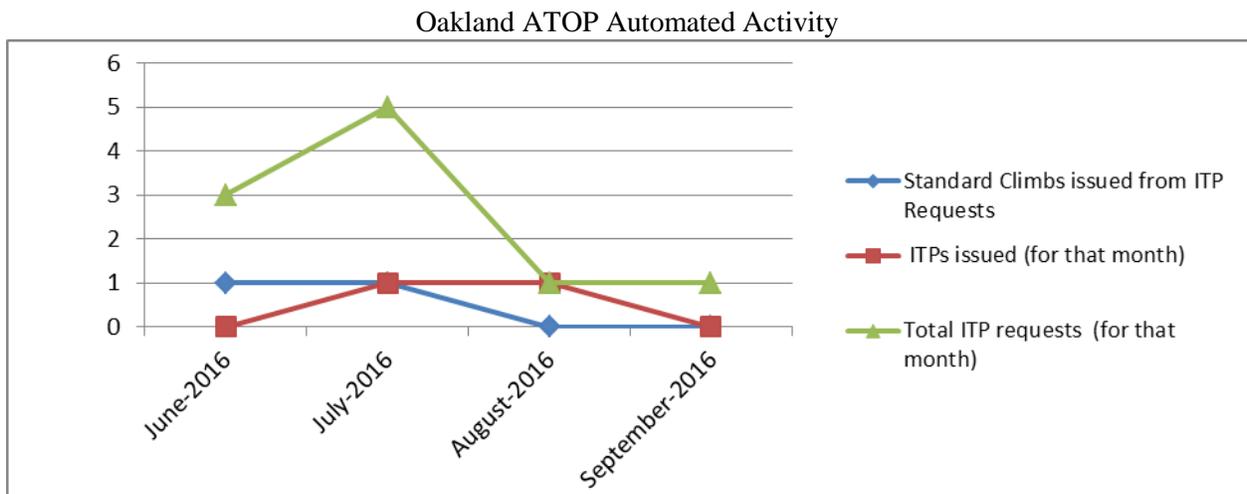
2.5.1 One of the 9 ITP requests was fulfilled using standard ATC separation.

2.5.2 Four of the 9 requests received at Oakland were incorrectly formatted and were not able to be processed as ITP procedures. Now that the FAA has transitioned to using ATOP software to apply the procedure, it is critical that the ITP downlink request be correctly formatted. If the down link freetext request message is incorrectly formatted, ATOP cannot parse the information and the ITP procedure cannot be applied. With two of the four incorrectly formatted requests, the controller was able to issue a climb clearance to an altitude that was lower than the requested ITP altitude.

2.5.3 One of the 9 ITP requests was overcome by events, before the ITP was processed, the reference aircraft changed altitude. The ITP aircraft was cleared to a lower altitude than the requested ITP climb.

2.5.4 One of the 9 ITP requests was denied because the reference aircraft was assigned a block altitude and the reference aircraft was traffic at the target altitude.

2.6 Since the ADS-B ITP capability has been enabled in the ATOP system at Oakland, there have been a total of 10 ITP requests received. Only 1 request was received each month in August and September, which resulted in 1 ITP clearance in August.



2.7 New York and Anchorage ARTCC's will be implementing the ITP procedure later this year after controller training has been completed.

3 Recommendation

3.1. The Meeting is invited to note the information provided in this paper.