Twenty Fifth Meeting of the
Informal South Pacific ATS Co-ordinating Group (ISPACG/25)

Honolulu, Hawaii, USA, 24-25 March 2011

Agenda Item 4: Review Open Action Items (AI 17-12)

TAILORED ARRIVALS UPDATE

Presented by the Federal Aviation Administration

SUMMARY

This information paper provides an update on the use of Tailored Arrivals in North America.

1. INTRODUCTION

1.1. The decision to provide an unrestricted, energy efficient descent into San Francisco International Airport (KSFO) was made in an effort to reduce harmful emissions such as carbon dioxide (CO_2) gases into the atmosphere. The FAA Oakland Air Route Traffic Control Center (ARTCC), Boeing Company, and United Airlines worked together to create a descent profile for use by oceanic Future Air Navigation System (FANS) equipped aircraft. The profile was developed with current traffic flows in mind. Both Northern California Terminal Radar Approach Control (TRACON) and Oakland ARTCC contributed to the development of altitude and airspeed constraints that would provide for the most efficient descent profile while meeting procedural needs.

1.2. Operational use of the Tailored Arrival (TA) into KSFO began in November 2006.

2. DISCUSSION

2.1. The TA is requested by the pilot while operating in Oakland Oceanic Control Area (OCA). This is necessary because the clearance, which includes route, altitude and speed information, must be uplinked to the aircraft's flight management system.

2.2. In a perfect environment, the TA would allow for an unrestricted descent from the aircraft's last-assigned cruising flight level to touch down at the airport. It has been shown that such a scenario can be accomplished about 33% of the time at KSFO. Initially, the low number of fully completed TAs was viewed as a disappointment. However, at least with the tailored arrival into KSFO, it was determined that an impressive fuel savings/emissions reduction was also being realized when the profile was only partially flown.

2.3. Analysis indicates that each fully flown TA into KSFO garners a savings of 300 to 536 kilograms of fuel (a reduction of 948 to 1693 kilograms of carbon dioxide, CO_2) while a partially flown profile produces a savings of approximately 131 to 236 kilograms of fuel (a reduction of 413 to 745 kilograms of CO_2).

2.4. In July 2010, the TA into KSFO was modified slightly to provide the pilot with an easier-to-read display of the route profile by eliminating some of latitude/longitude route points. The changes also allowed for elimination of ATC voice coordination requirements between the Control Center and TRACON.

2.5. Two other TAs have been used at Los Angeles International Airport (KLAX) and Miami International Airport (KMIA). Both of these locations have unique traffic conditions that have created the need for restrictions in the descent profile that somewhat reduce the overall efficiency of the procedure. However, even with the restrictions, studies indicate that meaningful fuel savings are being realized. Work continues to enhance the current procedures at both locations. In addition, work is underway at the FAA headquarters level to develop official FAA standards for TA development.

2.6. A face-to-face KLAX TA Team meeting was held at Southern California TRACON (SCT) on 1 November 2010. Working collaboratively, participants were able to identify several improvements to the Catalina One TA profile that may increase fuel benefits, improve the likelihood of receiving a full TA, and simplify ATC phraseology used during handoffs. After a thorough review, SCT did not agree to change the route. SCT determined the current Catalina One TA provides for the most efficient use overall of terminal airspace, taking into consideration departure, en route and arrival flows in the area.

2.7. The BUFIE RNAV STAR is scheduled for publication in 10 March 2011. It mirrors the current Catalina One TA. The effort to provide the KLAX Catalina TA after the publication of the BUFIE STAR is continuing, including redevelopment of the current profile so the projected benefits from previous work can be realized.

2.8. The FAA is committed to the continued development of the TA program. It has become a significant part for the Next Generation Air Transportation System (NextGen) Airspace Modeling of Optimal Profile Descents. Plans are underway for the timely implementation and integration of Initial Tailored Arrivals (ITA) into the National Airspace System by late 2011.

2.9. TAs adapted at KSFO (PACIFIC2 TA), KLAX (CATALINA1 TA) and KMIA (FLORIDA8 TA and FLORIDA9 TA) will be transitioned from an operational evaluation to actual implementation. Future development of these existing TAs, and new TAs, are subject to, and shall be in accordance with, the appropriate FAA operational, design and operator authorization documents.

2.10. As other airports are identified as candidates for TAs, the procedure for developing the profile will follow a similar process used for developing any other area navigation (RNAV) arrival. Until such time as a certified data link infrastructure is available in the US domestic ATC system, TA clearances are only available through the Ocean21 system and only to Future Air Navigation System (FANS) 1/A equipped aircraft.

Therefore, TA profiles will only be developed at those airports that have arrivals from oceanic airspace.

2.11. The full range of benefits from TAs will be realized with additional system development to permit routine operations with a more congested traffic load. The flight deck system components are currently sufficient to permit moderate, consistent, flight efficiency improvements when used in conjunction with existing ATC capabilities to provide the requested arrival profiles. The projections for fuel savings, and emissions reduction, using these procedures were confirmed by the initial TA flight trials. Allowing the airlines to request and fly these arrival routes now results in immediate cost savings and emissions reduction.

3. ACTION BY THE MEETING

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