

**Sixteenth Meeting of the Cross Polar Trans East Air Traffic Management Providers' Work Group
(CPWG/16)**

(Ottawa, Canada 3-6 December 2013)

Agenda Item 5: Provide Status on CPWG/15 Actions

Status of Oakland Flight Information Region (FIR) Trial to Merge PACOTS Tracks C and E

(Action Item #CP14-10)

(Presented by the Federal Aviation Administration)

SUMMARY

This paper presents information on the operational trial to merge Pacific Organized Track System (PACOTS) Tracks C and E to improve efficiencies for westbound aircraft.

1 Introduction

- 1.1. Westbound Pacific Organized Track System (PACOTS) tracks are generated by the Oakland Air Route Traffic Control Center (ARTCC) Traffic Management Unit (TMU), with Track E being the first track generated. As a result, subsequent tracks may not be able to follow the most efficient route since they must be separated from Track E
- 1.2. Tracks C and E are westbound tracks for aircraft destined to Japan from the North American west coast.
- 1.3. Analysis was conducted and a trial proposed to examine improved efficiencies by merging Tracks C and E.

2 Discussion

- 2.1. The development of advanced oceanic air traffic control systems has allowed for efficient control of an increased volume of traffic. As a result, an operational trial began on 15 March 2013 to merge traffic from PACOTS Tracks C and E which resulted in development of overall more efficient westbound PACOTS tracks between North America and Japan. The key component of the trial to merge Tracks C and E is the use of the Track Advisory (TA) system to manage the traffic at the merge point of PACOTS Tracks C and E.
- 2.2. The following procedures are used when merging PACOTS Tracks C and E:
 - a. When Oakland ARTCC generates the westbound PACOTS Tracks, they evaluate the tracks to see if there is at least 200 pounds (lbs.) of fuel burn savings on either Track C or Track E by merging the two tracks. If the minimum savings exists, then Track C and E will be published with a merge.

- b. Oakland ARTCC TMU uses the TA system to manage traffic loading onto the merged tracks. TA is a gateway reservation program that is used to plan the loading of aircraft onto PACOTS and the Russian Routes. Operators submit a request for their choices with a time window and altitude at a gateway point for a flight. TA compiles the operator choices at a 1650 UTC and then publishes a Gateway Reservation List for the flights. The point where Tracks C and E merge would be used as the “gateway” fix for a merged scenario. TA will provide for a managed traffic flow at the merge point for the two tracks.

2.3. Between 15 March and 20 April 2013, PACOTS Tracks C and E were successfully merged 14 days. Analysis of data for 10 of the 14 days indicates an average fuel burn savings of 509 kg. (1120 lbs.) per flight.

2.4. Between 21 and 25 April 2013 Oakland ARTCC encountered numerous traffic related difficulties with merged PACOTS Track C and E traffic. Those difficulties included increased workload and complexity due to extensive use of non-standard altitudes. On 26 April 2013 Oakland ARTCC suspended the PACOTS Track C and E merge operational trial.

2.5. Oakland ARTCC conducted an investigation into the traffic problems encountered 21-25 April 2013 and found a number of irregularities involving several different operators. An aircraft with a Track Advisory Reservation for a gateway is supposed to cross the gateway within 5 minutes before or after the requested time. Figure 1 shows the irregularities encountered 21-25 April 2013.

**Figure 1
Irregularities Encountered During C/E PACOTS Merge 21-25 April 2013**

Date	Avg. Crossing Time Difference (should be <5 min.)	Largest Crossing Time Difference	Crossed Track Advisory Gateway Fix Within 10 min. Window	Aircraft with No Track Advisory Reservation
22 April 2013	12 minutes	82 minutes	9 of 38 aircraft	7
23 April 2013	102 minutes	303 minutes	6 of 37 aircraft	6
25 April 2013	28 minutes	214 minutes	10 of 29 aircraft	1

2.6. Oakland ARTCC coordinated with each operator who made errors in their TA reservation between 21-25 April 2013. In order for the operational trial to merge PACOTS Tracks C and E to be successful, operators must improve in meeting their TA gateway reservation. The concern is that if there are too many gateway reservation errors, use of non-standard altitudes may not be enough of a mitigation as aircraft stack up in close proximity to one another. This would result in aircraft being assigned altitudes that are unacceptably low in order to ensure separation.

2.7. Even with accurate gateway reservations, there is still a requirement for the use of some non-standard altitudes. Fleet mix on the PACOTS could result in situations where aircraft with varying performance characteristics need to utilize non-standard altitudes. For instance, a B767 followed by a

B747 at the same altitude will not maintain separation over the long term and one aircraft will likely need to be moved to a non-standard altitude.

2.8. Final coordination and training are ongoing between Oakland ARTCC, Fukuoka Air Traffic Management Center (ATMC), and Anchorage ARTCC. Oakland ARTCC TMU will evaluate the westbound PACOTS during generation to determine if a merge of Tracks C and E would provide the benefits which meet the merge guidelines. If the merge were to happen in the Anchorage Flight Information Region (FIR), a track coordination message (TCM) would be published for coordination of the merged tracks. If the merge were to occur within the Oakland FIR, Oakland would obtain approval with the receiving facility for the use of non-standard altitudes for the merged tracks for the next day.

- a. If pre-approval for the use of non-standard altitudes is obtained, Oakland ARTCC will publish a TCM with Tracks C and E merged.
- b. If pre-approval for the use of non-standard altitudes cannot be obtained, Oakland ARTCC will publish a TCM without Tracks C and E merged in the Oakland FIR.

2.9. Prior to resuming the operational trial, operators will be reminded of the importance and use of Track Advisory as it relates to the merged track scenario. It is anticipated that the operational trial for merging Tracks C and E will resume in the near future.

3 Recommendation

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