

**Twenty Second Meeting of the  
Informal South Pacific ATS Co-ordinating Group (ISPACG/22)**

Papeete, Tahiti, 12-14 March 2008

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**Agenda Item 4: Review Progress on Open Action Items**

**Update on the Status of the Operational Trials and Demonstrations for 10 Minute  
Longitudinal Separation without Mandatory Mach Number Technique (MNT) in  
the Anchorage Flight Information Region (FIR)**

(Presented by the Federal Aviation Administration)

SUMMARY

This paper provides an update of the data collection required to complete a safety assessment for the 10-minute longitudinal separation without Mach Number Technique (MNT) operational trial being conducted within the Anchorage FIR. An updated preliminary analysis on observed longitudinally proximate pairs of aircraft is provided. The modification of five reporting points from non-compulsory to compulsory within the Anchorage FIR on 25 October 2007 should greatly assist the data collection needed for the safety assessment. The traffic data and the observed number of longitudinal proximate aircraft pairs will be evaluated from 25 October 2007 forward to determine the full extent of the operational trial needed to complete the safety analysis.

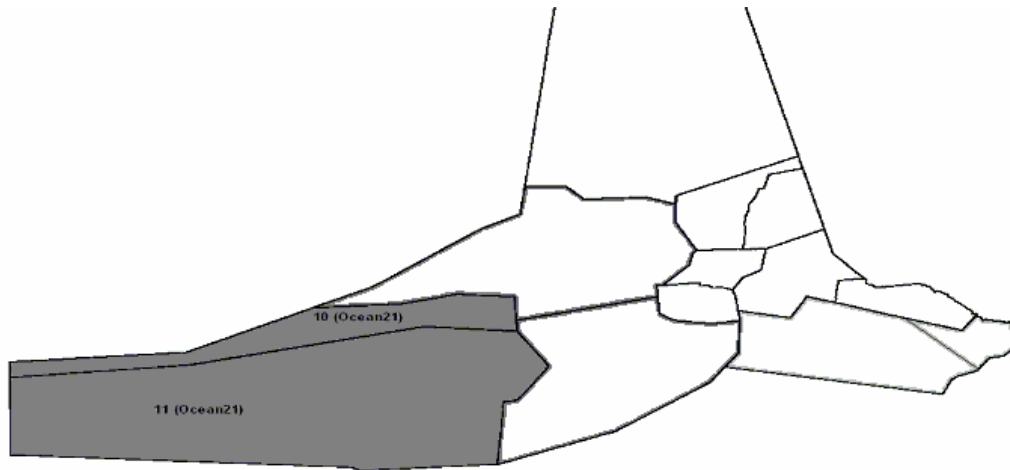
**1. Introduction**

- 1.1 The operational trial for the use of 10 minute longitudinal separation without MNT within Anchorage Flight Information Region (FIR) began on 12 April 2007. The purpose of the operational trial is to obtain data for analysis and to acquaint controllers with the operational aspects of its application. A similar operational trial in the adjacent Oakland FIR was initiated in September 1998. Reference 1 contains the analysis conducted to support the operational trial in the Oakland FIR.
- 1.2 The application of the 10 minute longitudinal separation without the use of MNT applies only to eastbound turbojet aircraft operating at or above FL290. The 10 minute longitudinal separation without the use of MNT can be applied to these aircraft upon entry into the Anchorage FIR and is applicable until either the aircraft is under radar coverage or exits Anchorage oceanic airspace.
- 1.3 This paper provides an update on the data sources to be used in the implementation of the 10 minute longitudinal separation without MNT within the Anchorage FIR. It also provides an update to the preliminary analysis on observed longitudinally proximate pairs of aircraft.

**2. Discussion**

- 2.1 Reference 2 provides a description on the data collection process. Position data from all aircraft operating in the Anchorage oceanic FIR are obtained from the Ocean21 data reduction archives.

- 2.1.1 On 1 March 2007, the Ocean21 system was introduced in the Anchorage FIR in oceanic sectors 10 and 11. Figure 1 illustrates the location of these sectors within the Anchorage FIR.



**Figure 1.** Location of Anchorage Oceanic Sectors 10 and 11

- 2.1.2 The process described in reference 2 specified that all available positions (latitude, longitude (or fix) and flight level and associated times of all aircraft regardless of reporting method (high frequency (HF), Controller Pilot Data Link Communication (CPDLC), or automatic dependent surveillance (ADS)) in the sectors of interest would be collected.
- 2.1.3 Reference 2 presented a preliminary data analysis using a 16-day sample from the Anchorage FIR. Only 31 longitudinally proximate aircraft pairs were found in this analysis, this number was considerably lower than expected. All of the aircraft pairs found had reported their position via ADS-Contract (ADS-C). The data processing for proximate aircraft pairings did not identify any aircraft that utilized HF or CPDLC for position reporting. This preliminary analysis and result revealed the lack of electronic position report data in the Ocean21 data archives from aircraft using HF or CPDLC to report position. There were no compulsory reporting points in the airspace for aircraft operating between the Fukuoka FIR boundary and the extent of the Shemya (SYA) radar coverage.
- 2.1.4 On 25 October 2007, the FAA modified five airspace fixes within the Anchorage oceanic FIR from non-compulsory to compulsory reporting points. These fixes include: AAMYY, CARTO, NIKLL, OPAKE, and PLADO. With this modification, position data from aircraft utilizing HF and CPDLC for position reporting not available previously in the Ocean21 data archives, will be available and should greatly aid the data collection process needed to complete the safety assessment for 10 minute longitudinal separation without MNT.
- 2.2 Updated Preliminary Data Analysis
- 2.2.1 As mentioned earlier, the start of the operational trial was 12 April 2007. In order to complete a safety assessment to support the implementation of the 10 minute longitudinal separation without the use of MNT, a sufficient number of proximate aircraft pairs must be observed. Also mentioned earlier, specifically in paragraph 2.1.3, the initial preliminary data analysis presented in reference 2 revealed a considerably lower number of longitudinal proximate pairs than were expected. The cause of this

result is the lack of compulsory reporting points between the Fukuoka FIR boundary and the extent of the SYA radar coverage. This situation is expected to change on 25 October 2007 with the addition of five compulsory reporting points in the Anchorage oceanic airspace.

- 2.2.2 Due to the known lack of position data available in the Oceani21 data archives for aircraft utilizing HF or CPDLC for position reporting, this updated preliminary analysis is not specific to the 10 minute longitudinal separation without MNT. It is anticipated that data collected from 25 October 2007 forward will be used in the safety assessment of the 10 minute longitudinal separation without MNT in the Anchorage oceanic FIR.
- 2.2.3 The Ocean21 data archives collected from the Anchorage FIR from March through August 2007 were analyzed for this updated preliminary analysis. From the aircraft filed flight plan data, it is estimated that an average of 440 flights per day operate within the Anchorage FIR. Twenty-two percent of these flights, or approximately 97 flights per day, utilize ADS for position reporting. The remaining 78 percent, or approximately 343 flights per day, utilize HF or CPDLC for position reporting.
- 2.2.4 There were 282 eastbound and 596 westbound longitudinally proximate pairs observed in the data. In each observed aircraft pair, both of the aircraft utilized ADS for position reporting.
- 2.2.5 It is desirable to include all potential aircraft pairs in the safety assessment for the 10 minute longitudinal separation without MNT in the Anchorage oceanic FIR, not just aircraft utilizing ADS for position reporting. Doing so ensures that all potential scenarios, including those arising from large prediction errors or large message transit times, amongst others, are taken into account in the safety assessment.
- 2.2.6 The length of time needed to collect a sufficient number of proximate aircraft pairs depends on the data, specifically the number of observed eastbound proximate eastbound aircraft pairs. The traffic data and the observed number of proximate eastbound pairs will be evaluated from 25 October 2007 forward to determine the full extent of the operational trial required to complete the safety analysis.

### **3. Action by the meeting**

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

### **References**

- 1 “Status of Operational Trials and Demonstrations for 10 Minutes Longitudinal Separation Without mandatory MNT in the Oakland FIR”, IP/3, Review of the General Concept of Separation Panel (RGCSP), Working Group A Meeting, St. Petersburg, 17-28 May 1999.
- 2 “Status of the Operational Trials and Demonstrations for 10 Minute Longitudinal Separation Without Mandatory Mach Number Technique (MNT) in the Anchorage Flight Information Region (FIR)”, IP/9, IPACG/26, Anchorage, Alaska, 14-18 May 2007.