

Twentieth Meeting of the Cross Polar Trans East Air Traffic Management Providers' Work Group (CPWG/20)

(Anchorage, Alaska 26-29 October 2015)

Agenda Item 3:

LOST FUEL SAVINGS DUE TO LACK OF RNP 4 & FANS-1A EQUIPAGE

Presented by Federal Aviation Administration

SUMMARY

This paper identifies FANS equipped aircraft without RNP4 certification and how they cause increased fuel burn due to lack of RNP 4 approval.

1 Introduction

1.1. When aircraft are FANS equipped and RNP 4 certified, Oceanic controllers can apply Automatic Dependent Surveillance-Contract (ADS-C) separation rules between pairs of properly equipped aircraft. Smaller separation standards allow aircraft to operate at more efficient routes and altitudes. This paper focuses on extra fuel burn due to denied altitude change requests because of lack of aircraft FANS and RNP 4 equipage.

2 Discussion

2.1. FANS equipped aircraft are able to qualify for RNP 4 certification. Since the fuel burn savings metrics in this paper were first developed, there has been a significant closure in the gap between the percentages of RNP 4 and FANS-1A equipped aircraft in the Oakland Oceanic Control Area (CTA). In May 2012, 51 percent of aircraft in the Oakland CTA were FANS-1A equipped, but only 30 percent of aircraft flight planned RNP 4 equipage. That was a gap of 21 percent of aircraft capable of being certified as RNP 4 but were not flight planning the equipage. Currently, about 64 percent of flights in the Oakland Oceanic FIR are FANS equipped and 61 percent flight plan RNP 4. There is still a gap of about 3 percent of flights that are capable of RNP 4 but that do not flight plan with RNP 4 equipage. Over the last 2 years, the gap has closed 18 percent between RNP 4 and FANS-1A equipped aircraft. Additionally, the percentage of FANS-1A equipped aircraft has increased by fourteen percent over the same time period.

2.2. Oakland Air Route Traffic Control Center (ARTCC) conducted a study to place a value on the extra fuel burn caused by aircraft operating at altitudes below their optimum altitude due to lack of RNP4 and FANS equipment. The FAA felt this analysis would help operators recognize the potential savings with RNP 4 and FANS equipage.

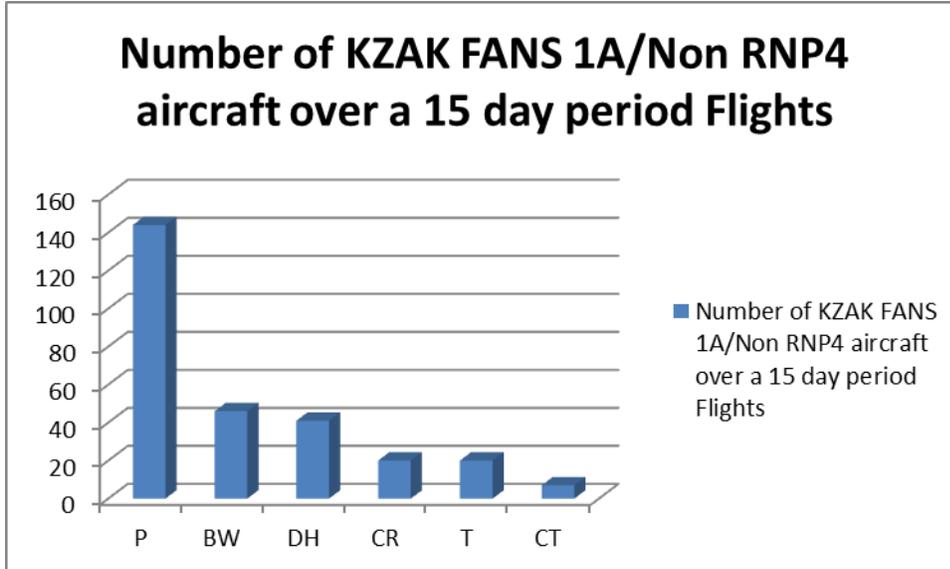
2.3. Over the past 3 years, five 15 day time periods were examined. The results from the collections varied from 28,858 kg to 18,267 kg extra fuel burn over 15 days due to the lack of FANS and RNP4. The extra fuel burn data collections have shown a smaller potential fuel burn

savings over time, but the savings are still significant. Smaller fuel burn savings found during the data collections may be explained by the increase in FANS and RNP 4 aircraft since the first data collection in April 2012. In April 2012, in the Oakland Oceanic FIR, the percentage of RNP 4 aircraft was at 30 percent. The percentage of FANS/RNP 4 aircraft has now risen to 61 percent. Additionally the number of FANS 1A equipped aircraft has grown by 14%. With more RNP 4, FANS 1A equipped aircraft, operators can more frequently realize altitude assignments that are closer to their optimum operating altitude.

2.4. In the NOPAC Route system, about 94% of the aircraft are FANS equipped. However only 83% of the NOPAC aircraft flight plan RNP4.

2.5. As part of this ongoing analysis we have identified that there is an extra fuel burn associated with RNP 4/FANS1A aircraft that are denied altitude changes because of conflicting traffic not RNP 4 equipped. For the 2014 analysis we were able to calculate a fuel burn loss for these RNP 4 aircraft. From July 23-August 7, 2014, RNP 4 aircraft experienced an extra fuel burn of 18,267 kg (40,187 lbs) due to other non-RNP 4 aircraft. That means the total extra fuel burn due to lack of RNP 4 and FANS 1A equipment was 37,001kg (81,402 lbs). Extrapolating the data over a 1 year time period the extra fuel burn annually is 900,366 kg (1,980,805 lbs) with an extra 2.84 million kg of CO₂ emissions.

2.6. In August 2015 there were 6 operators who used FANS-1A equipment but failed to flight plan RNP4. Two of the operators account for 68 percent of the FANS-1A/Non-RNP4 aircraft in the Oakland FIR. The chart below lists the number of flights over 15 days for the 6 operators.



Operators P and BW expect to obtain an RNP4 Op Spec approval in November 2015.

3 Recommendation

3.1 The meeting is invited to note the information provided, and

3.2 Work together to increase the number of FANS 1A and RNP4 aircraft