International Civil Aviation Organization

Thirteenth Meeting of the Air Traffic Management Sub-Group (ATM/SG/13) of APANPIRG

Singapore, 25 – 29 August 2025

Agenda Item 6: ATM Coordination (Meetings, Route Development, Contingency Planning)

UPDATE ON SOUTH-EAST ASIA-OCEANIC IMPLEMENTATION OF FREE ROUTE OPERATIONS (FRTO) PROJECT

(Presented by IATA, Co-sponsored by IATA, Civil Aviation Authority of Singapore, AirNav Indonesia, Airservices Australia and Airways New Zealand)

SUMMARY

This paper presents an update on the operational trials conducted by the South-East Asia-Oceanic Implementation of Free Route Operations (SEA-O FRTO) project team in several adjacent FIRs in the Asia and Pacific Regions (APAC) under the APAC ANSP Committee (AAC) Workstream 4.

1. INTRODUCTION

1.1 The APAC ANSP Committee Workstream 4 (AAC WS4) was tasked with promoting operational efficiency, enhancing coordination and addressing issues of common interest amongst oceanic ANSPs.

1.2 A Free Route Operations (FRTO) trial was identified to capitalize on existing and emerging User Preferred Route (UPR) programs in the region.

1.3 Four ANSPs (CAAS, AirNav Indonesia, Airservices Australia, and Airways NZ) agreed to collaborate with IATA and selected member airlines to create a suite of city-pairs for four airlines (Singapore Airlines (SIA), Garuda Indonesia (GIA), Qantas (QFA) and Air New Zealand (ANZ)) to flight plan trial UPRs with minimal constraints or operational restrictions.

2. DISCUSSION

2.1 In August 2024, the South-East Asia-Oceanic Implementation of Free Route Operations (SEA-O FRTO) project team commenced a trial involving four ANSPs (CAAS, AirNav Indonesia, Airservices Australia, and Airways NZ) and four airlines (SIA, GIA, QFA and ANZ). The trial combined several existing and emerging UPR programs and enhanced their potential efficiencies primarily through cooperation of neighbouring ANSPs to create a larger volume of access and remove constraints of tracking points at FIR boundaries.

2.2 Effectively ‘connecting’ the FIRs of the ANSPs provided opportunity for UPR flights to be planned for maximum distance with minimal restriction between 37 agreed city-pairs.

2.3 The initiative set out to demonstrate several benefits and goals:

a) progressing cross-border collaboration on FRTO initiatives:

i) demonstrate how benefits can be generated and sustained when multiple States cooperate for common goals;

b) optimize flight planning efficiency for operators:

i) enhanced efficiency by optimizing flight paths available to operators;

ii) increased options for operators during flight planning to find the most optimal route;

c) reduce operational cost for aircraft operators and airlines:

i) fewer track miles and/or more wind assisted routes flown equates to lower fuel burn which helps to reduce fuel uplift and operational costs; or

ii) airlines utilize potential fuel savings in other ways to generate benefits suiting business objectives.

2.4 A review of the trial and identification of benefits and expansion opportunities took place in Q1/2025. Data collated represented total savings achieved for UPR vs fixed routes for the restricted set of city-pairs used in the trial. The data represents what can be achieved in total when multiple States work in cooperation, not just the incremental saving from the trial itself, as much of the UPR efficiencies already existed in other individual programs.

Table 1: Reported Benefits – Airline 1

Month	Total No. of Flights on UPR	Total UPR Fuel Savings	Total UPR CO_2 Savings*
Aug 2024	160	24T	75.8T
Sep 2024	154	29T	91.6T
Oct 2024	152	19T	60.0T
Nov 2024	147	26T	82.2T
Dec 2024	151	20T	63.2T
5-Month Trial	764	118T	372.8T

a) *CO2 emissions = 3.16 x fuel consumed (ICAO CORSIA CO2 emissions factor);

b) participation was approximately 35% flights, with average fuel saving 150kg per flight; and

c) flight time and track mile differences were not tracked however estimated to be below five minutes (average flight time saving) and 25 NM (average track mile saving).

Table 2: Reported Benefits - Airline 2

	Time Savings per flight	Total UPR Fuel Savings	Total UPR CO_2 Savings*
City Pair (out)			
Single leg	6 mins	864kgs	2,730kgs
Weekly (x4)	24 mins	3,456kgs	10,921kgs
City Pair (return)			
Single leg	7 mins	839kgs	2,651kgs
Weekly (x4)	28 mins	3,356kgs	10,605kgs
Weekly Total	52 mins	6,812kgs	21,526kgs
5-Month Total (~x 20 Weeks)	~1,040 mins	136,240kgs	430,518kgs

Table 3: Reported Benefits - Airline 3

	Total UPR Fuel Savings	Total UPR CO_2 Savings*
Dry Season (6th Aug 24 to 13th Sep 24) - 37 days of data		
(from city-pair averages)	46,685kgs	147,525kgs
Average participation 32%		
Wet Season (1st Nov 24 to 3rd Jan 25) - 64 days of data		
(from city-pair averages)	314,041kgs	992,370kgs
Average participation 48%		
Totals	360,726kgs	1,139,895kgs

Table 4: Total Reported UPR City-Pair Benefits from ¾ of the Participating Airlines

Total UPR Fuel Savings	Total UPR CO_2 Savings*
614,966kgs	1,394,134kgs

2.5 In summary, participating airlines took a period to familiarize with and get started using the trial procedures. Some faced system setup challenges and change management issues, but once commenced, participation and tracking became more consistent.

2.6 Of note, the flights to/from Indonesia had the least opportunity to benefit, and even some Singapore services didn't show significant benefit due to seasonal wind patterns, whereas the overflying traffic could take full advantage. There were significant savings reported for HKG city-pair (averages of around 2000kg).

2.7 Post analysis, the AAC agreed to extend the trial until 31 October 2025 and expand it by adding two ANSPs (NiuSky Pacific and Fiji Airports), as well as four additional airlines (Cathay Pacific (CPA), Eva Air (EVA), Fiji Airways (FJA), and JetStar Airways - Australia (JST)) operating in an expanded suite of city-pairs.

2.8 Early progress update of benefits has included positive feedback, particularly for flights Manila-Sydney (500kgs average fuel saving per flight) and Manila-Brisbane (250kgs average fuel saving per flight).

2.9 The project team agreed that this would be the final extension, and the trial would cease at end of October 2025 with further data collation and reporting. At that point it is anticipated that those ANSPs that are able will amend necessary instructions to make the procedures business as usual. Others would transition to that over time once individual challenges are resolved.

2.10 The data results and lessons learnt from the trial will be utilized by the project team to develop future guidance material to encourage and support other ANSPs to transition to FRTO environment in the future so as to support regional expansion of the capability. That guidance material will be developed for targeted endorsement by the AAC in 2026.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper;

b) encourage States/Administrations to collaborate on FTRO initiatives to optimize flight efficiency; and

c) discuss any relevant matters as appropriate.

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