International Civil Aviation Organization

THE TENTH MEETING OF PERFORMANCE BASED NAVIGATION IMPLEMENTATION COORDINATION GROUP (PBNICG/10)

Bangkok, 19 - 21 April 2023

Agenda Item 3: Implementation status of the Regional Transition Plan for RNP APCH Chart Identification from RNAV to RNP

Agenda Item 4: States' PBN Implementation Progress and the challenges faced by the States and lessons learnt.

IP - UPDATE ON PBN IMPLEMENTATION IN AUSTRALIA

(Presented by Airservices Australia)

SUMMARY

This paper presents a brief overview of Australia's activities related to: - the transition of RNP APCH Chart identification - expected completion … and - Continuous Descent Operations (CDO) trial

1. INTRODUCTION

1.1 This information paper provides an update on PBN implementation activities in Australia, in particular:

- The transition of RNP APCH Chart identification - expected completion Nov 2023
- Continuous Descent Operations (CDO) trial (Managed Descent)

2. DISCUSSION

Transition Plan for RNP APCH Chart Identification from RNAV to RNP

2.1 Australia continues to transition charts to the ICAO naming convention for RNP. Due to the large number of charts, the implementation has been occurring over a little more than two- year period, with updates being completed region by region.

2.2 There has been no feedback or complaints from industry on either the changes, or the implementation plan. The longer implementation has also meant that data houses have been able to manage the additional workload from the changes, including system updates where required. The transition is on track to be completed by November 2023.

2.3 Reference: AIC H03/21 Change to Instrument Flight Procedures Approach Chart Identification from RNAV to RNP.

Continuous Descent Operations (CDO)

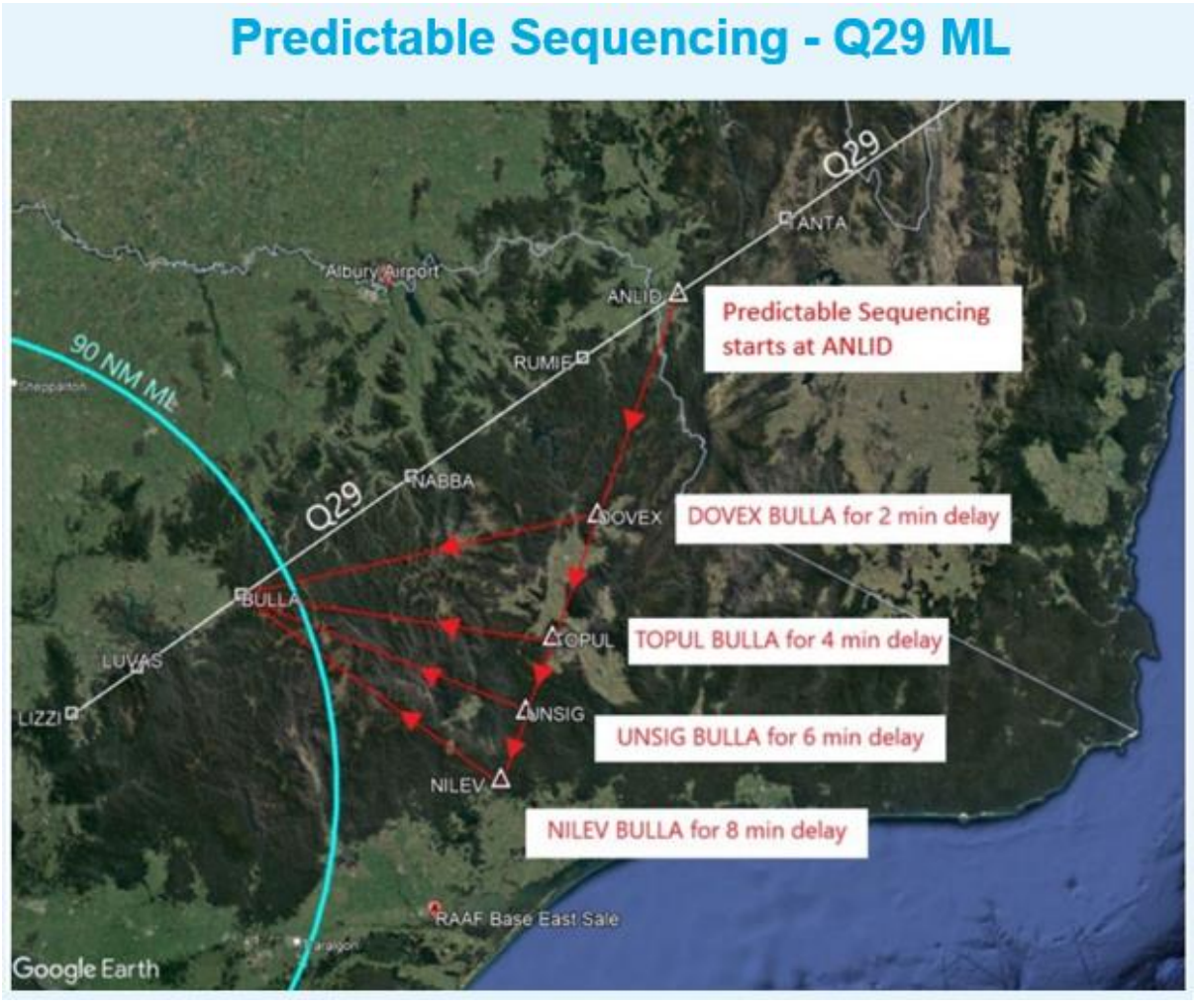
2.4 Australia has been conducting a 'Managed Descent' form of CDO since December 2022. There has been a positive uptake of the trial both by the domestic airline pilots as well as the Air Traffic Controllers (ATC) from the trial area.

2.5 The trial uses published routes that achieve a predictable delay through additional track miles (predictable sequencing), with the finer adjustment achieved through speed control. Pilots are issued with a waypoint (feeder fix) crossing time requirement e.g. CROSS BULLA AT 0123. All aircraft fly at 250KT from the feeder fix (published on charts).

2.6 The trial is being expanded to include an adjacent group of ATC sectors due to:

- a keen interest from the international airlines to participate in the trial. This expansion will include participation by international airlines such as Air New Zealand, Singapore Air and Japan Air; and
- the ease of expansion between the two adjacent ATC groups. Initial discussions with the newly affected ATC group have been favourable as they have observed the positive impact in the initial trial group.

2.7 Expansion of the trial will provide more data to inform the feasibility for national adoption of the procedure. Further expansion considerations include the suitability of existing route structures to incorporate the predictable sequencing routes as shown below.



2.8 Aircrew feedback includes the following:

- **FMS**
  - RTA function was generally not used, the aircraft remained in managed mode (VNAV PATH) and used VNAV speed,
  - B737 FMC is unable to manage a descent with an increase in airspeed at a set point (e.g. if the aircraft crosses LIZZI at time 49 at 250 knots, only a descent speed of 250 KIAS or greater can be flown in VNAV),
- **Ability to meet requirements**
  - The procedure was simple to enter/ execute, however unfamiliarity with the waypoints caused some early searching – ATC spelling out new waypoint names was helpful,
  - Aircraft were able to maintain an FMC profile descent,
  - The procedure worked well to manage the required delay, with pilot reporting less thinking about the flight path and a more efficient descent,
  - The procedure makes delay management a lot easier. With actual tracking information speed can be varied and vertical profile managed even with big wind changes from cruise level on descent,
- **Cockpit workload**
  - The procedure was generally considered to have a lower or neutral crew workload,
  - Pilots reported less change of descent modes on the MCP, better situational awareness of where the crew can expect to fly, accurate information now displayed in the FMC (ETA, FUEL),
  - Pilots reported that the procedure allows better situational awareness with weather, cabin management, traffic etc. It is highly preferable over a minimum speed cruise and descent which is often required,
  - A consideration is that the procedure may increase workload if weather is poor and deviations are required,
- **Additional comments**
  - The earlier the aircrew know of a delay, the more they can do to manage it efficiently,
  - Adding track miles is an easy way to program an airborne delay, but a lower descent speed and, where necessary, a lower cruise altitude accomplishes this in a more fuel-efficient way,
  - Consideration of how the flow sequence point can impact efficiency. (This is the point where the flow controller considers aircraft and adds them into the aerodrome flow sequence e.g 350NM from destination.) When pilots know what the flow point is, arrivals may fly fast to a certain point then reduce to minimum speed, only to accelerate again to 250 KIAS from a feeder fix – with more notice, an efficient average speed could be flown.

3. ACTION REQUIRED BY THE MEETING

3.1 The meeting is invited to:

a) please note the information contained in this paper; and
b) discuss any relevant matters as appropriate.