International Civil Aviation Organization

THE TENTH MEETING OF PERFORMANCE BASED NAVIGATION IMPLEMENTATION COORDINATION GROUP (PBNICG/11)

Bangkok, Thailand, 27-29 March 2024

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.

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 from RNAV to RNP,

- SID/STAR RNP specification standardisation and SID/STAR quality assurance, 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,
- SID/STAR RNP specification standardisation and quality assurance work,
- Continuous Descent Operations (CDO) trial (Managed Descent).

2. DISCUSSION

Transition to ICAO Chart Identification

2.1 The Australian transition of instrument approach charts to the ICAO naming convention for RNP was completed in November 2023. Due to the large number of charts, the implementation occurred over more than two-years, 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 provided data houses with capacity to manage the additional workload from the changes, including system updates, where required.

RNAV SID/STAR

2.3 Australia commenced RNP 1 SID and STAR implementation in 2016 and all new SID and STAR procedures are now designed to RNP 1 specification. Examples are Brisbane (YBBN) with 34 RNP 1 SID and STAR procedures that were added with the new parallel runway re-design. The latest additions are for Williamtown (YWLM), also added with a traffic management redesign in November 2023.

2.3.1 The majority of other existing SID and STAR procedures are designed to RNP 1 standards, however not all have the RNP 1 label on the chart. A quality assurance review is underway of all existing RNAV SIDs/STARs to ensure that where the procedure meets RNP 1 specifications that the labels are added to the charts. Some procedures will not meet the requirement as they were designed with additional requirements such as tracking via conventional navaids eg via a VOR radial.

Continuous Descent Operations

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

2.5 The trial uses published routes that achieve a predictable delay through additional track miles (predictable sequencing) prior to the aircraft top of descent, with finer adjustment achieved through speed control. Pilots are issued with a waypoint (feeder fix - published on charts) crossing time requirement e.g. CROSS BULLA AT 0123. Crossing times are generated by the MAESTRO arrivals system. All aircraft fly at 250KT from the feeder fix.

2.6 The original ATC group (Monaro) has now completed their trial and a safety post implementation review (PIR) has been completed. The PIR examined the original hazards identified before the trial to consider whether:

- all safety requirements were met,
- the identified hazards were correct, remain credible, and controls were effective,
- there were any new hazards identified, and
- safety benefits were realised.

2.6.1 Of the 5 hazards identified prior to the trial:

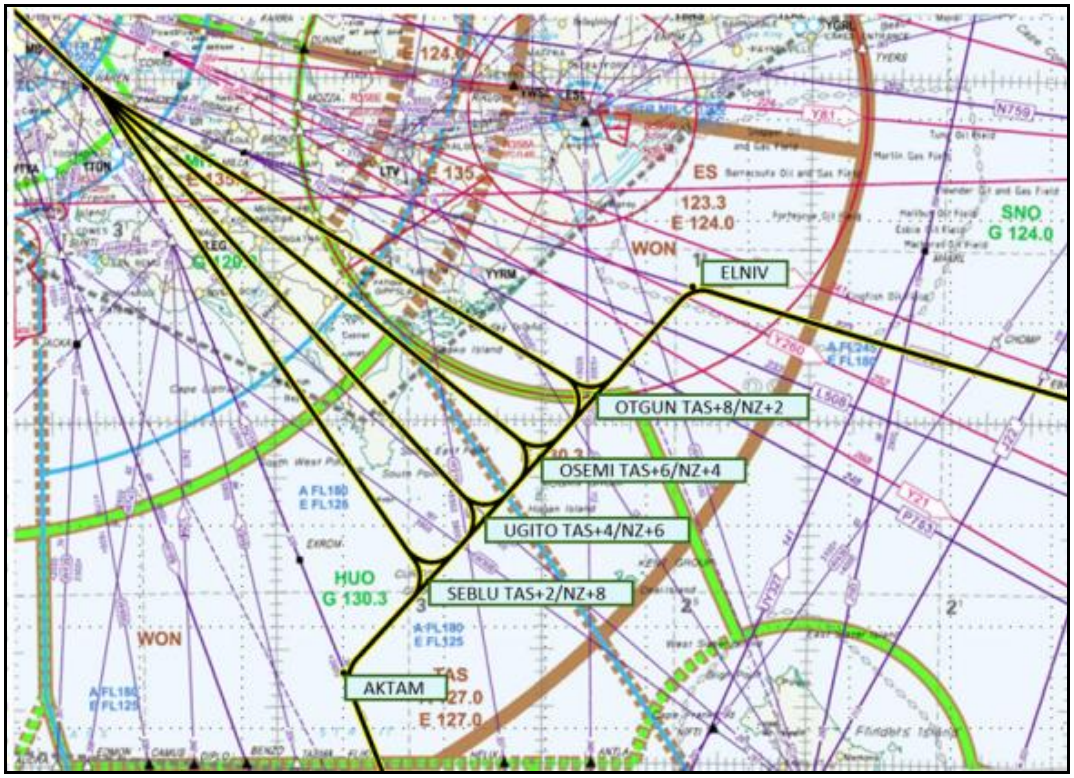
- two hazards were deemed no longer applicable,
- one hazard will be transferred to Monaro group Operational Risk Assessment register.
- two hazards were assessed remain credible however all related controls have now been met and sufficiently minimise the risk.

2.6.2 A human factors assessment was completed, focusing on ATC workload, phraseology, coordination, and monitoring impacts affecting a controller's ability to maintain situational awareness – interpret and evaluate traffic events and prioritise, project and plan. Overall, although there were some shifts in workload, no human factors concerns were experienced by ATC during the CDO trial.

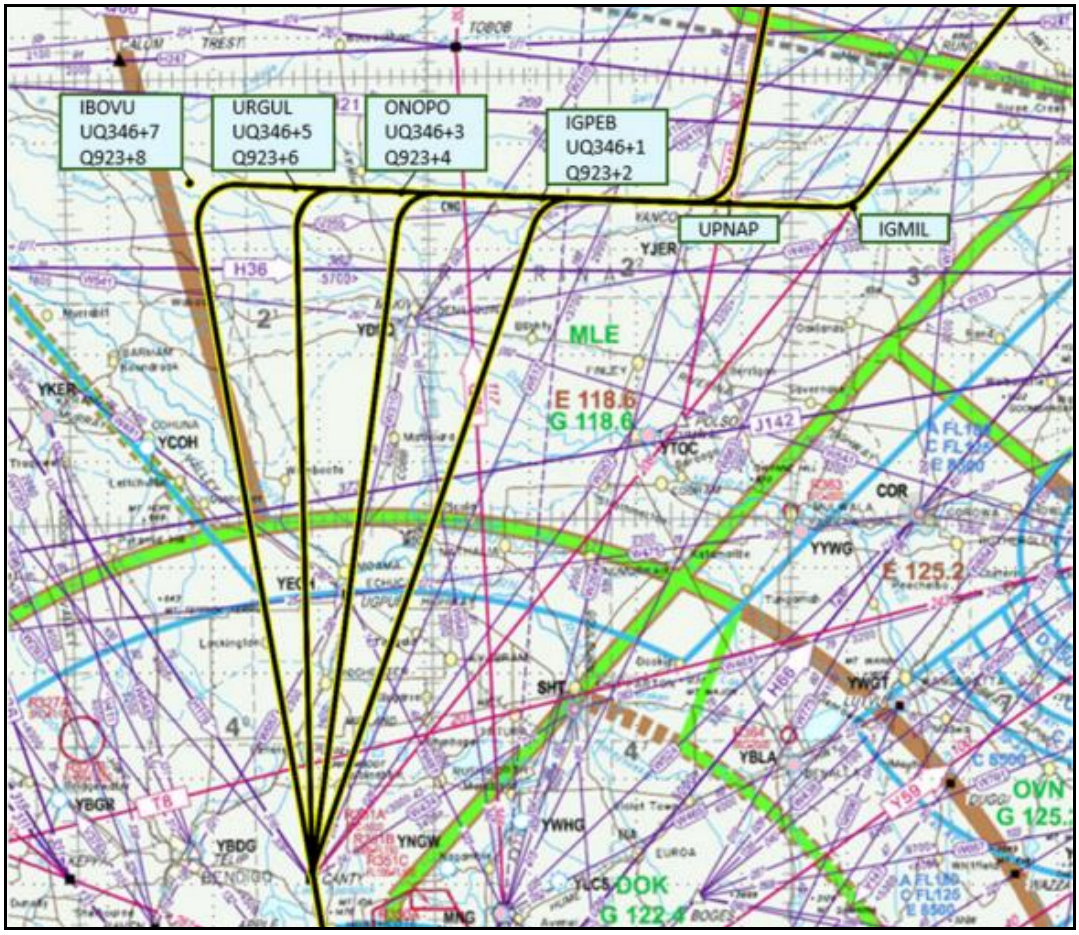
2.7 No additional hazards were identified following the trial and the trial is considered as successful. The key lesson for future CDO trials is to ensure that all waypoints are clearly defined prior to beginning the trial, both for ATC and aircraft systems.

2.8 The trial has now been expanded (as a new trial phase) to other ATC sectors, further domestic routes and one international arrival route. New predictable sequence routes are now more complex; tailored to the sectors and arrival flows.

2.8.1 Routes South of Melbourne:



2.8.2 Routes North of Melbourne:



2.9 There are now three ATC arrivals groups using this method to manage arrivals to Melbourne Airport (YMML). For further information on the latest trial expansion see AIC H01/24. These procedures are expected to be permanently implemented at following a successful 3-month trial period.

2.10 In addition to the benefits described by the airline industry and included in Australia's update to PBNICG 10, fuel saving has been quantified at an average saving of 75kg per flight. Noise benefits have been difficult to quantify due to lack of noise monitors in areas that would expect most benefit.

2.11 The next locations for additional trial phases are expected to be in the Brisbane and Sydney area, with particular attention expected to the adoption of CDO with 'open' STARs in Sydney and how they affect effectiveness and uptake. (Open STARs are STARs that terminate without joining to an instrument approach procedure. These are used at Sydney to facilitate vectoring onto parallel approaches.)

3. ACTION REQUIRED BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper; and

b) discuss any relevant matters as appropriate.

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