PBN Regulatory Framework Project

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PBN Regulatory Framework Project

• NZ PBN Concept

• PBN Regulatory Framework Approach

• Workshops
  ➢ Technical/Operational
  ➢ PBN Project Delivery
NZ PBN Concept
NZ PBN Concept

• Driven by:
  ➢ ICAO Global Air Navigation Plan
  ➢ ICAO Assembly Resolution A37-11
  ➢ National Airspace and Air Navigation Plan
  ➢ PBN Implementation plan – Revised 2017

• ICAO PBN Manual Doc 9613
  ➢ PBN Concept
  ➢ Implementation Guidance
  ➢ Navigation Specifications
NZ PBN Concept

- **Objective:**
  - Full PBN environment by 2023
  - Minimising mixed mode environment (PBN/Conventional)
  - Focusing on benefits
    - Safety
    - Airspace Capacity & Efficiency
    - Operator Efficiency
    - Operator Accessibility
    - Fuel Efficiency
    - Optimisation of Infrastructure
    - Environmental
    - Societal
NZ PBN Concept

• PBN Primary Means Navigation

• Based upon ICAO PBN Navigation Specifications

• NAV Specification Implementation based upon
  ➢ GNSS
    o GPS Constellation
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• Navigation need to be considered in relation to:
  ➢ Communication
  ➢ Surveillance

• NZ Surveillance Solution
  ➢ ADS-B (GPS Dependent)
  ➢ MLAT
  ➢ Non GNSS Cooperative Surveillance (Contingency)
  ➢ Non Cooperative Surveillance (Primary Radar)
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- GPS is susceptible to a number of issues:
  - Jamming
  - Spoofing
  - on-board equipment failure
  - Space Weather
  - GPS constellation issues (regional or global)

- **Common Mode Failure: GPS – Safety**
  - PBN
  - Surveillance (ADS-B)
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• Alternate Means of Navigation
  ➢ Required in the event of loss of GPS
  ➢ Safe Recovery of Aircraft

• Ground Based Navigation Aids
  • GBNA Review Panel
    • Two Considerations:
      • Safe Recovery of Aircraft: Minimum Operational Network (MON)
      • Continued Operations – Contingency
    • Proposed 19 VOR/DME stations
NZ PBN 2023

• Operations Overview
  ➢ PBN Navigation Specifications
  ➢ Primary Navigation Source: GPS
  ➢ Routes and Procedures based upon PBN (normal ops)
  ➢ Alternate Navigation
    o VOR/DME, VOR
    o Limited conventional routes and procedures (non-normal/contingency)
  ➢ Domestic Airspace
    o Operations outside GBNA – Acceptable
    o If outside GBNA service – Extraction Procedures
      ▪ Recovery of aircraft (MON)

Key Input to PBN Regulatory Framework
NZ PBN Concept

• PBN Regulatory Framework – Prerequisite work
  - Addressing issues to establish safe outcomes
  - RAIM Prediction
  - RAIM Prediction 0.3(H)
  - Equipage Requirements
  - Extraction Criteria
  - Alternate Requirements (navigation source)
  - VOR/DME versus VOR
  - Low Performance Aircraft (proposed GBNA)
  - GNSS Monitoring
  - PBN ConOps

Technical Papers
Workshops
Safety Assessment
NZ PBN Concept

Working Session – Questions?
PBN Regulatory Framework Approach
Overview

What's being delivered

A regulatory framework to support and enable implementation of Performance Based Navigation

This will ensure the navigation systems and operations within NZ FIR are appropriately harmonised within the aviation system for PBN Implementation

The regulatory framework may include –

- Revision of advisory circulars
- Initiation of education campaigns
- Development of promotional material
- Rule amendments and/or;
- The introduction of a notice/s
Overview cont.

Based on an assessment of the CAA rule set (2016) which identified 55 possible rule or guidance issues

Issues range from minor definition issues to large scale issue projects

Issues related to equipment, alternates, fuel requirements, operations, training and qualifications, airspace, definitions, and ATS
How the project is being delivered

- Staggered approach to address regulatory issues
  
  Based upon

- Collaboration and engagement
- Transparency
- A logical process
Staggered Approach

Noting, not all issues can be addressed at once –

A review of all PBN related rule and guidance issues was conducted. This identified -

• critical dependencies between issues
• issues that can be raised early
• areas that require further discussion with industry

This work began to naturally shape the priority and approach to address regulatory issues
Collaboration and Engagement

Early engagement with stakeholders so that;

**Stakeholders -**
- Understand the possible issues being raised
- When and where their expertise is required
- Can bring to light any risks and issues early in the piece
- Are involved at the earliest possible point in the decision making process

**We, as the CAA -**
- Gain their operational level expertise and perspective
- Clearly understand the impacts to their operations
- Remain transparent, building trust and advocacy

Which leads to sound, robust and considered decision making, smoothing the process during NPRM stages
How is this being achieved

• New Southern Sky Working Group
• Roadshows
  ➢ NSS Roadshow – Sept 2016 / Nov 2018
• Events
  ➢ Approach16 / Approach18
• Conferences
  • NSS Conference - May 2018 (lock it in your diaries!)
• Stakeholder ownership of tasks and activities
  ➢ PBN Rotary CONOPs
• Workshops
PBN Rotary workshop – Feb 26th 2018

Rotary workshop held Feb 26th to understand impacts of GBNA RP and extractions and diversions recommendations

- Looked at impacts from a commercial, military and security and resilience perspective

- Group identified a number of limitations and constraints the recommendations would pose to their operations

- Used scenarios to support the limitations and constraints identified
Scenario: DUN – CHC EMS Operation

- Transfer of a critical patient from Dunedin hospital directly to Christchurch hospital
- Recommendation means Ashburton and Timaru NDB removed
- Dunedin’s VOR filed as the next most suitable alternate
- Impose additional fuel requirements and weight restrictions to extent flight no longer possible
- May prolong time to transfer patient
Results of workshop

Output
- A report consolidating the workshop findings

Outcome
- CAA gain operational level perspective and a clear understanding of how the recommendations will impact this sector
- Stakeholders have confidence that their views are being considered alongside any future discussions and decisions

What we will do with this information
- Will feed into PBN Regulatory Framework, MoT, NSSWG etc.
- Used to help inform discussions and decisions within these groups/orgs.
- May identify further work required
Working Session – Questions?
PBN Regulatory Workshop
Workshop

- Feedback request for -
  - Project delivery and engagement
  - Technical and operations

- Provided with a range of questions
  - Brainstorm within your group
  - Write your feedback/comments
  - Report back